Intertek | Architectural Testing

PERFORMANCE TEST REPORT

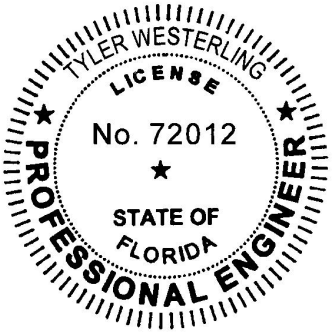
Report No.: A8744.04-801-18

Rendered to:

C.R. Laurence Co., INC.
Los Angeles, California

PRODUCT TYPE: Curtain Wall Systems
SERIES/MODEL: StormWall®XL

This report contains in its entirety:
Cover Page: 1 page
Report Body: 84 pages
Sketches: 15 pages
Drawings: 39 pages



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Test Dates: 04/29/11
Through: 07/14/11
Report Date: 08/19/11
Test Record Retention End Date: 07/14/15

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1.0 Report Issued To: C.R. Laurence Co., INC.
2503 E. Vernon Ave.
Los Angeles, California 90058

2.0 Test Laboratory: Architectural Testing, Inc.
2865 Market Loop
Southlake, Texas 76092
817-410-7202

3.0 Project Summary:

3.1 Product Type: Curtain Wall Systems

3.2 Series/Model: StormWall®XL

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test methods.

Test samples E6, E8 and E9 met the performance requirements set forth in the referenced test procedures for a ±3352 Pa (±70.0 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 4.

Test samples E2 and E7 met the performance requirements set forth in the referenced test procedures for a ±4788 Pa (±100.0 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 4.

Test sample E1 met the performance requirements set forth in the referenced test procedures for a +3352/-3830 Pa (+70.0/-80.0 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 4.

Test sample E4 met the performance requirements set forth in the referenced test procedures for a ±3112 Pa (±65.0 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 4.

Test sample E3 met the performance requirements set forth in the referenced test procedures for a ±4788 Pa (±100.0 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 3.

Test sample E5 met the performance requirements set forth in the referenced test procedures for a ±3112 Pa (±65.0 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 3.

This product was originally tested as the Oldcastle BuildingEnvelope® products series/model Reliance StormMax and is a reissue of the original Report No. A8744.02-801-18. This report is reissued in the name of C.R. Laurence Co., Inc. through written authorization by Oldcastle BuildingEnvelope®.

3.4 Test Dates: 04/29/2011 - 07/14/2011

3.5 Test Location: Architectural Testing, Inc. test facility in Southlake, Texas.

3.6 Test Sample Source: The test specimens were provided by the client. Representative samples of the test specimens will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.0 Project Summary: (Continued)

3.7 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimens reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

3.8 List of Official Observers:

Name	Company
George Gonzalez	Oldcastle BuildingEnvelope
Joe Chandler	Oldcastle BuildingEnvelope
Tom Klein	Architectural Testing, Inc.
Jesus Mata	Architectural Testing, Inc.

4.0 Test Specifications:

ASTM E 283-04, *Test Method for Determining Rate of Airflow Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.*

ASTM E 330-02, *Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

ASTM E 331-00, *Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

ASTM E 1886-05, *Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.*

ASTM E 1996-05, *Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Wind Borne Debris in Hurricanes.*

5.0 Test Specimen (E1) Description:

5.1 Product Size:

Overall Area: 20.3 m^2 (218.75 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	5334	210	3810	150
Door opening size	2134	84	2464	97

5.2 Frame Construction:

Each jamb (XL500-BP) and mullion (XL500-BP) had a 2-1/2" tall standard sleeve (XLS 20001) inserted into the top and bottom. A 1" wide shear block (XLB 18003) was located at the top and bottom side of each jamb (XL500-BP), one on each side at the top of the mullions (XL500-BP), on one side of the bottom of each mullion (XL500-BP), and one on each side of the mullions (XL500-BP) and jambs (XL500-BP) where the horizontals (XL500-BP, XL532-BP and XL533-BP) attach. Each shear block was fastened to the jambs (XL500-BP), mullions (XL500-BP), and standard sleeves (XL520001) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BR), head (XL501-BP), horizontal (XL500-BP, XL532-BP and XL533-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit with two #10 x 1" Phillips flat head screws (XLF118). Dow Corning Sealant (795) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (795) to the ends of each sill (XL502-BP) and head (XL501-BP) section and at the ends of the horizontals (XL500-BP, XL532-BP, XL533-BP).

A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BP) with sealant (795) and two drive screws #10 x 1/2" (XLF320). A mullion cap (XLC325) was secured to the top and bottom of each mullion (XL500-BP) with sealant (795) and two drive screws #10 x 1/2" (XLF320). A pocket filler (XL122-BP) was located at the exterior portion of the jambs XL500-BP) and door frame opening mullions (XL500-BP) and was secured using sealant (795) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (795) was applied over screws. The door subframe head (D-231), subframe jambs (D-226) and threshold (TH-57) were connected at the corners with two #14 x 1-1/2" hex head screws (XLF009). A door stop (FG-5163) was snapped into each subframe jamb (D-226) and subframe head (D-231). The subframe jambs (D-226) and head (D-231) were secured to the opening with #12 x 1" hex head self-tapping screws (XLF322) located at 18" on center spacing with one at the midpoint on the subframe head (D-231).

5.0 Test Specimen (E1) Description: (Continued)

5.2 Frame Construction: (Continued) The threshold (TH-57) was fastened down with 1/4" x 1-1/8" flat head screws located at 4" from ends of each door panel, one at midpoint of door panels, and one underneath the door stop (D-134-4). The door stop (D-134-4) was fastened through the threshold (TH-57) with two 1/4" x 2" Phillips flat head screws. The door frame was sealed (795) to the opening full perimeter at the interior and exterior.

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18003	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Standard sleeve	XL520001	2.282" x 4.953" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BP	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Mullion	XL500-BP	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Horizontal	XL500-BP	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Roll over horizontal	XL532-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Filler	XK237-BP	0.204" x 4.905" x 0.080"	6063-T5 Aluminum
Roll under horizontal	XL533-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
F-anchor	XLA10301	6.250" x 2.869" x 0.250"	6063-T6 Aluminum
T-anchor	XLA10501	7.500" x 2.869" x 0.250"	6063-T6 Aluminum
Door stop	FG-5163	1.240" x 0.745" x 0.070"	6063-T6 Aluminum
Door stop	D-134-4	0.334" x 1.485"	6063-T5 Aluminum
Steel reinforcement	XLBR15	0.500" x 4.000"	Zinc painted steel
Threshold	TH-57	5.625" x 0.500" x 0.125"	6063-T5 Aluminum
Subframe	D-226	1.000" x 5.000" x 0.094"	6063-T6 Aluminum
Mullion cap	XLC325	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
Steel reinforcement	XLBR25	1.875" x 4.721" x 0.250"	Zinc painted steel
Subframe	D-231	1.000" x 5.000" x 0.094"	6063-T6 Aluminum

5.0 Test Specimen (E1) Description: (Continued)

5.2 Frame Construction: (Continued)

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Setting block	XLSB2101	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Interior spacer gasket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
Door gasket	D-125	0.350" x 0.365"	EPDM
Zone plug	XLD352	1.056" x 1.591"	ABS plastic

5.3 Weather-stripping:

Description	Quantity	Location
Bulb gasket	1 Row	Exterior face of each door stop

5.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (995) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG (left lites, top and bottom)	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.090" DuPont™ SentryGlas®, 1/4" heat strengthened	1/4" Tempered	Exterior glazed
1-5/16" IG (right lites, top and bottom and center lite above door opening	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.075" Vanceva™ StormGlass™, 1/4" heat strengthened	1/4" Tempered	Exterior glazed

5.0 Test Specimen (E1) Description: (Continued)

5.4 Glazing: (Continued)

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Top lites, right and left side	2	1461 x 1181	57-1/2 x 46-1/2	3/4"
Top lite, center	1	2191 x 1181	86-1/4 x 46-1/2	3/4"
Bottom lites, right and left side	2	1461 x 2438	57-1/2 x 96	3/4"

5.5 Drainage: All XL62-BP horizontal pressure plates had two 5/16" weep holes located at quarter points of each member. XL110-BP face cap also had a 5/16" weep hole located at centerline of daylight opening.

5.6 Hardware: Each hinge was fastened to the door jamb and door leaf hinge stile with four #12 x 1/2" Phillips flat head screws. The screws went through a backer plate reinforcement located in the jambs and stiles. The backer plate was secured with four #12 x 1/2" Phillips flat head screws.

Description	Quantity	Location
5 Barrel hinge	6	Three at each hinge stile on door leafs at 9", 49-3/4" and 90-3/8" on center from bottom of door leaf
Door handle	2	One at each locking stile of door leafs at 37" on center from bottom of door leaf
Sweep lock	1	Locking stile of operable panel at 45" on center from bottom of door leaf
Flush bolts	2	One at top and bottom of fixed panel

5.7 Reinforcement: The mullions (XL500-BP) were reinforced with a piece of steel C-Channel (XLBR25) and a piece of flat steel (XLBR15). The jambs (XL500-BP) were reinforced with a piece of steel C-Channel (XLBR25). Two #12 x 1-1/2" hex head self-tapping screws (XLF325) were used to fasten each mullion (XL500-BP), flat steel (XLBR15), and steel C-Channel (XLBR25) reinforcement together and each jamb (XL500-BR) and steel C-Channel (XLBR25) reinforcement together. Screws were located through the middle of the shear blocks (XLB18301), 97" from bottom of unit.

5.8 Installation: The specimen was installed into a 2-1/2" x 10" steel C-Channel test buck. The rough opening allowed for a 1-3/8" shim space. The exterior of the window was sealed full perimeter with sealant (795).

5.0 Test Specimen (E1) Description: (Continued)

5.8 Installation: (Continued)

Location	Anchor Description	Anchor Location
Top and bottom of each mullion (XL500-BP) and each jamb (XL500-BP)	Aluminum F-anchors (XLA10301) at jambs (XL500-BP) and mullions (XL500-BP) and aluminum T-anchors (XLA10501) at mullions (XL500BP) and 1/2" x 2" Type "F" hex head anchor bolts	One T-anchor at top of each mullion (XL500-BP) and one F-anchor at top and bottom of each jamb (XL500-BP) and bottom of each mullion (XL500-BP). Anchors were inserted into sides of standard sleeve. Two bolts at each F-anchor (XLA10301) and one bolt on each side of T-anchor (XLA10501). The bolts were inserted into steel buck.

6.0 Test Specimen (E2) Description:

6.1 Product Size:

Overall Area: 17.7 m^2 (190.10 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	4636	182-1/2	3810	150

6.2 Frame Construction: Each jamb (XL500-BP) and mullion (XL500-BP) had a 2-1/2" tall standard sleeve (XL520001) inserted into the top and bottom. A 1" tall shear block (XLB18301) was located at the top and bottom side of each jamb (XL500-BP), one on each side of the top and bottom of the mullions (RW500), and one on each side of the mullions (XL500-BP) and jambs (XL500-BP) where the horizontals (XL500-BP, XL532-BP and XL533-BP) attach. Each shear block was fastened to the jambs (XL500-BP), mullions (XL500-BP) and standard sleeves (XLS2001) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP), head (XL501-BP) and horizontal (XL500-BP, XL532-BP and XL533-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit with two #10 x 1" Phillips flat head screws (XLF118). Sealant (SCS2000) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (SCS2000) to the ends of

each sill (XL502-BP) and head (XL501-BP) section and at the ends of the horizontals
(XL500-BP, XL532-BP, XL533-BP). A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BP) with sealant (SCS2000) and two drive screws #10 x 1/2" (XLF320).

6.0 Test Specimen (E2) Description: (Continued)

6.2 Frame Construction: (Continued) A mullion cap (XLC325) was secured to the top and bottom of each mullion (XL500-BP) with sealant (SCS2000) and two drive screws #10 x 1/2" (XLF320). A pocket filler (XL122-BP) was located at the exterior portion of the jambs (XL500-BP) and was secured using sealant (SCS2000) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (SCS2000) was applied over screws.

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Standard sleeve	XLS20001	2.282" x 4.953" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BP	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Mullion	XL500-BP	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Mullion cap	XLC325	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
Horizontal	XL500-BP	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Roll over horizontal	XL532-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Filler	XL237-BP	0.204" x 4.905" x 0.080"	6063-T5 Aluminum
Roll under horizontal	XL533-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
F-anchor	XLA10301	6.250" x 2.869" x 0.250"	6063-T6 Aluminum
T-anchor	XLA10501	7.500" x 2.869" x 0.250"	6063-T6 Aluminum
Steel reinforcement	XLBR25	1.875" x 4.721" x 0.250"	Zinc painted steel

6.0 Test Specimen (E2) Description: (Continued)

6.2 Frame Construction: (Continued)

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Setting block	XLSB2101	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Interior spacer gasket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic

6.3 Weather-stripping: No weather-stripping was utilized.

6.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (SSG4600CTG) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL100-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.090" DuPont™ SentryGlas®, 1/4" heat strengthened	1/4" Heat strengthened	Exterior glazed

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Top lites	3	1461 x 1181	57-1/2 x 46-1/2	3/4"
Bottom lites	3	1461 x 2438	57-1/2 x 96	3/4"

6.5 Drainage: All XL162-BP horizontal pressure plates had two 5/16" weep holes located at quarter points of each member. XL100-BP face cap also had a 5/16" weep hole located at centerline of daylight opening.

6.6 Hardware: No hardware was utilized.

6.0 Test Specimen (E2) Description: (Continued)

6.6 Reinforcement: Each mullion (XL500-BP) and jamb (XL500-BP) was reinforced with a piece of steel C-Channel (XLBR25). Two #12 x 1-1/2" hex head self-tapping screws (XLF325) were used to fasten each mullion (XL500-BP) / jamb (XL500-BP) and steel C-Channel reinforcement (XLBR25) together. Screws were located through the middle of the shear blocks (XLB18301), 97" from bottom of unit.

6.7 Installation: The specimen was installed into a 2-1/2" x 10" steel C-Channel test buck. The rough opening allowed for a 1-3/8" shim space. The exterior of the unit was sealed full perimeter with sealant (SCS2000).

Location	Anchor Description	Anchor Location
Top and bottom of each mullion (XL500-BP) and each jamb (XL500-BP)	Aluminum F-anchors (XLA10301) at jambs (XL500-BP) and aluminum T-anchors (XLA10501) at mullions (XL500-BP) and 1/2" x 2" Type "F" hex head anchor bolts	One anchor at top and bottom of each mullion (XL500-BP) and each jamb (XL500-BP). Anchors were inserted into sides of standard sleeve (XLS-20001). Two bolts at each F-anchor (XLA10301) and one bolt on each side of T-anchor (XLA10501). Bolts were inserted into steel buck.

7.0 Test Specimen (E3) Description:

7.1 Product Size:

Overall Area: 17.7 m^2 (190.10 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	4636	182-1/2	3810	150

7.2 Frame Construction: Each jamb (XL500-BP) and mullion (XL500-BP) had a 2-1/2" tall standard sleeve (XLS20001) inserted into the top and bottom. A 1" wide shear block (XLB18301) was located at the top and bottom side of each jamb (XL500-BR), one on each side of the top and bottom of the mullions (XL500-BR) and one on each side of the mullions (XL500-BR) and jambs (XL500-BR) where the horizontals (XL500-BR, XL532-BP and XL533-BP) attach. Each shear block was fastened to the jambs (XL500-BR), mullions (XL500-BR) and standard sleeves (XLS20001) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP), head (XL501-BP), and horizontal (XL500-BR, XL532-BP, and XL533-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the

7.0 Test Specimen (E3) Description: (Continued)

7.2 Frame Construction: (Continued) unit with two #10 x 1" Phillips flat head screws (XLF118). Sealant (795) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (795) to the ends of each sill (XL502-BP) and head (XL501-BP) section and at the ends of the horizontals (XL500-BR, HW532, XL533-BP). A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BR) with sealant (795) and two XLF320 #10 x 1/2" drive screws. A mullion cap (XLC325) was secured to the top and bottom of each mullion (XL500-BR) with sealant (795) and two XLF320 #10 x 1/2" drive screws. A pocket filler (XL122-BP) was located at the exterior portion of the jambs (XL500-BR) and was secured using sealant (795) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends and at 12" on center and covered with sealant (795).

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Standard sleeve	XLS20001	2.282" x 4.953" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Mullion	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Mullion cap	XLC325	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
Horizontal	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Roll over horizontal	XL532-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Filler	XL237-BP	0.204" x 4.905" x 0.080"	6063-T5 Aluminum
Roll under horizontal	XL533-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
F-anchor	XLA10301	6.250" x 2.869" x 0.250"	6063-T6 Aluminum
T-anchor	XLA10501	7.500" x 2.869" x 0.250"	6063-T6 Aluminum
Steel reinforcement	XLBR25	1.875" x 4.721" x 0.250"	Zinc painted steel

7.0 Test Specimen (E3) Description: (Continued)

7.2 Frame Construction: (Continued)

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Setting block	XLSB2102	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Interior spacer gasket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic

7.3 Weather-stripping: No weather-stripping was utilized.

7.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (995) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.075" Vanceva™ StormGlass™, 1/4" heat strengthened	1/4" Heat strengthened	Exterior glazed

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Top lites	3	1461 x 1181	57-1/2 x 46-1/2	3/4"
Bottom lites	3	1461 x 2438	57-1/2 x 96	3/4"

7.5 Drainage: Two 5/16" holes which were located at quarter points were drilled into all XL162-BP horizontal pressure plates. One 5/16" hole was drilled at the center bottom of the XL110-BP face cap.

7.6 Hardware: No hardware was utilized.

7.0 Test Specimen (E3) Description: (Continued)

7.7 Reinforcement: Each mullion (XL500-BR) and jamb (XL500-BR) were reinforced with a piece of steel C-Channel (XLBR25). Two #12 x 1-1/2" hex head self- tapping screws (XLF325) were used to fasten each mullion (XL500-BR) / jamb (XL500-BR) and steel C-Channel reinforcement (XLBR25) together. Screws were located through the middle of the shear blocks (XLB18301), 97" from bottom of unit.

7.8 Installation: The specimen was installed into a 2-1/2" x 10" steel C-Channel test buck. The rough opening allowed for a 1-3/8" shim space. The exterior of the unit was sealed full perimeter with sealant (795).

Location	Anchor Description	Anchor Location
Top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR)	Aluminum F-anchors (XLA10301) at jambs (XL500-BR) and aluminum T-anchors (XLA10501) at mullions (XL500-BR) and 1/2" x 2" Type "F" hex head anchor bolts	One anchor at top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR). Anchors were inserted into sides of standard sleeve (XLS20001). Two bolts at each F-anchor (XLA10301) and one bolt on each side of T-anchor (XLA10501). Bolts were inserted into steel buck.

8.0 Test Specimen (E4) Description:

8.1 Product Size:

Overall Area: 9.5 m^2 (101.84 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	3531	139	2680	105-1/2

8.2 Frame Construction: Each jamb (XL500-BR) and mullion (XL500-BR) had a 2-1/2" tall standard sleeve (XLS20001) inserted into the top and bottom. A 1" wide shear block (XLB18301) was located at the top and bottom side of each jamb (XL500-BR) and one on each side of the top and bottom of the mullions (XL500-BR). Each shear block was fastened to the jamb (XL500-BR), mullion (XL500-BR), and standard sleeve (XLS20001) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP) and head (XL501-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit

with two #10 x 1" Phillips flat head screws (XLF118). Sealant (795) was applied over the screws (XLF118) and

8.0 Test Specimen (E4) Description: (Continued)

8.2 Frame Construction: (Continued) at each frame corner connection. A zone plug (XLD352) was sealed (795) to the ends of each sill (XL502-BP) and head (XL501-BP) section. A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BR) with sealant (795) and two drive screws #10 x 1/2" (XLF320). A mullion cap (XLC325) was secured to the top and bottom of each mullion (XL500-BR) with sealant (795) and two drive screws #10 x 1/2" (XLF320). A pocket filler (XL122-BP) was located at the exterior portion of the jambs
(XL500-BR) and was secured using sealant (795) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (795) was applied over screws (XLF322).

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Standard sleeve	XLS20001	2.282" x 4.953" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Mullion	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Mullion cap	XLC325	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
L-anchor	XLA7401	6.000" x 3.500" x 0.250"	6063-T6 Aluminum

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Interior spacer gasket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
Setting block	XLSB2102	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic

8.0 Test Specimen (E4) Description: (Continued)

8.3 Weather-stripping: No weather-stripping was utilized.

8.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (995) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.090" DuPont™ Butacite® PVB, 1/4" heat strengthened	1/4" Heat strengthened	Exterior glazed

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
All lites	3	1092 x 2553	43 x 100-1/2	3/4"

8.5 Drainage: All XL162-BP horizontal pressure plates had two 5/16" weep holes located at quarter points of each member. XL110-BP face cap also had a 5/16" weep hole located at centerline of daylight opening.

8.6 Hardware: No hardware was utilized.

8.7 Reinforcement: No reinforcement was utilized.

8.8 Installation: The specimen was installed into a 2x12 #2 yellow pine buck. The rough opening allowed for a 1/2" shim space. The exterior of the window was sealed full perimeter with sealant (795).

Location	Anchor Description	Anchor Location
Top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR)	Aluminum L-anchors (XLA7401) and 3/8" x 3" lag screws	Two anchors at top and bottom of each mullion (XL500-BR) and one at top and bottom of each jamb (XL500-BR). Anchors were inserted into sides of standard sleeve (XLS20001). Four lag screws per L-anchor (XLA7401) into wood buck.

9.0 Test Specimen (E5) Description:

9.1 Product Size:

Overall Area: 9.5 m^2 (101.84 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	3531	139	2680	105-1/2

9.2 Frame Construction: A 1" wide shear block (XLB18301) was located at the top and bottom side of each jamb (XL500-BR), one on each side of the top and bottom of the mullions (XL500-BR), and one on each side of the mullions (XL500-BR) and jambs (XL500-BR) where the horizontals (XL500-BR, XL532-BP and XL533-BP) attach. Each shear block was fastened to the jambs (XL500-BR) and mullions (XL500-BR) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP), head (XL501-BP) and horizontal (XL500-BR, XL532-BP and XL533-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit with two #10 x 1" Phillips flat head screws (XLF118). Sealant (795) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (795) to the end of each sill (XL502-BP) and head (XL501-BP) section and at the ends of the horizontals (XL500-BR, XL532-BP, XL533-BP). A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BR) with sealant (795) and two drive screws #10 x 1/2" (XLF320). A mullion cap (XLC325) was secured to the top and bottom of each mullion (XL500-BR) with sealant (795) and two drive screws #10 x 1/2" (XLF320) .

A pocket filler (XL122-BP) was located at the exterior portion of the jambs (XL500-BR) and was secured using sealant (795) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (795) was applied over screws.

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

9.0 Test Specimen (E5) Description:

9.2 Frame Construction: (Continued)

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Standard sleeve	XLS20001	2.282" x 4.953" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Mullion	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Mullion cap	XLC325	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
L-anchor	XLA7401	6.000" x 3.500" x 0.250"	6063-T6 Aluminum

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Interior spacer gasket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
Setting block	XLSB2102	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic

9.3 Weather-stripping: No weather-stripping was utilized.

9.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (SSG4600CTG) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.090" Solutia™ Saflex® PVB, 1/4" heat strengthened	1/4" Heat strengthened	Exterior glazed

9.0 Test Specimen (E5) Description: (Continued)

9.4 Glazing: (Continued)

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
All lites	3	1092 x 2553	43 x 100-1/2	3/4"

9.5 Drainage: Two 5/16" holes which were located at quarter points were drilled into all XL162-BP horizontal pressure plates. One 5/16" hole was drilled at the center bottom of the XL110-BP face cap.

9.6 Hardware: No hardware was utilized.

9.7 Reinforcement: No reinforcement was utilized.

9.8 Installation: The specimen was installed into a 2x12 #2 yellow pine buck. The rough opening allowed for a 1/2" shim space. The exterior of the unit was sealed full perimeter with sealant (SCS2000).

Location	Anchor Description	Anchor Location
Top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR)	Aluminum L-anchors (XLA7401) and 3/8" x 3" lag screws	Two anchors at top and bottom of each mullion (XL500-BR) and one at top and bottom of each jamb (XL500-BR). Anchors were inserted into sides of standard sleeve (XLS20001). Four lag screws per L-anchor (XLA7401) into wood buck.

10.0 Test Specimen (E6) Description:

10.1 Product Size:

Overall Area: 17.7 m^2 (190.10 ft^2)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	4636	182-1/2	3810	150

10.2 Frame Construction: A 1" wide shear block (XLB18301) was located at the top and bottom side of each jamb (XL500-BR), one on each side of the top and bottom of the mullions (XL500-BR), and one on each side of the mullions (XL500-BR) and jambs (XL500-BR) where the horizontals (XL500-BR, XL532-BP and XL533-BP) attach. Each shear block was fastened to the jambs (XL500-BR) and mullions (XL500-BR) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP), head (XL501-BP) and horizontal (XL500-BR, XL532-BP and XL533-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit with two #10 x 1" Phillips flat head screws (XLF118). Sealant (795) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (795) to the end of each sill (XL502-BP) and head (XL501-BP) section and at the ends of the horizontals (XL500-BR, XL532-BP, XL533-BP). A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BR) with sealant (795) and two drive screws #10 x 1/2" (XLF320). A mullion cap (XLC325) was secured to the top and bottom of each mullion (XL500-BR) with sealant (795) and two drive screws #10 x 1/2" (XLF320).

A pocket filler (XL122-BP) was located at the exterior portion of the jambs (XL500-BR) and was secured using sealant (795) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (795) was applied over screws.

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

10.0 Test Specimen (E6) Descript ion: (Continued)

10.2 Frame Construction: (Continued)

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Mullion	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Mullion cap	XLC325	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
Horizontal	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Roll over horizontal	XL532-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Filler	XL237-BP	0.204" x 4.905" x 0.080"	6063-T5 Aluminum
Roll under horizontal	XL533-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
F-anchor	XLA10302	6.250" x 2.869" x 0.250"	6063-T6 Aluminum
T-anchor	XLA10502	7.500" x 2.869" x 0.250"	6063-T6 Aluminum
Steel reinforcement	XLBR25	1.875" x 4.721" x 0.250"	Zinc painted steel

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Setting block	XLSB2102	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Dry glaze gasket	XLG1015	0.319" x 0.962"	EPDM/SPONGE 70 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic

10.3 Weather-stripping: No weather-stripping was utilized.

10.4 Glazing: The unit was exterior glazed. The glass was set against gasket (XLG1015) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

10.0 Test Specimen (E6) Descript ion: (Continued)

10.4 Glazing: (Continued)

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.090" DuPont™ SentryGlas®, 1/4" heat strengthened	1/4" Heat strengthened	Exterior glazed

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Top lites	3	1461 x 1181	57-1/2 x 46-1/2	3/4"
Bottom lites	3	1461 x 2438	57-1/2 x 96	3/4"

10.5 Drainage: All XL162-BP horizontal pressure plates had two 5/16" weep holes located at quarter points of each member. XL110-BP face cap also had a 5/16" weep hole located at centerline of daylight opening.

10.6 Hardware: No hardware was utilized.

10.7 Reinforcement: Each mullion (XL500-BR) was reinforced with a piece of steel C-Channel (XLBR25). Two #12 x 1-1/2" hex head self-tapping screws (XLF325) were used to fasten each mullion (XL500-BR) and steel C-Channel reinforcement (XLBR25) together. Screws were located through the middle of the shear blocks (XLB18301), 97" from bottom of unit.

10.8 Installation: The specimen was installed into a 2-1/2" x 10" steel C-Channel test buck. The rough opening allowed for a 1-3/8" shim space. The exterior of the window was sealed full perimeter with sealant (795).

Location	Anchor Description	Anchor Location
Top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR)	Aluminum F-anchors (XLA10302) at jambs (XL500-BR) and aluminum T-Anchors (XLA10502) at mullions (XL500-BR) and 1/2" x 2" Type "F" hex head anchor bolts	One anchor at top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR). Anchors were inserted into each extrusion. Two bolts at each F-anchor (XLA10302) and one bolt on each side of T-anchor (XLA10502). Bolts were inserted into steel buck.

11.0 Test Specimen (E7) Description:

11.1 Product Size:

Overall Area: 17.7 m^2 (190.10 ft^2)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	4636	182-1/2	3810	150

11.2 Frame Construction: Each jamb (XL500-BR) and mullion (XL500-BR) had a 2-1/2" tall standard sleeve (XLS20001) inserted into the top and bottom. A 1" wide shear block (XLB18301) was located at the top and bottom side of each jamb (XL500-BR), one on each side of the top and bottom of the mullions (XL500-BR) and one on each side of the mullions (XL500-BR) and jambs (XL500-BR) where the horizontals (XL500-BR, XL532-BP and XL533-BP) attach. Each shear block was fastened to the jambs (XL500-BR), mullions (XL500-BR) and standard sleeves (XLS20001) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP), head (XL501-BP) and horizontal (XL500-BR, XL532-BP and XL533-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit with two #10 x 1" Phillips flat head screws (XLF118). Sealant (SCS2000) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (SCS2000) to the ends of each sill (XL502-BP) and head (XL501-BP) section and at the ends of the horizontals (XL500-BR, XL532-BP, XL533-BP). A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BR) with sealant (SCS2000) and two drive screws #10 x 1/2" (XLF320). A mullion cap (XLC325) was secured to the top and bottom of each mullion (XL500-BR) with sealant (SCS2000) and two drive screws #10 x 1/2" (XLF320). A pocket filler (XL122-BP) was located at the exterior portion of the jambs (XL500-BR) and was secured using sealant (SCS2000) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (SCS2000) was applied over screws. A glazing adaptor (XL130-BP) was located on each side of the exterior portion of the mullions (XL500-BR) and horizontals (XL500-BR, XL532-BP, XL533-BP) and on one side of the sill (XL502-BP), head (XL501-BP) and jambs (XL500-BR). The adaptor (XL130-BP) was bedded with sealant (SCS2000) and #10 x 1-3/8" Phillips flat head screws (XLF119). Screws (XLF119) were located at 4" from ends with the remaining at 12" on center spacing thereafter. Sealant (SCS2000) was applied over screws.

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

11.0 Test Specimen (E7) Description: (Continued)

11.2 Frame Construction: (Continued)

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Standard sleeve	XLS20001	2.282" x 4.953" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Mullion	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Mullion cap	XLC325	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
Horizontal	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Roll over horizontal	XL532-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Filler	XL237-BP	0.204" x 4.905" x 0.080"	6063-T5 Aluminum
Roll under horizontal	XL533-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
F-anchor	XLA10301	6.250" x 2.869" x 0.250"	6063-T6 Aluminum
T-anchor	XLA10501	7.500" x 2.869" x 0.250"	6063-T6 Aluminum
Glazing adaptor	XL130-BP	0.861" x 0.910" x 0.080"	6063-T5 Aluminum
Steel reinforcement	XLBR15	0.500" x 4.000"	Zinc painted steel

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Setting block	XLB2101	0.500" x 0.188" x 4.000"	EPDM 80 Durometer
Interior spacer gasket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic

11.3 Weather-stripping: No weather-stripping was utilized.

11.0 Test Specimen (E7) Description: (Continued)

11.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (SSG4600CTG) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Glazing	Glazing Method
9/16" Monolithic	1/4" Heat strengthened, 0.090" Vanceva™ StormGlass™, 1/4" heat strengthened	Exterior glazed

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Top lites	3	1461 x 1181	57-1/2 x 46-1/2	3/4"
Bottom lites	3	1461 x 2438	57-1/2 x 96	3/4"

11.5 Drainage: All XL162-BP horizontal pressure plates had two 5/16" weep holes located at quarter points of each member. XL110-BP face cap also had a 5/16" weep hole located at centerline of daylight opening.

11.6 Hardware: No hardware was utilized.

11.7 Reinforcement: Each mullion (XL500-BR) and jamb (XL500-BR) were reinforced with a piece of flat steel (XLBR15). Two #12 x 1-1/2" hex head self-tapping screws (XLF325) were used to fasten each mullion (XL500-BR) / jamb (XL500-BR) and flat steel reinforcement (XLBR15) together. Screws were located through the middle of the shear blocks (XLB18301), 97" from bottom of unit.

11.0 Test Specimen (E7) Description: (Continued)

11.8 Installation: The specimen was installed into a 2-1/2" x 10" steel C-Channel test buck. The rough opening allowed for a 1-3/8" shim space. The exterior of the window was sealed full perimeter with sealant (SCS2000).

Location	Anchor Description	Anchor Location
Top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR)	Aluminum F-anchors (XLA10301) at jambs (XL500-BR) and aluminum T-anchors (XLA10501) at mullions (XL500-BR) and 1/2" x 2" Type "F" hex head anchor bolts	One anchor at top and bottom of each mullion (XL500-BR) and each jamb (XL500-BR). Anchors were inserted into sides of standard sleeve (XLS20001). Two bolts at each F-anchor (XLA10301) and one bolt on each side of T-anchor (XLA10501). Bolts were inserted into steel buck.

12.0 Test Specimen (E8) Description:

12.1 Product Size:

Overall Area: 9.5 m^2 (102.75 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	3721	146-1/2	2565	101

12.2 Frame Construction: Each jamb (XL500-BR) had a 2-1/2" tall standard sleeve (XLS20001) inserted into the top and bottom and each SSG mullion (XL504-BP) had a 2-1/2" tall heavy sleeve (XLS20101) inserted into the top and bottom. A 1" wide shear block (XLB18301) was located at the top and bottom side of each jamb (XL500-BR) and one on each side of the top and bottom of the SSG mullions (XL504-BP). Each shear block was fastened to the jamb (XL500-BR), SSG mullion (XL504-BP), and standard sleeve (XLS20001) or heavy sleeve (XLS20101) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP) and head (XL501-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit with two #10 x 1" Phillips flat head screws (XLF118). Sealant (SCS2000) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (SCS2000) to the ends of each sill (XL502-BP) and head (XL501-BP) connection to the jambs (XL500-BR) and a SSG bridge (XLD350) was sealed (SCS2000) to the ends of each sill (XL502-BP) and head (XL501-BP) connection to the SSG mullions (XL504-BP). A jamb cap (XLC338) was secured to the top and bottom of each jamb (XL500-BR)

12.0 Test Specimen (E8) Description: (Continued)

12.2 Frame Construction: (Continued) with sealant (SCS2000) and two drive screws #10 x 1/2" (XLF320). An SSG mullion cap (XLC358) was secured to the top and bottom of each SSG mullion (XL504-BP) with sealant (SCS2000) and two drive screws #10 x 1/2" (XLF320). A pocket filler (XL122-BP) was located at the exterior portion of the jambs (XL500-BR) and was secured using sealant (SCS2000) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (SCS2000) was applied over screws (XLF322).

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP-01	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Standard sleeve	XLS20001	2.282" x 4.953" x 0.125"	6063-T6 Aluminum
Jamb	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
SSG mullion	XL504-BP	2.500" x 5.234" x 0.200"	6063-T6 Aluminum
SSG mullion cap	XLC358	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
L-anchor	XLA7401	6.000" x 3.500" x 0.250"	6063-T6 Aluminum
Heavy sleeve	XLS20101	2.282" x 4.675" x 0.125"	6063-T6 Aluminum

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Interior spacer gasket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
Setting block	XLSB2102	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic
SSG bridge	XLD350	2.415" x 1.519" x 0.750"	ABS plastic

12.0 Test Specimen (E8) Description: (Continued)

12.3 Weather-stripping: No weather-stripping was utilized.

12.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (SSG4600CTG) located at the interior. The faces of the mullions (XL504-BP) had no pressure plates, but were sealed with structural silicone (SSG4600CTG). The sealant (SSG4600CTG) filled a 1/2" joint between the glazing. The remaining exterior face of the unit (jambs XL500-BR, head XL501-BP and sill XL502-BP) had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of these members with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.075" Vanceva™ StormGlass™, 1/4" heat strengthened	1/4" Heat strengthened	Exterior glazed

Location	Quantity	Daylight Opening	Glass Bite
Center lites	1	45-1/2" x 96"	1"
Left and right lites	2	45-1/2" x 96"	1" at SSG mullion 3/4" on jambs

12.5 Drainage: All XL162-BP horizontal pressure plates had two 5/16" weep holes located at quarter points of each member. XL110-BP face cap also had a 5/16" weep hole located at centerline of daylight opening.

12.6 Hardware: No hardware was utilized.

12.7 Reinforcement: No reinforcement was utilized.

12.0 Test Specimen (E8) Description: (Continued)

12.8 Installation: The specimen was installed into a 2x12 #2 yellow pine buck. The rough opening allowed for a 1/2" shim space. The exterior of the window was sealed full perimeter with sealant (SCS2000).

Location	Anchor Description	Anchor Location
Top and bottom of each SSG mullion (XL504-BP) and each jamb (XL500-BR)	Aluminum L-anchors (XLA7401) and 3/8" x 3" lag screws	Two anchors at top and bottom of each SSG mullion (XL504-BP) and one at top and bottom of each jamb (XL500-BR). Anchors at SSG mullions (XL504-BP) were inserted into sides of heavy sleeve (XLS20101) and anchors at jambs (XL500-BR) were inserted into sides of standard sleeve (XLS20001). Four lag screws per L-anchor (XLA7401) into wood buck.

13.0 Test Specimen (E9) Description:

13.1 Product Size:

Overall Area: 13.6 m^2 (146.50 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	3721	146-1/2	3658	144

13.2 Frame Construction: Each heavy jamb (XL510-BP) and SSG mullion (XL504-BP) had a 2-1/2" tall heavy sleeve (XLS20101) inserted into the top and bottom. A 1" wide shear block (XLB18301) was located at the top and bottom side of each heavy jamb (XL510-BP), one on each side of the top and bottom of the
SSG mullions (XL504-BP) and one on each side of the SSG mullions (XL504-BP) and heavy jambs (XL510-BP) where the horizontals (XL500-BR, XL532-BP and XL533-BP) attach. Each shear block (XLB18301) was fastened to the heavy jambs (XL510-BP) and SSG mullions (XL504-BP) with four #14 x 1-1/2" hex head screws (XLF009). Each sill (XL502-BP), head (XL501-BP) and horizontal (XL500-BR, XL532-BP and XL533-BP) section were secured to the shear blocks (XLB18301) through the exterior face of the unit with two #10 x 1" Phillips flat head screws (XLF118). Sealant (795) was applied over the screws (XLF118) and at each frame corner connection. A zone plug (XLD352) was sealed (795) to the ends of each sill (XL502-BP) and head (XL501-BP) connection to the heavy jambs
(XL510-BP) and a SSG bridge (XLD350) was sealed (795) to the ends of each sill (XL502-BP) and head (XL501-BP) connection to the SSG mullions (XL504-

BP). A jamb cap (XLC338) was secured to the top and bottom of each heavy jamb (XL510-BP) with sealant (795) and two drive screws #10 x 1/2" (XLF320). An

13.0 Test Specimen (E9) Description: (Continued)

13.2 Frame Construction: (Continued) SSG mullion cap (XLC358) was secured to the top and bottom of each SSG mullion (XL504-BP) with sealant (795) and two drive screws #10 x 1/2" (XLF320). A pocket filler (XL122-BP) was located at the exterior portion of the heavy jambs (XL510-BP) and was secured using sealant (795) and #12 x 1" hex head self-tapping screws (XLF322). Screws (XLF322) were located at 4" from the ends with the remaining at 12" on center spacing. Sealant (795) was applied over screws.

Frame Member	Material	Description
All members	Anodized aluminum	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

Aluminum/Steel Parts Details:

Description	Part #	Overall Cross Section	Material Temp-Alloy
Head	XL501-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Face cap	XL110-BP	0.500" x 2.500" x 0.050"	6063-T5 Aluminum
Pressure plate	XL162-BP	0.442" x 2.394" x 0.094"	6063-T6 Aluminum
Shear block	XLB18301	2.827" x 2.272" x 0.125"	6063-T6 Aluminum
Heavy jamb	XL510-BP	2.500" x 5.234" x 0.250"	6063-T6 Aluminum
Jamb cap	XLC338	2.750" x 1.925" x 0.063"	5005 H32 Aluminum
Pocket filler	XL122-BP	1.562" x 0.937" x 0.094"	6063-T5 Aluminum
Sill	XL502-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
SSG mullion	XL504-BP	2.500" x 5.234" x 0.200"	6063-T6 Aluminum
SSG mullion cap	XLC358	3.000" x 1.925" x 0.063"	5005 H32 Aluminum
Horizontal	XL500-BR	2.500" x 5.000" x 0.094"	6063-T6 Aluminum
Roll over horizontal	XL532-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
Filler	XL237-BP	0.204" x 4.905" x 0.080"	6063-T5 Aluminum
Roll under horizontal	XL533-BP	2.500" x 5.203" x 0.094"	6063-T6 Aluminum
L-anchor	XLA7401	6.000" x 3.500" x 0.250"	6063-T6 Aluminum
Steel reinforcement	XLBR25	1.875" x 4.721" x 0.250"	Zinc painted steel
Heavy sleeve	XLS20101	2.282" x 4.675" x 0.125"	6063-T6 Aluminum
Steel reinforcement	XLBR15	0.500" x 4.000"	Zinc painted steel

13.0 Test Specimen (E9) Description: (Continued)

13.2 Frame Construction: (Continued)

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
Exterior gasket	XLG117	0.217" x 0.438"	EPDM 60 Durometer
Isolator gasket	XLG107	0.264" x 0.626"	EPDM 70 Durometer
Setting block	XLSB2102	1.250" x 0.188" x 4.000"	EPDM 80 Durometer
Zone plug	XLD352	1.056" x 1.591"	ABS plastic
Interior spacer basket	FG-5185	0.375" x 0.250"	EPDM 70 Durometer
SSG bridge	XLD350	2.415" x 1.519" x 0.750"	ABS plastic

13.3 Weather-stripping: No weather-stripping was utilized.

13.4 Glazing: The unit was exterior glazed. The glass was set against gasket (FG-5185) and sealant (995) located at the interior. The exterior face of the unit had a kerf mount for installation of the isolator (XLG107). A pressure plate (XL162-BP) with two rows of gasket (XLG117) was fastened to the face of the unit with #12 x 1-1/2" hex head self-tapping screws (XLF325) located at 2" from ends with the remaining at 9" on center spacing thereafter. An aluminum face cap (XL110-BP) was then snapped onto the pressure plate (XL162-BP).

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1-5/16" IG	1/2" Aluminum reinforced	1/4" Heat strengthened, 0.075" Vanceva™ StormGlass™, 1/4" heat strengthened	1/4" Heat strengthened	Exterior glazed

Location	Quantity	Daylight Opening	Glass Bite
Top lites, left and right	2	45-1/2" x 40-1/2"	3/4" at jambs 1" at mullions
Top lite center	1	45-1/2" x 40 1/2"	1"
Bottom lites, left and right	2	45-1/2" x 96"	3/4" at jambs 1" at mullion
Bottom lite center	1	45-1/2" x 96"	1"

13.0 Test Specimen (E9) Description: (Continued)

13.5 Drainage: All XL162-BP horizontal pressure plates had two 5/16" weep holes located at quarter points of each member. XL110-BP face cap also had a 5/16" weep hole located at centerline of daylight opening.

13.6 Hardware: No hardware was utilized.

13.7 Reinforcement: Each SSG mullion (XL504-BP) was reinforced with a piece of steel C-Channel (XLBR25) and each heavy jamb (XL510-BP) was reinforced with a piece of flat steel (XLBR15). Two #12 x 1-1/2" hex head self-tapping screws (XLF325) were used to fasten each SSG mullion (XL504-BP) and steel C-Channel reinforcement (XLBR25) together and each heavy jamb (XL510-BP) and flat steel reinforcement (XLBR15) together. Screws were located through the middle of the shear blocks (XLB18301), 97" from bottom of unit.

13.8 Installation: The specimen was installed into a 2x12 #2 yellow pine buck. The rough opening allowed for a 1/2" shim space. The exterior of the window was sealed full perimeter with sealant (795).

Location	Anchor Description	Anchor Location
Top and bottom of each SSG mullion (XL504-BP) and each heavy jamb (XL510-BP)	Aluminum L-anchors (XLA7401) and 3/8" x 3" lag screws	Two anchors at top and bottom of each SSG mullion (XL504-BP) and one at top and bottom of each heavy jamb (XL510-BP). Anchors at SSG mullions (XL504-BP) and heavy jamb (XL510-BP) were inserted into sides of heavy sleeve (XLS20101). Four lag screws per L-anchor (XLA7401) into wood buck.

14.0 Test Results: The results are tabulated as follows:

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 28°C (83°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Test Unit (E1): Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.3 m/s (50.1 fps)	
Impact Area:	Bottom left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.2 m/s (50.0 fps)	
Impact Area:	Bottom left lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Bottom right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Bottom right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

14.0 Test Results (E1): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.3 m/s (50.3 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

Impact #6: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Center horizontal mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #1 for impact locations.*

14.0 Test Results (E1): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: +3352/-3830 Pa (+70.0/-80.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
670 to 1676 (14.0 to 35.0)	3500	2.20	<1 (0.01)	3 (0.10)	<1 (0.01)	7 (0.29)	10 (0.39)	7 (0.29)
0 to 2011 (0 to 42.0)	300	2.90	<1 (0.01)	3 (0.12)	<1 (0.01)	8 (0.31)	11 (0.42)	8 (0.32)
1676 to 2681 (35.0 to 56.0)	600	2.00	1 (0.02)	4 (0.17)	1 (0.02)	12 (0.46)	14 (0.57)	12 (0.47)
1005 to 3352 (21.0 to 70.0)	100	2.90	1 (0.02)	5 (0.18)	1 (0.02)	13 (0.53)	18 (0.69)	14 (0.55)
			Permanent Set mm (inches)					
			<1 (<0.01)	<1 (0.01)	<1 (<0.01)	1 (0.02)	1 (0.02)	<1 (0.01)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
670 to 1676 (14.0 to 35.0)	3500	2.20	14 (0.55)	18 (0.69)	2 (0.07)	1 (0.03)	8 (0.30)	1 (0.03)
0 to 2011 (0 to 42.0)	300	2.90	16 (0.63)	22 (0.88)	2 (0.08)	1 (0.04)	9 (0.35)	1 (0.03)
1676 to 2681 (35.0 to 56.0)	600	2.00	22 (0.86)	33 (1.31)	3 (0.12)	2 (0.06)	12 (0.47)	1 (0.04)
1005 to 3352 (21.0 to 70.0)	100	2.90	24 (0.94)	38 (1.48)	4 (0.14)	2 (0.08)	14 (0.54)	1 (0.04)
			Permanent Set mm (inches)					
			1 (0.02)	1 (0.04)	1 (0.02)	<1 (0.01)	1 (0.03)	<1 (0.01)

14.0 Test Results (E1): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: +3352/-3830 Pa (+70.0/-80.0 psf)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
1149 to 3830 (24.0 to 80.0)	50	2.80	1 (0.05)	8 (0.33)	1 (0.05)	23 (0.92)	26 (1.02)	22 (0.85)
1915 to 3064 (40.0 to 64.0)	1050	2.20	1 (0.04)	7 (0.29)	1 (0.04)	19 (0.74)	20 (0.80)	17 (0.68)
0 to 2298 (0 to 48.0)	50	3.00	1 (0.03)	7 (0.27)	1 (0.03)	15 (0.59)	19 (0.75)	17 (0.65)
766 to 1915 (16.0 to 40.0)	3350	2.40	1 (0.02)	3 (0.13)	1 (0.02)	10 (0.39)	11 (0.44)	9 (0.36)
			Permanent Set mm (inches)					
			<1 (<0.01)	<1 (0.01)	<1 (<0.01)	<1 (0.01)	<1 (0.01)	1 (0.02)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
1149 to 3830 (24.0 to 80.0)	50	2.80	36 (1.41)	6 (0.25)	11 (0.42)	3 (0.13)	22 (0.85)	4 (0.17)
1915 to 3064 (40.0 to 64.0)	1050	2.20	29 (1.15)	3 (0.11)	9 (0.37)	3 (0.10)	18 (0.69)	4 (0.15)
0 to 2298 (0 to 48.0)	50	3.00	27 (1.07)	2 (0.09)	9 (0.36)	2 (0.08)	14 (0.55)	3 (0.13)
766 to 1915 (16.0 to 40.0)	3350	2.40	25 (0.98)	2 (0.07)	5 (0.20)	1 (0.03)	10 (0.38)	2 (0.06)
			Permanent Set mm (inches)					
			<1 (0.01)	<1 (0.01)	1 (0.02)	<1 (0.01)	1 (0.03)	1 (0.03)

Observations: *No additional damage or deglazing was observed.*

Result: Pass

***Note**: See Architectural Testing Sketch #1 for indicator locations.*

15.0 Test Results (E2): The results are tabulated as follows:

Design Pressure: ±4788 Pa (±100.0 psf)

Title of Test	Results
Air Infiltration per ASTM E 283 at 75 Pa (1.57 psf) (25 mph)	0.05 L/s/m² (<0.01 cfm/ft²)
Air Infiltration per ASTM E 283 at 300 Pa (6.24 psf) (50 mph)	0.05 L/s/m² (<0.01 cfm/ft²)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +3591 Pa (+75.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	2 (0.09)	1 (0.04)	1 (0.04)	1 (0.05)	1 (0.02)	1 (0.03)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	1 (0.02)	<1 (0.01)	1 (0.02)	<1 (0.01)	<1 (0.01)
Design Pressure +4788 Pa (+100.0 psf)						
Uniform Load Deflection Per ASTM E 330	3 (0.10)	2 (0.06)	1 (0.05)	1 (0.05)	1 (0.02)	1 (0.03)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	1 (0.02)	<1 (0.01)	1 (0.03)	<1 (0.01)	<1 (0.01)
50% of Test Pressure -3591 Pa (-75.0 psf)						
Uniform Load Deflection Per ASTM E 330	3 (0.13)	2 (0.07)	1 (0.03)	<1 (0.01)	1 (0.03)	2 (0.06)
Uniform Load Structural Per ASTM E 330	1 (0.05)	1 (0.02)	<1 (0.01)	1 (0.04)	<1 (0.01)	1 (0.02)
Design Pressure -4788 Pa (-100.0 psf)						
Uniform Load Deflection Per ASTM E 330	5 (0.18)	3 (0.10)	1 (0.04)	1 (0.05)	1 (0.04)	2 (0.07)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.02)	<1 (0.01)	1 (0.04)	<1 (0.01)	1 (0.03)

15.0 Test Results (E2): (Continued)

Design Pressure: ±4788 Pa (±100.0 psf)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +3591 Pa (+75.0 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	13 (0.50)	6 (0.23)	6 (0.23)	20 (0.78)	20 (0.80)	22 (0.87)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	<1 (0.01)	2 (0.06)	2 (0.09)	2 (0.06)	1 (0.05)
Design Pressure +4788 Pa (+100.0 psf)						
Uniform Load Deflection Per ASTM E 330	16 (0.62)	7 (0.29)	7 (0.28)	27 (1.08)	30 (1.17)	28 (1.09)
Uniform Load Structural Per ASTM E 330	1 (0.05)	1 (0.02)	2 (0.06)	2 (0.09)	2 (0.08)	2 (0.07)
50% of Test Pressure -3591 Pa (-75.0 psf)						
Uniform Load Deflection Per ASTM E 330	4 (0.15)	7 (0.28)	19 (0.76)	20 (0.79)	24 (0.94)	24 (0.95)
Uniform Load Structural Per ASTM E 330	1 (0.05)	1 (0.05)	3 (0.12)	3 (0.11)	3 (0.12)	3 (0.11)
Design Pressure -4788 Pa (-100.0 psf)						
Uniform Load Deflection Per ASTM E 330	8 (0.30)	10 (0.39)	23 (0.92)	28 (1.10)	32 (1.25)	27 (1.05)
Uniform Load Structural Per ASTM E 330	2 (0.06)	2 (0.07)	4 (0.15)	5 (0.19)	4 (0.15)	4 (0.14)

15.0 Test Results (E2): (Continued)

Design Pressure: ±4788 Pa (±100.0 psf)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +3591 Pa (+75.0 psf)	#13	#14	#15	#16	#17	#18
Uniform Load Deflection Per ASTM E 330	21 (0.82)	6 (0.25)	3 (0.10)	21 (0.82)	16 (0.62)	8 (0.30)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.02)	<1 (0.01)	1 (0.05)	1 (0.04)	<1 (0.01)
Design Pressure +4788 Pa (+100.0 psf)						
Uniform Load Deflection Per ASTM E 330	8 (0.33)	30 (1.20)	4 (0.14)	28 (1.09)	21 (0.83)	10 (0.41)
Uniform Load Structural Per ASTM E 330	2 (0.09)	2 (0.09)	<1 (0.01)	2 (0.08)	2 (0.06)	1 (0.02)
50% of Test Pressure -3591 Pa (-75.0 psf)						
Uniform Load Deflection Per ASTM E 330	8 (0.30)	25 (0.99)	4 (0.14)	24 (0.94)	20 (0.78)	9 (0.35)
Uniform Load Structural Per ASTM E 330	2 (0.06)	3 (0.11)	1 (0.03)	3 (0.11)	2 (0.09)	2 (0.06)
Design Pressure -4788 Pa (-100.0 psf)						
Uniform Load Deflection Per ASTM E 330	11 (0.43)	34 (1.32)	5 (0.18)	32 (1.26)	28 (1.10)	12 (0.49)
Uniform Load Structural Per ASTM E 330	2 (0.08)	4 (0.15)	1 (0.02)	4 (0.14)	4 (0.14)	2 (0.08)
Water Infiltration Per ASTM E 331 At least 15% Positive Design Pressure 958 Pa (+20.0 psf)	No Penetration					
Test Pressure +7182 Pa (+150.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	3 (0.13)	1 (0.05)	1 (0.04)	2 (0.07)	1 (0.02)	1 (0.02)
Uniform Load Structural Per ASTM E 330	2 (0.08)	<1 (0.01)	<1 (0.01)	1 (0.04)	<1 (0.01)	<1 (0.01)

15.0 Test Results (E2): (Continued)

Design Pressure: ±4788 Pa (±100.0 psf)

	Indicator Reading mm (inches)					
Test Pressure -7182 Pa (-150.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	3 (0.12)	13 (0.50)	3 (0.10)	1 (0.04)	1 (0.03)	1 (0.02)
Uniform Load Structural Per ASTM E 330	1 (0.03)	1 (0.05)	1 (0.02)	1 (0.02)	<1 (0.01)	<1 (0.01)
Test Pressure +7182 Pa (+150.0 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	22 (0.87)	12 (0.47)	43 (1.69)	44 (1.74)	48 (1.88)	44 (1.72)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.04)	5 (0.21)	5 (0.20)	5 (0.20)	5 (0.19)
Test Pressure -7182 Pa (-150.0 psf)						
Uniform Load Deflection Per ASTM E 330	21 (0.82)	9 (0.37)	41 (1.61)	42 (1.67)	47 (1.86)	45 (1.77)
Uniform Load Structural Per ASTM E 330	4 (0.15)	1 (0.03)	2 (0.06)	2 (0.06)	2 (0.06)	2 (0.07)
Test Pressure +7182 Pa (+150.0 psf)	#13	#14	#15	#16	#17	#18
Uniform Load Deflection Per ASTM E 330	14 (0.55)	48 (1.89)	8 (0.30)	43 (1.68)	32 (1.27)	17 (0.68)
Uniform Load Structural Per ASTM E 330	2 (0.09)	5 (0.19)	1 (0.03)	5 (0.19)	4 (0.15)	2 (0.07)
Test Pressure -7182 Pa (-150.0 psf)						
Uniform Load Deflection Per ASTM E 330	19 (0.73)	46 (1.83)	2 (0.08)	43 (1.70)	34 (1.32)	18 (0.69)
Uniform Load Structural Per ASTM E 330	2 (0.06)	2 (0.06)	1 (0.04)	2 (0.06)	2 (0.06)	1 (0.03)

***Note**: See Architectural Testing Sketch #2 for indicator locations.*

15.0 Test Results (E2): (Continued)

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 27°C (80°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Bottom left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.5 m/s (50.9 fps)	
Impact Area:	Bottom left lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.4 m/s (50.6 fps)	
Impact Area:	Bottom center lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.4 m/s (50.6 fps)	
Impact Area:	Bottom center lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

15.0 Test Results (E2): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Center horizontal mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

Impact #6: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Bottom right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #7: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #8: Missile Velocity: 15.3 m/s (50.1 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #3 for impact locations.*

15.0 Test Results (E2): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±4788 Pa (±100.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
958 to 2394 (20.0 to 50.0)	3500	2.30	2 (0.06)	4 (0.16)	1 (0.05)	9 (0.34)	11 (0.45)	18 (0.71)
0 to 2873 (0 to 60.0)	300	3.00	2 (0.06)	4 (0.16)	1 (0.05)	9 (0.34)	13 (0.51)	20 (0.79)
2394 to 3830 (50.0 to 80.0)	600	2.20	2 (0.06)	4 (0.17)	1 (0.05)	13 (0.52)	16 (0.64)	25 (0.99)
1436 to 4788 (30.0 to 100.0)	100	2.20	2 (0.07)	6 (0.24)	2 (0.06)	14 (0.56)	21 (0.82)	32 (1.25)
			Permanent Set mm (inches)					
			1 (0.02)	1 (0.04)	1 (0.02)	1 (0.04)	3 (0.10)	5 (0.18)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
958 to 2394 (20.0 to 50.0)	3500	2.30	18 (0.72)	20 (0.80)	18 (0.72)	6 (0.24)	19 (0.73)	3 (0.12)
0 to 2873 (0 to 60.0)	300	3.00	20 (0.79)	22 (0.88)	20 (0.79)	7 (0.26)	21 (0.81)	4 (0.14)
2394 to 3830 (50.0 to 80.0)	600	2.20	25 (1.00)	28 (1.10)	25 (0.98)	8 (0.32)	26 (1.02)	4 (0.16)
1436 to 4788 (30.0 to 100.0)	100	2.20	32 (1.26)	35 (1.38)	31 (1.23)	10 (0.39)	33 (1.29)	5 (0.18)
			Permanent Set mm (inches)					
			4 (0.17)	4 (0.15)	3 (0.10)	1 (0.04)	2 (0.09)	1 (0.03)

15.0 Test Results (E2): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±4788 Pa (±100.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#13	#14	#15
958 to 2394 (20.0 to 50.0)	3500	2.30	18 (0.71)	13 (0.52)	7 (0.27)
0 to 2873 (0 to 60.0)	300	3.00	20 (0.79)	15 (0.58)	8 (0.30)
2394 to 3830 (50.0 to 80.0)	600	2.20	25 (0.98)	18 (0.72)	9 (0.36)
1436 to 4788 (30.0 to 100.0)	100	2.20	31 (1.22)	23 (0.91)	11 (0.45)
			Permanent Set mm (inches)		
			3 (0.10)	2 (0.09)	1 (0.05)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
1436 to 4788 (30.0 to 100.0)	50	3.00	7 (0.29)	11 (0.44)	3 (0.12)	12 (0.48)	26 (1.02)	35 (1.38)
2394 to 3830 (50.0 to 80.0)	1050	2.30	6 (0.22)	9 (0.36)	3 (0.11)	10 (0.40)	21 (0.83)	29 (1.15)
0 to 2873 (0 to 60.0)	50	2.90	5 (0.18)	8 (0.31)	2 (0.09)	9 (0.34)	19 (0.73)	25 (1.00)
958 to 2394 (20.0 to 50.0)	3350	2.20	4 (0.15)	6 (0.24)	2 (0.09)	7 (0.27)	15 (0.59)	21 (0.82)
			Permanent Set mm (inches)					
			3 (0.10)	2 (0.07)	1 (0.03)	3 (0.11)	5 (0.19)	6 (0.25)

15.0 Test Results (E2): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±4788 Pa (±100.0 psf)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
1436 to 4788 (30.0 to 100.0)	50	3.00	36 (1.43)	39 (1.54)	37 (1.46)	14 (0.57)	38 (1.49)	6 (0.24)
2394 to 3830 (50.0 to 80.0)	1050	2.30	30 (1.18)	33 (1.28)	31 (1.23)	12 (0.47)	32 (1.25)	5 (0.20)
0 to 2873 (0 to 60.0)	50	2.90	26 (1.04)	29 (1.14)	28 (1.09)	11 (0.43)	28 (1.11)	5 (0.18)
958 to 2394 (20.0 to 50.0)	3350	2.20	21 (0.83)	23 (0.90)	22 (0.87)	9 (0.34)	22 (0.87)	3 (0.13)
			Permanent Set mm (inches)					
			6 (0.25)	7 (0.27)	6 (0.25)	3 (0.12)	6 (0.25)	1 (0.05)

Negative PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#13	#14	#15
1436 to 4788 (30.0 to 100.0)	50	3.00	36 (1.42)	27 (1.05)	14 (0.57)
2394 to 3830 (50.0 to 80.0)	1050	2.30	30 (1.18)	22 (0.87)	12 (0.46)
0 to 2873 (0 to 60.0)	50	2.90	27 (1.05)	20 (0.77)	10 (0.41)
958 to 2394 (20.0 to 50.0)	3350	2.20	21 (0.83)	15 (0.60)	8 (0.33)
			Permanent Set mm (inches)		
			6 (0.23)	4 (0.17)	3 (0.12)

***Observations**: No additional damage or deglazing was observed.*

Result: Pass

***Note**: See Architectural Testing Sketch #3 for indicator locations.*

16.0 Test Results (E3): The results are tabulated as follows:

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 26°C (78°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.4 m/s (50.6 fps)	
Impact Area:	Bottom left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Bottom left lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Bottom center lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Bottom center lite, center of glass
Observations:	Tear measuring 1-3/4" x 1/4" formed in interlayer
Results:	Pass

16.0 Test Results (E3): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Center horizontal mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

Impact #6: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #6: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #8: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #4 for impact locations.*

16.0 Test Results (E3): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±4788 Pa (±100.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
958 to 2394 (20.0 to 50.0)	3500	2.30	1 (0.05)	4 (0.14)	4 (0.17)	10 (0.38)	15 (0.61)	16 (0.63)
0 to 2873 (0 to 60.0)	300	2.90	2 (0.06)	5 (0.18)	8 (0.30)	9 (0.37)	16 (0.62)	17 (0.67)
2394 to 3830 (50.0 to 80.0)	600	2.70	2 (0.08)	7 (0.27)	20 (0.78)	13 (0.52)	21 (0.83)	22 (0.87)
1436 to 3352 (30.0 to 100.0)	100	2.90	3 (0.11)	10 (0.38)	21 (0.82)	17 (0.65)	26 (1.04)	29 (1.14)
			Permanent Set mm (inches)					
			1 (0.03)	1 (0.02)	1 (0.03)	6 (0.22)	6 (0.25)	2 (0.07)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
958 to 2394 (20.0 to 50.0)	3500	2.30	21 (0.82)	22 (0.86)	20 (0.80)	9 (0.36)	19 (0.76)	6 (0.23)
0 to 2873 (0 to 60.0)	300	2.90	22 (0.87)	23 (0.91)	22 (0.85)	10 (0.38)	21 (0.81)	6 (0.24)
2394 to 3830 (50.0 to 80.0)	600	2.70	28 (1.11)	30 (1.17)	28 (1.10)	11 (0.42)	27 (1.05)	7 (0.26)
1436 to 3352 (30.0 to 100.0)	100	2.90	36 (1.41)	38 (1.48)	36 (1.41)	14 (0.54)	35 (1.37)	8 (0.32)
			Permanent Set mm (inches)					
			7 (0.28)	7 (0.26)	7 (0.29)	6 (0.25)	5 (0.20)	4 (0.14)

16.0 Test Results (E3): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±4788 Pa (±100.0 psf)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
1436 to 4788 (30.0 to 100.0)	50	2.90	5 (0.18)	14 (0.56)	5 (0.18)	15 (0.59)	25 (0.99)	32 (1.26)
2394 to 3830 (50.0 to 80.0)	1050	2.30	4 (0.14)	12 (0.46)	4 (0.14)	12 (0.47)	20 (0.80)	26 (1.02)
0 to 2873 (0 to 60.0)	50	2.70	3 (0.13)	11 (0.43)	3 (0.12)	11 (0.43)	20 (0.78)	26 (1.01)
958 to 2394 (20.0 to 50.0)	3350	2.50	3 (0.11)	8 (0.32)	3 (0.10)	11 (0.42)	16 (0.64)	20 (0.77)
			Permanent Set mm (inches)					
			2 (0.08)	2 (0.07)	2 (0.06)	3 (0.11)	4 (0.14)	3 (0.13)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
1436 to 4788 (30.0 to 100.0)	50	2.90	34 (1.32)	36 (1.43)	34 (1.33)	12 (0.48)	35 (1.36)	7 (0.26)
2394 to 3830 (50.0 to 80.0)	1050	2.30	27 (1.05)	29 (1.15)	27 (1.08)	9 (0.37)	28 (1.09)	5 (0.21)
0 to 2873 (0 to 60.0)	50	2.70	26 (1.02)	29 (1.13)	27 (1.05)	8 (0.33)	26 (1.02)	5 (0.18)
958 to 2394 (20.0 to 50.0)	3350	2.50	21 (0.81)	23 (0.91)	21 (0.83)	8 (0.31)	22 (0.85)	4 (0.16)
			Permanent Set mm (inches)					
			4 (0.14)	5 (0.19)	4 (0.16)	4 (0.14)	5 (0.18)	2 (0.08)

Observations: *Passing results for Wind Zone 3 because of* 1-3/4" x 1/4" tear formed in interlayer during impacts.

Result: Pass

***Note**: See Architectural Testing Sketch #4 for indicator locations.*

17.0 Test Results (E4) : The results are tabulated as follows:

Structural Only
Design Pressure: ±3112 Pa (±65.0 psf)

	Indicator Reading mm (inches)								
Structural Loads 50% of Test Pressure +2334 Pa (+48.75 psf)	#1	#2	#3	#4	#5	#6	#7	#8	#9
Uniform Load Deflection Per ASTM E 330	1 (0.03)	3 (0.10)	1 (0.04)	2 (0.07)	6 (0.24)	2 (0.06)	<1 (0.01)	<1 (0.01)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	<1 (0.01)	<1 (0.01)	<1 (0.01)	1 (0.02)	1 (0.02)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Design Pressure +3112 Pa (+65.0 psf)									
Uniform Load Deflection Per ASTM E 330	1 (0.04)	4 (0.14)	1 (0.05)	3 (0.11)	8 (0.33)	2 (0.09)	<1 (0.01)	1 (0.02)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	1 (0.02)	<1 (0.01)	1 (0.02)	1 (0.03)	1 (0.04)	1 (0.03)	<1 (0.01)	<1 (<0.01)	<1 (<0.01)
50% of Test Pressure -2334 Pa (-48.75 psf)									
Uniform Load Deflection Per ASTM E 330	4 (0.14)	5 (0.19)	2 (0.08)	5 (0.20)	9 (0.34)	2 (0.09)	<1 (0.01)	<1 (0.01)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.02)	1 (0.02)	1 (0.03)	1 (0.04)	1 (0.03)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Design Pressure -3112 Pa (-65.0 psf)									
Uniform Load Deflection Per ASTM E 330	6 (0.24)	7 (0.28)	3 (0.12)	9 (0.35)	13 (0.53)	4 (0.16)	<1 (0.01)	1 (0.02)	<1 (0.01)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.05)	1 (0.04)	1 (0.05)	2 (0.07)	1 (0.05)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)

17.0 Test Results (E4): (Continued)

Structural Only
Design Pressure: ±3112 Pa (±65.0 psf)

	Indicator Reading mm (inches)								
Test Pressure +4668 Pa (+97.5 psf)	#1	#2	#3	#4	#5	#6	#7	#8	#9
Uniform Load Deflection Per ASTM E 330	2 (0.07)	5 (0.21)	2 (0.06)	5 (0.19)	13 (0.52)	3 (0.13)	<1 (0.01)	1 (0.03)	<1 (0.01)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.02)	1 (0.02)	2 (0.06)	2 (0.07)	1 (0.05)	<1 (0.01)	<1 (<0.01)	<1 (<0.01)
Test Pressure -4668 Pa (-97.5 psf)									
Uniform Load Deflection Per ASTM E 330	10 (0.39)	12 (0.46)	6 (0.23)	12 (0.49)	19 (0.75)	7 (0.28)	<1 (0.01)	1 (0.02)	<1 (0.01)
Uniform Load Structural Per ASTM E 330	2 (0.06)	2 (0.06)	1 (0.05)	2 (0.07)	2 (0.09)	2 (0.07)	<1 (<0.01)	<1 (<0.01)	<1 (0.01)

***Note**: See Architectural Testing Sketch #5 for indicator locations.*

17.0 Test Results (E4): (Continued)

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 25°C (77°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Left lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.5 m/s (51.0 fps)	
Impact Area:	Center lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.5 m/s (51.0 fps)	
Impact Area:	Center lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

17.0 Test Results (E4): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #6: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #7: Missile Velocity: 15.3 m/s (50.3 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #6 for impact locations.*

17.0 Test Results (E4): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±3112 Pa (±65.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
622 to 1556 (13.0 to 32.5)	3500	2.35	<1 (0.01)	2 (0.06)	1 (0.02)	1 (0.05)	4 (0.17)	1 (0.04)
0 to 1867 (0 to 39.0)	300	2.97	1 (0.02)	2 (0.07)	1 (0.02)	1 (0.05)	5 (0.19)	1 (0.04)
1556 to 2490 (32.5 to 52.0)	600	2.32	1 (0.03)	2 (0.09)	1 (0.02)	2 (0.07)	6 (0.23)	1 (0.05)
934 to 3112 (19.5 to 65.0)	100	2.99	1 (0.03)	3 (0.10)	1 (0.02)	2 (0.07)	6 (0.25)	1 (0.05)
			Permanent Set mm (inches)					
			<1 (0.01)	1 (0.04)	<1 (0.01)	1 (0.02)	3 (0.11)	1 (0.03)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
934 to 3112 (19.5 to 65.0)	50	2.94	3 (0.11)	5 (0.19)	2 (0.06)	6 (0.25)	11 (0.43)	2 (0.08)
1556 to 2490 (32.5 to 52.0)	1050	2.64	3 (0.10)	4 (0.17)	1 (0.05)	6 (0.23)	9 (0.36)	2 (0.07)
0 to 1867 (0 to 39.0)	50	2.94	1 (0.05)	3 (0.12)	1 (0.05)	5 (0.18)	7 (0.27)	2 (0.06)
622 to 1556 (13.0 to 32.5)	3350	2.80	1 (0.04)	3 (0.11)	1 (0.05)	4 (0.15)	6 (0.25)	2 (0.06)
			Permanent Set mm (inches)					
			<1 (0.01)	1 (0.03)	1 (0.02)	1 (0.03)	2 (0.08)	1 (0.03)

Observations: *No additional damage or deglazing was observed.*

Result: Pass

Note: *See Architectural Testing Sketch #6 for indicator locations.*

18.0 Test Results (E5): The results are tabulated as follows:

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 26°C (78°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.5 m/s (51.0 fps)	
Impact Area:	Left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.3 m/s (50.3 fps)	
Impact Area:	Left lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.3 m/s (50.3 fps)	
Impact Area:	Center lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.3 m/s (50.1 fps)	
Impact Area:	Center lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

18.0 Test Results (E5): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.3 m/s (50.3 fps)	
Impact Area:	Right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #6: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #7: Missile Velocity: 15.3 m/s (50.1 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #7 for impact locations.*

18.0 Test Results (E5): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±3112 Pa (±65.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
622 to 1556 (13.0 to 32.5)	3500	1.92	<1 (0.01)	2 (0.06)	<1 (0.01)	1 (0.03)	4 (0.15)	1 (0.04)
0 to 1867 (0 to 39.0)	300	2.95	1 (0.02)	2 (0.08)	<1 (0.01)	1 (0.04)	5 (0.19)	2 (0.06)
1556 to 2490 (32.5 to 52.0)	600	1.76	1 (0.02)	2 (0.09)	1 (0.03)	1 (0.05)	6 (0.25)	2 (0.06)
934 to 3112 (19.5 to 65.0)	100	2.88	1 (0.03)	3 (0.12)	1 (0.03)	2 (0.07)	8 (0.32)	2 (0.06)
			Permanent Set mm (inches)					
			<1 (0.01)	1 (0.02)	1 (0.02)	<1 (0.01)	1 (0.02)	<1 (0.01)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
934 to 3112 (19.5 to 65.0)	50	2.63	2 (0.09)	5 (0.18)	1 (0.04)	4 (0.16)	10 (0.38)	3 (0.11)
1556 to 2490 (32.5 to 52.0)	1050	1.80	2 (0.08)	4 (0.15)	1 (0.04)	4 (0.15)	8 (0.33)	3 (0.10)
0 to 1867 (0 to 39.0)	50	2.84	2 (0.08)	3 (0.13)	1 (0.03)	3 (0.13)	8 (0.31)	3 (0.10)
622 to 1556 (13.0 to 32.5)	3350	2.02	2 (0.08)	3 (0.10)	1 (0.03)	3 (0.11)	6 (0.25)	2 (0.07)
			Permanent Set mm (inches)					
			1 (0.03)	1 (0.04)	1 (0.02)	1 (0.04)	2 (0.06)	1 (0.04)

Observations: *Tear measuring 1-1/2" x 1/4" formed in interlayer. Passing results for Wind Zone 3.*

Result: Pass

Note: *See Architectural Testing Sketch #7 for indicator locations.*

19.0 Test Results (E6): The results are tabulated as follows:

Design Pressure: ±3352 Pa (±70.0 psf)

Title of Test	Results
Air Infiltration Per ASTM E 283 at 75 Pa (1.57 psf) (25 mph)	0.05 L/s/m² (<0.01 cfm/ft²)
Air Infiltration Per ASTM E 283 at 300 Pa (6.24 psf) (50 mph)	0.05 L/s/m² (<0.01 cfm/ft²)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +2514 Pa (+52.5 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	1 (0.05)	11 (0.43)	2 (0.06)	1 (0.05)	1 (0.04)	2 (0.07)
Uniform Load Structural Per ASTM E 330	1 (0.03)	1 (0.02)	<1 (0.01)	<1 (0.01)	<1 (<0.01)	<1 (0.01)
Design Pressure +3352 Pa (+70.0 psf)						
Uniform Load Deflection Per ASTM E 330	2 (0.08)	14 (0.55)	2 (0.07)	2 (0.06)	1 (0.04)	2 (0.08)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.03)	<1 (0.01)	<1 (0.01)	<1 (0.01)	<1 (0.01)
50% of Test Pressure -2514 Pa (-52.5 psf)						
Uniform Load Deflection Per ASTM E 330	4 (0.14)	13 (0.50)	2 (0.07)	1 (0.02)	1 (0.04)	1 (0.03)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.05)	1 (0.02)	<1 (0.01)	<1 (0.01)	1 (0.02)
Design Pressure -3352 Pa (-70.0 psf)						
Uniform Load Deflection Per ASTM E 330	5 (0.18)	17 (0.66)	3 (0.10)	1 (0.02)	1 (0.05)	1 (0.04)
Uniform Load Structural Per ASTM E 330	1 (0.05)	2 (0.06)	1 (0.03)	<1 (0.01)	1 (0.02)	1 (0.02)

19.0 Test Results (E6): (Continued)

Design Pressure: ±3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +2514 Pa (+52.5 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	18 (0.71)	19 (0.75)	18 (0.72)	6 (0.23)	19 (0.76)	2 (0.07)
Uniform Load Structural Per ASTM E 330	1 (0.03)	1 (0.04)	1 (0.05)	1 (0.03)	2 (0.06)	<1 (0.01)
Design Pressure +3352 Pa (+70.0 psf)						
Uniform Load Deflection Per ASTM E 330	23 (0.91)	24 (0.95)	24 (0.93)	8 (0.32)	25 (0.98)	2 (0.09)
Uniform Load Structural Per ASTM E 330	1 (0.04)	2 (0.07)	2 (0.08)	1 (0.05)	2 (0.09)	<1 (0.01)
50% of Test Pressure -2514 Pa (-52.5 psf)						
Uniform Load Deflection Per ASTM E 330	20 (0.80)	22 (0.85)	21 (0.83)	8 (0.31)	23 (0.89)	4 (0.14)
Uniform Load Structural Per ASTM E 330	3 (0.11)	3 (0.13)	3 (0.12)	2 (0.08)	3 (0.13)	1 (0.03)
Design Pressure -3352 Pa (-70.0 psf)						
Uniform Load Deflection Per ASTM E 330	26 (1.04)	28 (1.09)	27 (1.06)	10 (0.40)	29 (1.13)	5 (0.19)
Uniform Load Structural Per ASTM E 330	4 (0.14)	4 (0.16)	4 (0.15)	3 (0.10)	4 (0.16)	2 (0.06)
Water Infiltration Per ASTM E 331 At least 15% Positive Design Pressure 958 Pa (+20.0 psf)	No Penetration					
Test Pressure +5027 Pa (+105.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	3 (0.11)	19 (0.74)	4 (0.15)	1 (0.05)	1 (0.05)	3 (0.11)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.03)	1 (0.03)	<1 (0.01)	1 (0.02)	<1 (0.01)

19.0 Test Results (E6): (Continued)

Design Pressure: ±3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)					
Test Pressure -5027 Pa (-105.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	6 (0.23)	22 (0.86)	5 (0.21)	1 (0.04)	1 (0.03)	1 (0.05)
Uniform Load Structural Per ASTM E 330	2 (0.09)	2 (0.08)	3 (0.10)	<1 (0.01)	1 (0.03)	1 (0.03)
Test Pressure +5027 Pa (+105.0 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	30 (1.19)	31 (1.23)	30 (1.19)	11 (0.45)	32 (1.27)	3 (0.12)
Uniform Load Structural Per ASTM E 330	2 (0.06)	2 (0.06)	2 (0.07)	1 (0.03)	2 (0.08)	<1 (0.01)
Test Pressure -5027 Pa (-105.0 psf)						
Uniform Load Deflection Per ASTM E 330	33 (1.31)	35 (1.38)	34 (1.33)	13 (0.52)	36 (1.42)	6 (0.25)
Uniform Load Structural Per ASTM E 330	4 (0.15)	5 (0.18)	5 (0.18)	2 (0.09)	5 (0.20)	2 (0.09)

***Note**: See Architectural Testing Sketch #8 for indicator locations.*

19.0 Test Results (E6): (Continued)

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 22°C (71°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Bottom left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom left lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.4 m/s (50.6 fps)	
Impact Area:	Bottom center lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.4 m/s (50.5 fps)	
Impact Area:	Bottom center lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

19.0 Test Results (E6): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Center horizontal mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

Impact #6: Missile Velocity: 15.5 m/s (51.0 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

Impact #7: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #8: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Bottom right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

***Note**: See Architectural Testing Sketch #9 for impact locations.*

19.0 Test Results (E6): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±3352 Pa (±70.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
670 to 1676 (14.0 to 35.0)	3500	2.30	1 (0.03)	3 (0.10)	1 (0.04)	3 (0.11)	4 (0.14)	3 (0.13)
0 to 2011 (0 to 42.0)	300	2.90	1 (0.04)	11 (0.42)	2 (0.08)	11 (0.43)	12 (0.47)	11 (0.43)
1676 to 2681 (35.0 to 56.0)	600	2.20	1 (0.04)	11 (0.45)	3 (0.10)	11 (0.45)	12 (0.48)	11 (0.45)
1005 to 3352 (21.0 to 70.0)	100	2.80	1 (0.05)	13 (0.50)	3 (0.11)	13 (0.52)	14 (0.57)	13 (0.53)
			Permanent Set mm (inches)					
			1 (0.02)	1 (0.02)	1 (0.04)	8 (0.32)	8 (0.32)	8 (0.32)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#7	#8	#9
670 to 1676 (14.0 to 35.0)	3500	2.30	2 (0.06)	3 (0.13)	1 (0.02)
0 to 2011 (0 to 42.0)	300	2.90	4 (0.15)	12 (0.48)	3 (0.12)
1676 to 2681 (35.0 to 56.0)	600	2.20	5 (0.18)	13 (0.51)	4 (0.14)
1005 to 3352 (21.0 to 70.0)	100	2.80	5 (0.19)	15 (0.58)	4 (0.15)
			Permanent Set mm (inches)		
			4 (0.15)	8 (0.31)	1 (0.04)

19.0 Test Results (E6): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±3352 Pa (±70.0 psf)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
1005 to 3352 (21.0 to 70.0)	50	2.80	3 (0.13)	18 (0.70)	5 (0.20)	26 (1.04)	28 (1.11)	28 (1.11)
1676 to 2681 (35.0 to 56.0)	1050	2.10	2 (0.09)	12 (0.48)	3 (0.10)	20 (0.77)	21 (0.83)	22 (0.85)
0 to 2011 (0 to 42.0)	50	2.90	2 (0.07)	11 (0.45)	2 (0.09)	19 (0.76)	21 (0.81)	21 (0.83)
670 to 1676 (14.0 to 35.0)	3350	2.10	1 (0.05)	8 (0.30)	1 (0.05)	15 (0.60)	16 (0.64)	17 (0.67)
			Permanent Set mm (inches)					
			<1 (0.01)	1 (0.02)	1 (0.02)	3 (0.10)	3 (0.12)	4 (0.14)

Negative PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)		
			#7	#8	#9
1005 to 3352 (21.0 to 70.0)	50	2.80	10 (0.41)	29 (1.14)	4 (0.15)
1676 to 2681 (35.0 to 56.0)	1050	2.10	8 (0.33)	22 (0.86)	3 (0.13)
0 to 2011 (0 to 42.0)	50	2.90	8 (0.32)	21 (0.84)	3 (0.11)
670 to 1676 (14.0 to 35.0)	3350	2.10	7 (0.26)	17 (0.67)	2 (0.09)
			Permanent Set mm (inches)		
			2 (0.07)	4 (0.15)	1 (0.02)

Observations: *No additional damage or deglazing was observed.*

Result: Pass

Note: *See Architectural Testing Sketch #9 for indicator locations.*

20.0 Test Results (E7): The results are tabulated as follows:

Design Pressure: ±4788 Pa (±100.0 psf)

Title of Test	Results
Air Infiltration per ASTM E 283 at 75 Pa (1.57 psf) (25 mph)	0.05 L/s/m² (<0.01 cfm/ft²)
Air Infiltration per ASTM E 283 at 300 Pa (6.24 psf) (50 mph)	0.05 L/s/m² (<0.01 cfm/ft²)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +3591 Pa (+75.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	1 (0.03)	1 (0.04)	1 (0.02)	<1 (0.01)	6 (0.23)	1 (0.04)
Uniform Load Structural Per ASTM E 330	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (0.01)	<1 (<0.01)
Design Pressure +4788 Pa (+100.0 psf)						
Uniform Load Deflection Per ASTM E 330	1 (0.03)	1 (0.04)	1 (0.03)	<1 (0.01)	8 (0.31)	2 (0.06)
Uniform Load Structural Per ASTM E 330	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (0.01)	<1 (<0.01)
50% of Test Pressure -3591 Pa (-75.0 psf)						
Uniform Load Deflection Per ASTM E 330	<1 (0.01)	1 (0.05)	1 (0.02)	1 (0.03)	6 (0.24)	1 (0.05)
Uniform Load Structural Per ASTM E 330	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Design Pressure -4788 Pa (-100.0 psf)						
Uniform Load Deflection Per ASTM E 330	<1 (0.01)	2 (0.06)	1 (0.02)	1 (0.03)	8 (0.33)	2 (0.06)
Uniform Load Structural Per ASTM E 330	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1 (0.01)	<1 (<0.01)	<1 (<0.01)

20.0 Test Results (E7): (Continued)

Design Pressure: ±4788 Pa (±100.0 psf)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +3591 Pa (+75.0 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	20 (0.78)	21 (0.83)	19 (0.76)	3 (0.11)	22 (0.88)	1 (0.02)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.04)	1 (0.04)	<1 (0.01)	1 (0.05)	<1 (<0.01)
Design Pressure +4788 Pa (+100.0 psf)						
Uniform Load Deflection Per ASTM E 330	27 (1.05)	28 (1.12)	26 (1.04)	4 (0.15)	31 (1.21)	1 (0.03)
Uniform Load Structural Per ASTM E 330	2 (0.07)	2 (0.07)	2 (0.07)	1 (0.02)	2 (0.08)	<1 (<0.01)
50% of Test Pressure -3591 Pa (-75.0 psf)						
Uniform Load Deflection Per ASTM E 330	19 (0.76)	20 (0.79)	18 (0.70)	2 (0.07)	20 (0.80)	1 (0.02)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	<1 (0.01)	<1 (0.01)	1 (0.02)	<1 (0.01)	<1 (<0.01)
Design Pressure -4788 Pa (-100.0 psf)						
Uniform Load Deflection Per ASTM E 330	27 (1.05)	27 (1.08)	25 (0.97)	3 (0.12)	28 (1.11)	1 (0.03)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.02)	1 (0.02)	<1 (<0.01)	1 (0.02)	<1 (<0.01)

Structural Loads 50% of Test Pressure +3591 Pa (+75.0 psf)	#13	#14	#15
Uniform Load Deflection Per ASTM E 330	19 (0.75)	13 (0.52)	7 (0.27)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.03)	<1 (0.01)

20.0 Test Results (E7): (Continued)

Design Pressure: ±4788 Pa (±100.0 psf)

	Indicator Reading mm (inches)		
Design Pressure +4788 Pa (+100.0 psf)	#13	#14	#15
Uniform Load Deflection Per ASTM E 330	26 (1.02)	18 (0.72)	9 (0.37)
Uniform Load Structural Per ASTM E 330	2 (0.06)	1 (0.04)	1 (0.02)
50% of Test Pressure -3591 Pa (-75.0 psf)			
Uniform Load Deflection Per ASTM E 330	17 (0.67)	11 (0.44)	7 (0.28)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	1 (0.02)	<1 (<0.01)
Design Pressure -4788 Pa (-100.0 psf)			
Uniform Load Deflection Per ASTM E 330	24 (0.93)	16 (0.62)	10 (0.38)
Uniform Load Structural Per ASTM E 330	1 (0.02)	<1 (<0.01)	<1 (<0.01)
Water Infiltration Per ASTM E 331 At least 15% Positive Design Pressure 958 Pa (+20.0 psf)	No Penetration		

Test Pressure +7182 Pa (+150.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	3 (0.12)	1 (0.02)	1 (0.02)	1 (0.04)	12 (0.48)	3 (0.10)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	<1 (<0.01)	<1 (<0.01)	1 (0.02)	1 (0.02)	<1 (0.01)
Test Pressure -7182 Pa (-150.0 psf)						
Uniform Load Deflection Per ASTM E 330	3 (0.10)	1 (0.02)	1 (0.04)	2 (0.06)	12 (0.49)	3 (0.10)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	<1 (0.01)	<1 (<0.01)	1 (0.02)	<1 (0.01)	<1 (<0.01)

20.0 Test Results (E7): (Continued)

Design Pressure: ±4788 Pa (±100.0 psf)

	Indicator Reading mm (inches)					
Test Pressure +7182 Pa (+150.0 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	45 (1.76)	47 (1.87)	44 (1.74)	8 (0.31)	51 (2.02)	1 (0.05)
Uniform Load Structural Per ASTM E 330	5 (0.20)	5 (0.19)	5 (0.18)	2 (0.06)	5 (0.20)	<1 (0.01)
Test Pressure -7182 Pa (-150.0 psf)						
Uniform Load Deflection Per ASTM E 330	43 (1.68)	45 (1.78)	42 (1.67)	8 (0.32)	48 (1.88)	1 (0.05)
Uniform Load Structural Per ASTM E 330	1 (0.03)	1 (0.04)	1 (0.04)	1 (0.03)	1 (0.04)	<1 (<0.01)

Test Pressure +7182 Pa (+150.0 psf)	#13	#14	#15
Uniform Load Deflection Per ASTM E 330	43 (1.70)	31 (1.21)	15 (0.59)
Uniform Load Structural Per ASTM E 330	4 (0.17)	3 (0.12)	1 (0.04)
Test Pressure -7182 Pa (-150.0 psf)			
Uniform Load Deflection Per ASTM E 330	41 (1.62)	30 (1.18)	16 (0.62)
Uniform Load Structural Per ASTM E 330	1 (0.04)	1 (0.03)	1 (0.02)

***Note**: See Architectural Testing Sketch #10 for indicator locations.*

20.0 Test Results (E7): (Continued)

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 29°C (84°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom left lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Test Unit (E7): Orientation within ±5° of horizontal

Impact #3: Missile Velocity: 15.4 m/s (50.5 fps)	
Impact Area:	Bottom center lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Bottom center lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

20.0 Test Results (E7): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Center horizontal mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

Impact #6: Missile Velocity: 15.4 m/s (50.5 fps)	
Impact Area:	Bottom right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #7: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Bottom right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #8: Missile Velocity: 15.3 m/s (50.3 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #11 for impact locations.*

20.0 Test Results (E7): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±4788 Pa (±100.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
958 to 2394 (20.0 to 50.0)	3500	2.50	1 (0.02)	4 (0.15)	2 (0.06)	17 (0.67)	18 (0.70)	17 (0.68)
0 to 2873 (0 to 60.0)	300	2.60	1 (0.02)	2 (0.08)	2 (0.07)	9 (0.35)	9 (0.36)	9 (0.37)
2394 to 3830 (50.0 to 80.0)	600	2.20	1 (0.02)	3 (0.13)	2 (0.07)	14 (0.55)	14 (0.57)	14 (0.55)
1436 to 4788 (30.0 to 100.0)	100	3.00	1 (0.02)	5 (0.18)	2 (0.07)	19 (0.76)	20 (0.78)	19 (0.76)
			Permanent Set mm (inches)					
			<1 (0.01)	2 (0.08)	<1 (0.01)	7 (0.29)	8 (0.32)	8 (0.32)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
958 to 2394 (20.0 to 50.0)	3500	2.50	4 (0.16)	19 (0.73)	3 (0.10)	16 (0.64)	11 (0.43)	6 (0.22)
0 to 2873 (0 to 60.0)	300	2.60	3 (0.12)	10 (0.38)	2 (0.08)	9 (0.35)	6 (0.25)	4 (0.16)
2394 to 3830 (50.0 to 80.0)	600	2.20	3 (0.12)	15 (0.61)	2 (0.08)	13 (0.53)	9 (0.35)	5 (0.19)
1436 to 4788 (30.0 to 100.0)	100	3.00	3 (0.12)	21 (0.84)	2 (0.08)	19 (0.73)	13 (0.50)	7 (0.26)
			Permanent Set mm (inches)					
			2 (0.08)	9 (0.36)	1 (0.04)	8 (0.32)	6 (0.24)	3 (0.11)

20.0 Test Results (E7): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±4788 Pa (±100.0 psf)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
1436 to 4788 (30.0 to 100.0)	50	3.00	2 (0.09)	10 (0.41)	2 (0.08)	35 (1.36)	37 (1.47)	35 (1.37)
2394 to 3830 (50.0 to 80.0)	1050	2.10	2 (0.08)	8 (0.33)	2 (0.07)	28 (1.11)	30 (1.18)	28 (1.12)
0 to 2873 (0 to 60.0)	50	2.90	2 (0.07)	8 (0.32)	2 (0.07)	27 (1.08)	29 (1.14)	27 (1.06)
958 to 2394 (20.0 to 50.0)	3350	2.40	2 (0.06)	6 (0.23)	1 (0.04)	19 (0.75)	21 (0.81)	20 (0.77)
			Permanent Set mm (inches)					
			2 (0.07)	2 (0.06)	1 (0.02)	5 (0.19)	6 (0.23)	6 (0.25)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
1436 to 4788 (30.0 to 100.0)	50	3.00	9 (0.34)	39 (1.52)	7 (0.27)	34 (1.33)	25 (0.97)	13 (0.50)
2394 to 3830 (50.0 to 80.0)	1050	2.10	8 (0.30)	31 (1.22)	6 (0.22)	27 (1.08)	20 (0.78)	10 (0.41)
0 to 2873 (0 to 60.0)	50	2.90	6 (0.23)	30 (1.17)	4 (0.16)	25 (0.99)	18 (0.72)	9 (0.37)
958 to 2394 (20.0 to 50.0)	3350	2.40	6 (0.23)	21 (0.83)	4 (0.15)	19 (0.74)	13 (0.53)	7 (0.28)
			Permanent Set mm (inches)					
			3 (0.11)	6 (0.25)	1 (0.04)	6 (0.24)	4 (0.17)	1 (0.04)

Observations: *No additional damage or deglazing was observed.*

Result: Pass

Note: *See Architectural Testing Sketch #11 for indicator locations.*

21.0 Test Results (E8): The results are tabulated as follows:

Structural Only
Design Pressure: ± 3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)								
Structural Loads 50% of Test Pressure +2514 Pa (+52.5 psf)	#1	#2	#3	#4	#5	#6	#7	#8	#9
Uniform Load Deflection Per ASTM E 330	1 (0.03)	3 (0.10)	1 (0.05)	2 (0.08)	8 (0.32)	3 (0.10)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.02)	1 (0.02)	1 (0.02)	1 (0.03)	1 (0.03)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Design Pressure +3352 Pa (+70.0 psf)									
Uniform Load Deflection Per ASTM E 330	1 (0.05)	4 (0.14)	2 (0.06)	3 (0.13)	11 (0.42)	3 (0.13)	<1 (<0.01)	<1 (0.01)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.03)	1 (0.03)	1 (0.03)	1 (0.04)	1 (0.04)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
50% of Test Pressure -2514 Pa (-52.5 psf)									
Uniform Load Deflection Per ASTM E 330	1 (0.05)	3 (0.11)	1 (0.04)	3 (0.12)	8 (0.33)	3 (0.11)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	1 (0.02)	<1 (0.01)	<1 (0.01)	1 (0.03)	1 (0.02)	1 (0.02)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Design Pressure -3352 Pa (-70.0 psf)									
Uniform Load Deflection Per ASTM E 330	2 (0.07)	4 (0.17)	2 (0.08)	5 (0.19)	12 (0.47)	4 (0.17)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.02)	<1 (0.01)	1 (0.04)	1 (0.05)	1 (0.05)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)

21.0 Test Results (E8): (Continued)

Structural Only
Design Pressure: ± 3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)								
Test Pressure +5027 Pa (+105.0 psf)	#1	#2	#3	#4	#5	#6	#7	#8	#9
Uniform Load Deflection Per ASTM E 330	2 (0.08)	5 (0.21)	2 (0.08)	5 (0.20)	15 (0.59)	5 (0.19)	<1 (<0.01)	<1 (0.01)	<1 (0.01)
Uniform Load Structural Per ASTM E 330	1 (0.03)	1 (0.04)	1 (0.03)	1 (0.04)	1 (0.05)	1 (0.05)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Test Pressure -5027 Pa (-105.0 psf)									
Uniform Load Deflection Per ASTM E 330	4 (0.14)	8 (0.31)	6 (0.22)	9 (0.34)	20 (0.80)	9 (0.35)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Uniform Load Structural Per ASTM E 330	1 (0.03)	1 (0.03)	1 (0.03)	2 (0.06)	2 (0.08)	2 (0.08)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)

***Note**: See Architectural Testing Sketch #12 for indicator locations.*

21.0 Test Results (E8): (Continued)

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 29°C (84°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.5 m/s (50.8 fps)	
Impact Area:	Left lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Left lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Center lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #4: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Center lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

21.0 Test Results (E8): (Continued)

ASTM E 1886, *Large Missile Impact*

Impact #5: Missile Velocity: 15.5 m/s (50.7 fps)	
Impact Area:	Right lite, top right corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #6: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Right lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #7: Missile Velocity: 15.3 m/s (50.3 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #13 for impact locations.*

21.0 Test Results (E8): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±3352 Pa (±70.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
670 to 1676 (14.0 to 35.0)	3500	2.03	<1 (0.01)	1 (0.05)	<1 (0.01)	1 (0.04)	3 (0.10)	1 (0.04)
0 to 2011 (0 to 42.0)	300	2.87	1 (0.02)	1 (0.05)	<1 (0.01)	1 (0.05)	3 (0.12)	2 (0.06)
1676 to 2681 (35.0 to 56.0)	600	2.39	1 (0.02)	2 (0.07)	<1 (0.01)	2 (0.06)	3 (0.13)	2 (0.06)
1005 to 3352 (21.0 to 70.0)	100	2.93	1 (0.02)	3 (0.10)	1 (0.02)	2 (0.07)	4 (0.15)	2 (0.08)
			Permanent Set mm (inches)					
			<1 (0.01)	<1 (<0.01)	<1 (<0.01)	1 (0.02)	1 (0.03)	1 (0.02)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
1005 to 3352 (21.0 to 70.0)	50	1.87	1 (0.05)	3 (0.13)	2 (0.07)	4 (0.16)	14 (0.55)	4 (0.14)
1676 to 2681 (35.0 to 56.0)	1050	2.46	1 (0.04)	3 (0.12)	2 (0.06)	4 (0.15)	12 (0.48)	3 (0.13)
0 to 2011 (0 to 42.0)	50	2.41	1 (0.04)	3 (0.10)	2 (0.06)	3 (0.12)	9 (0.36)	3 (0.13)
670 to 1676 (14.0 to 35.0)	3350	2.26	1 (0.04)	2 (0.09)	1 (0.05)	3 (0.11)	8 (0.32)	3 (0.12)
			Permanent Set mm (inches)					
			1 (0.02)	1 (0.05)	1 (0.02)	1 (0.04)	4 (0.17)	1 (0.03)

Observations: *No additional damage or deglazing was observed.*

Result: Pass

Note: *See Architectural Testing Sketch #13 for indicator locations.*

22.0 Test Results (E9): The results are tabulated as follows:

Structural Only
Design Pressure: ± 3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)					
Structural Loads 50% of Test Pressure +2514 Pa (+52.5 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	1 (0.03)	5 (0.18)	1 (0.05)	1 (0.02)	1 (0.03)	1 (0.02)
Uniform Load Structural Per ASTM E 330	<1 (0.01)	1 (0.02)	<1 (0.01)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Design Pressure +3352 Pa (+70.0 psf)						
Uniform Load Deflection Per ASTM E 330	2 (0.06)	6 (0.24)	2 (0.09)	1 (0.02)	1 (0.04)	1 (0.02)
Uniform Load Structural Per ASTM E 330	1 (0.02)	1 (0.04)	1 (0.02)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
50% of Test Pressure -2514 Pa (-52.5 psf)						
Uniform Load Deflection Per ASTM E 330	4 (0.14)	8 (0.30)	5 (0.21)	1 (0.02)	1 (0.03)	<1 (0.01)
Uniform Load Structural Per ASTM E 330	3 (0.10)	3 (0.12)	3 (0.13)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)
Design Pressure -3352 Pa (-70.0 psf)						
Uniform Load Deflection Per ASTM E 330	4 (0.16)	10 (0.39)	7 (0.27)	1 (0.03)	1 (0.03)	<1 (0.01)
Uniform Load Structural Per ASTM E 330	3 (0.11)	4 (0.14)	4 (0.16)	<1 (<0.01)	<1 (<0.01)	<1 (0.01)
Structural Loads 50% of Test Pressure +2514 Pa (+52.5 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	5 (0.18)	9 (0.36)	12 (0.48)	12 (0.49)	13 (0.51)	13 (0.51)
Uniform Load Structural Per ASTM E 330	1 (0.03)	1 (0.04)	1 (0.05)	2 (0.06)	1 (0.05)	1 (0.05)

22.0 Test Results (E9): (Continued)

Structural Only
Design Pressure: ± 3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)					
Design Pressure +3352 Pa (+70.0 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	6 (0.25)	12 (0.49)	17 (0.65)	17 (0.68)	18 (0.69)	18 (0.69)
Uniform Load Structural Per ASTM E 330	1 (0.04)	2 (0.06)	2 (0.07)	2 (0.09)	2 (0.07)	2 (0.08)
50% of Test Pressure -2514 Pa (-52.5 psf)						
Uniform Load Deflection Per ASTM E 330	8 (0.30)	12 (0.49)	15 (0.60)	16 (0.62)	15 (0.60)	15 (0.60)
Uniform Load Structural Per ASTM E 330	3 (0.12)	4 (0.17)	4 (0.17)	4 (0.15)	4 (0.17)	4 (0.16)
Design Pressure -3352 Pa (-70.0 psf)						
Uniform Load Deflection Per ASTM E 330	10 (0.39)	16 (0.64)	19 (0.76)	19 (0.75)	20 (0.77)	19 (0.76)
Uniform Load Structural Per ASTM E 330	4 (0.14)	5 (0.19)	5 (0.19)	4 (0.15)	5 (0.20)	5 (0.20)
Structural Loads 50% of Test Pressure +2514 Pa (+52.5 psf)	#13		#14			#15
Uniform Load Deflection Per ASTM E 330	2 (0.08)		14 (0.54)			4 (0.15)
Uniform Load Structural Per ASTM E 330	1 (0.02)		1 (0.04)			1 (0.03)
Design Pressure +3352 Pa (+70.0 psf)						
Uniform Load Deflection Per ASTM E 330	4 (0.14)		19 (0.73)			5 (0.21)
Uniform Load Structural Per ASTM E 330	2 (0.06)		2 (0.07)			1 (0.05)

22.0 Test Results (E9): (Continued)

Test Unit (E9): Structural Only
Design Pressure: ± 3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)					
50% of Test Pressure -2514 Pa (-52.5 psf)	#13		#14		#15	
Uniform Load Deflection Per ASTM E 330	7 (0.29)		15 (0.61)		6 (0.23)	
Uniform Load Structural Per ASTM E 330	4 (0.17)		4 (0.15)		3 (0.12)	
Design Pressure -3352 Pa (-70.0 psf)						
Uniform Load Deflection Per ASTM E 330	9 (0.36)		20 (0.78)		7 (0.29)	
Uniform Load Structural Per ASTM E 330	6 (0.22)		5 (0.18)		4 (0.14)	
Test Pressure +5027 Pa (+105.0 psf)	#1	#2	#3	#4	#5	#6
Uniform Load Deflection Per ASTM E 330	2 (0.07)	10 (0.39)	4 (0.17)	1 (0.04)	2 (0.08)	1 (0.04)
Uniform Load Structural Per ASTM E 330	1 (0.04)	2 (0.06)	2 (0.07)	<1 (0.01)	<1 (<0.01)	<1 (<0.01)
Test Pressure -5027 Pa (-105.0 psf)						
Uniform Load Deflection Per ASTM E 330	6 (0.24)	17 (0.65)	12 (0.49)	1 (0.04)	1 (0.03)	<1 (0.01)
Uniform Load Structural Per ASTM E 330	4 (0.14)	6 (0.22)	6 (0.22)	<1 (0.01)	<1 (0.01)	<1 (0.01)
Test Pressure +5027 Pa (+105.0 psf)	#7	#8	#9	#10	#11	#12
Uniform Load Deflection Per ASTM E 330	10 (0.40)	20 (0.78)	26 (1.03)	29 (1.13)	28 (1.10)	28 (1.10)
Uniform Load Structural Per ASTM E 330	2 (0.07)	3 (0.10)	3 (0.13)	6 (0.22)	4 (0.14)	4 (0.15)
Test Pressure -5027 Pa (-105.0 psf)						
Uniform Load Deflection Per ASTM E 330	16 (0.63)	25 (0.97)	29 (1.13)	27 (1.07)	29 (1.16)	29 (1.13)
Uniform Load Structural Per ASTM E 330	5 (0.21)	7 (0.26)	7 (0.26)	5 (0.19)	7 (0.26)	7 (0.26)

22.0 Test Results (E9): (Continued)

Structural Only
Design Pressure: ± 3352 Pa (±70.0 psf)

	Indicator Reading mm (inches)		
Test Pressure +5027 Pa (+105.0 psf)	#13	#14	#15
Uniform Load Deflection Per ASTM E 330	8 (0.30)	30 (1.17)	9 (0.36)
Uniform Load Structural Per ASTM E 330	3 (0.10)	3 (0.12)	3 (0.11)
Test Pressure -5027 Pa (-105.0 psf)			
Uniform Load Deflection Per ASTM E 330	13 (0.52)	30 (1.17)	11 (0.45)
Uniform Load Structural Per ASTM E 330	6 (0.25)	6 (0.23)	5 (0.20)

***Note**: See Architectural Testing Sketch #14 for indicator locations.*

22.0 Test Results (E9): (Continued)

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 29°C (84°F)
Missile Weight: 4173 g (9.20 lbs)
Missile Length: 2.4 m (96")
Muzzle Distance from Test Specimen: 5.2 m (17' 0")

Orientation within ±5° of horizontal

Impact #1: Missile Velocity: 15.2 m/s (50.0 fps)	
Impact Area:	Bottom center lite, center of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #2: Missile Velocity: 15.4 m/s (50.5 fps)	
Impact Area:	Bottom center lite, bottom left corner of glass
Observations:	No rupture, no penetration in excess of allowable, sacrificial lite broke
Results:	Pass

Impact #3: Missile Velocity: 15.4 m/s (50.6 fps)	
Impact Area:	Right vertical mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

Impact #4: Missile Velocity: 15.3 m/s (50.2 fps)	
Impact Area:	Center horizontal mullion, midpoint
Observations:	No rupture, no penetration in excess of allowable
Results:	Pass

***Note**: See Architectural Testing Sketch #15 for impact locations.*

22.0 Test Results (E9): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±3352 Pa (±70.0 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
670 to 1676 (14.0 to 35.0)	3500	2.20	1 (0.05)	6 (0.23)	5 (0.20)	5 (0.19)	8 (0.32)	10 (0.41)
0 to 2011 (0 to 42.0)	300	2.90	2 (0.08)	6 (0.25)	7 (0.28)	6 (0.23)	9 (0.35)	11 (0.45)
1676 to 2681 (35.0 to 56.0)	600	2.20	3 (0.11)	7 (0.28)	8 (0.31)	7 (0.26)	10 (0.38)	12 (0.49)
1005 to 3352 (21.0 to 70.0)	100	2.80	3 (0.12)	7 (0.28)	8 (0.32)	7 (0.29)	10 (0.40)	13 (0.51)
			Permanent Set mm (inches)					
			1 (0.05)	2 (0.06)	1 (0.02)	3 (0.10)	6 (0.22)	7 (0.28)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
670 to 1676 (14.0 to 35.0)	3500	2.20	11 (0.42)	11 (0.45)	11 (0.45)	4 (0.17)	16 (0.63)	4 (0.16)
0 to 2011 (0 to 42.0)	300	2.90	11 (0.45)	12 (0.49)	12 (0.48)	5 (0.18)	17 (0.65)	5 (0.19)
1676 to 2681 (35.0 to 56.0)	600	2.20	12 (0.49)	14 (0.55)	13 (0.52)	5 (0.21)	17 (0.68)	5 (0.21)
1005 to 3352 (21.0 to 70.0)	100	2.80	13 (0.51)	15 (0.58)	14 (0.55)	6 (0.22)	18 (0.72)	6 (0.22)
			Permanent Set mm (inches)					
			7 (0.29)	7 (0.29)	7 (0.27)	2 (0.07)	10 (0.39)	5 (0.21)

22.0 Test Results (E9): (Continued)

ASTM E 1886, *Air Pressure Cycling*
Design Pressure: ±3352 Pa (±70.0 psf)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#1	#2	#3	#4	#5	#6
1005 to 3352 (21.0 to 70.0)	50	2.70	5 (0.21)	13 (0.53)	11 (0.43)	14 (0.54)	20 (0.80)	25 (0.97)
1676 to 2681 (35.0 to 56.0)	1050	2.10	5 (0.19)	11 (0.44)	9 (0.37)	11 (0.43)	16 (0.63)	20 (0.77)
0 to 2011 (0 to 42.0)	50	2.00	4 (0.17)	10 (0.38)	8 (0.33)	10 (0.41)	15 (0.59)	19 (0.74)
670 to 1676 (14.0 to 35.0)	3350	2.20	4 (0.15)	9 (0.36)	7 (0.29)	9 (0.36)	10 (0.41)	17 (0.65)
			Permanent Set mm (inches)					
			5 (0.20)	5 (0.21)	7 (0.27)	6 (0.22)	6 (0.24)	8 (0.31)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inches)					
			#7	#8	#9	#10	#11	#12
1005 to 3352 (21.0 to 70.0)	50	2.70	24 (0.96)	25 (0.98)	23 (0.92)	11 (0.45)	33 (1.28)	12 (0.48)
1676 to 2681 (35.0 to 56.0)	1050	2.10	19 (0.76)	20 (0.77)	19 (0.73)	10 (0.41)	26 (1.03)	9 (0.37)
0 to 2011 (0 to 42.0)	50	2.00	19 (0.73)	19 (0.74)	18 (0.69)	10 (0.39)	25 (0.98)	8 (0.33)
670 to 1676 (14.0 to 35.0)	3350	2.20	15 (0.60)	16 (0.62)	15 (0.59)	10 (0.38)	20 (0.80)	8 (0.31)
			Permanent Set mm (inches)					
			7 (0.27)	7 (0.27)	7 (0.28)	9 (0.37)	10 (0.38)	6 (0.25)

***Observations**: No additional damage or deglazing was observed.*

Result: Pass

***Note**: See Architectural Testing Sketch #15 for indicator locations.*
***General Note**: Upon completion of testing, the specimens met the requirements of Section 7 of ASTM E 1996.*

8.0 Test Equipment:

Cannon: Constructed from steel piping utilizing compressed air to propel the missile

Missile: 2x4 Southern Pine

Timing Device: Electronic Beam Type

Cycling Mechanism: Computer controlled centrifugal blower with electronic pressure measuring device

Deflection Measuring Device: Linear transducers, and 1" dial indicators

This report is reissued in the name of C.R. Laurence Co., Inc. through written authorization by Oldcastle BuildingEnvelope® to whom the original report was rendered. The original Oldcastle BuildingEnvelope® report No. is A8744.01-801-18.

Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

The service life of this report will cease on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

Digitally Signed by: Andy Cost

Andy Cost
Laboratory Manager

Digitally Signed by: Tyler Westerling

Tyler Westerling, P.E.
Senior Project Engineer

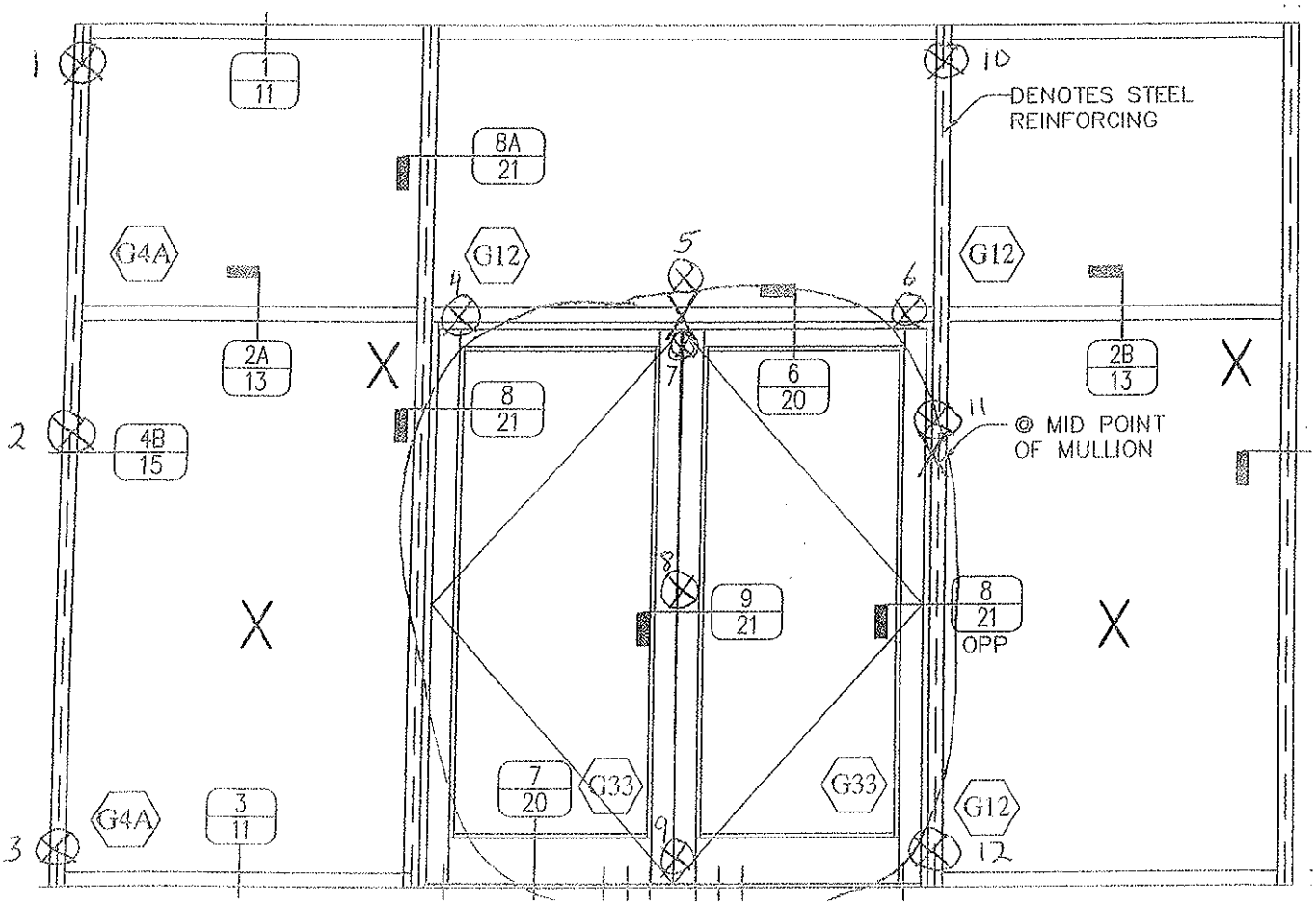
AC:tw/cm

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Sketches (15)
Appendix-B: Drawings (39)

Appendix A

Sketches

TEST UNIT E1

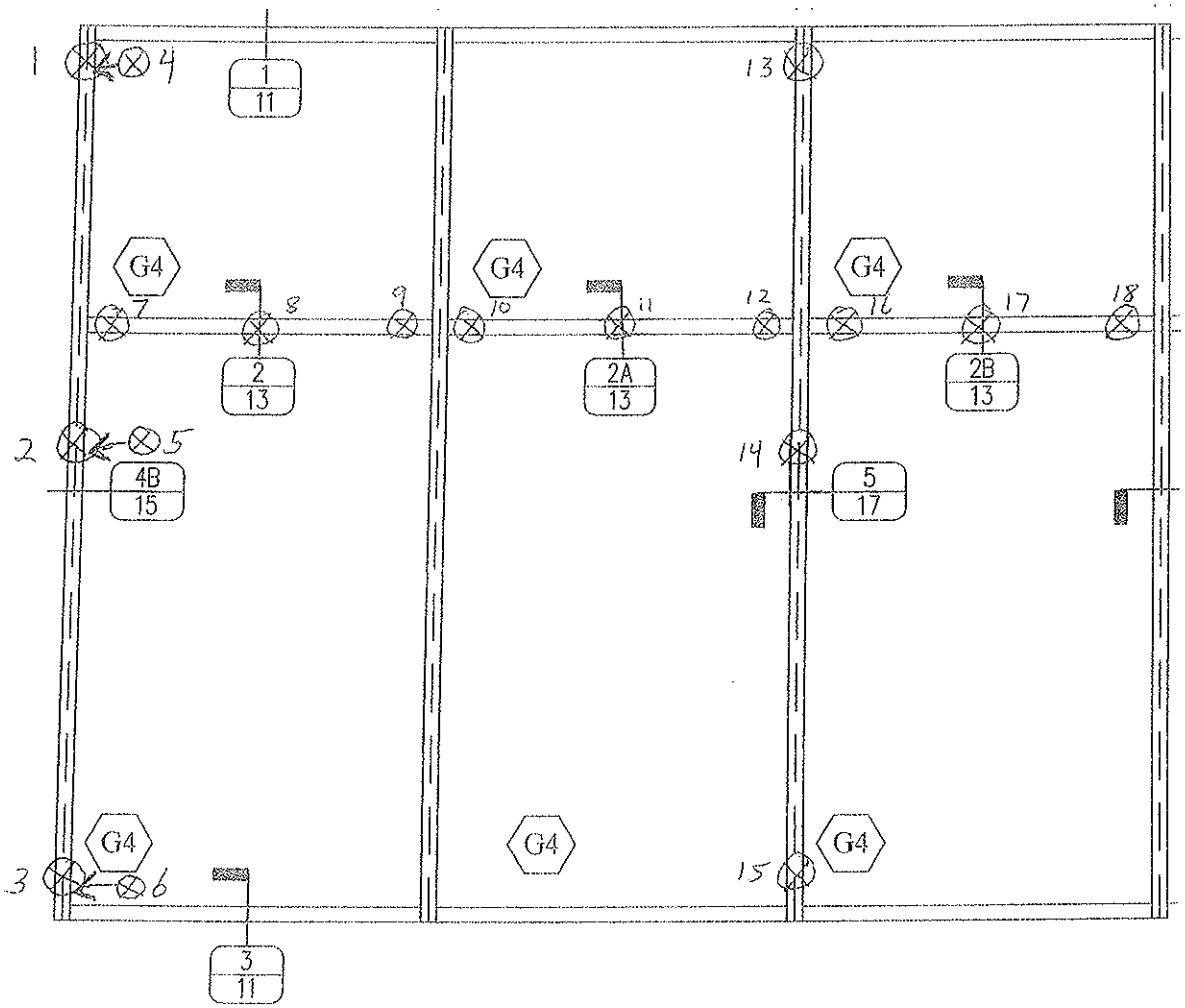


Sketch #1

⊗ = Indicator Locations

X = Impact Locations

TEST UNIT E2

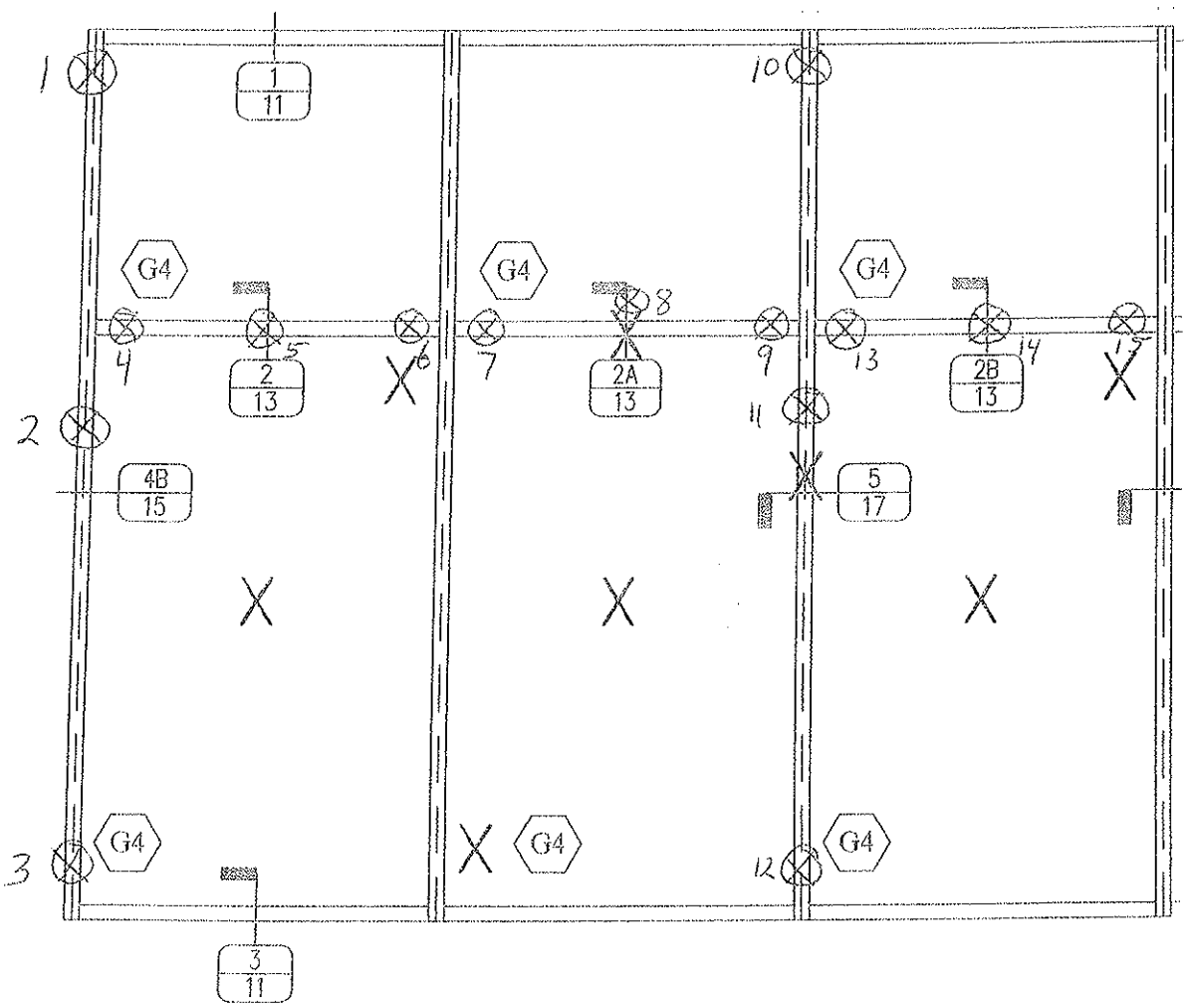


Sketch #2

⊗ = Indicator Locations

Note: Indicator readings 4-6 were taken on the lateral face of the jamb

TEST UNIT E2

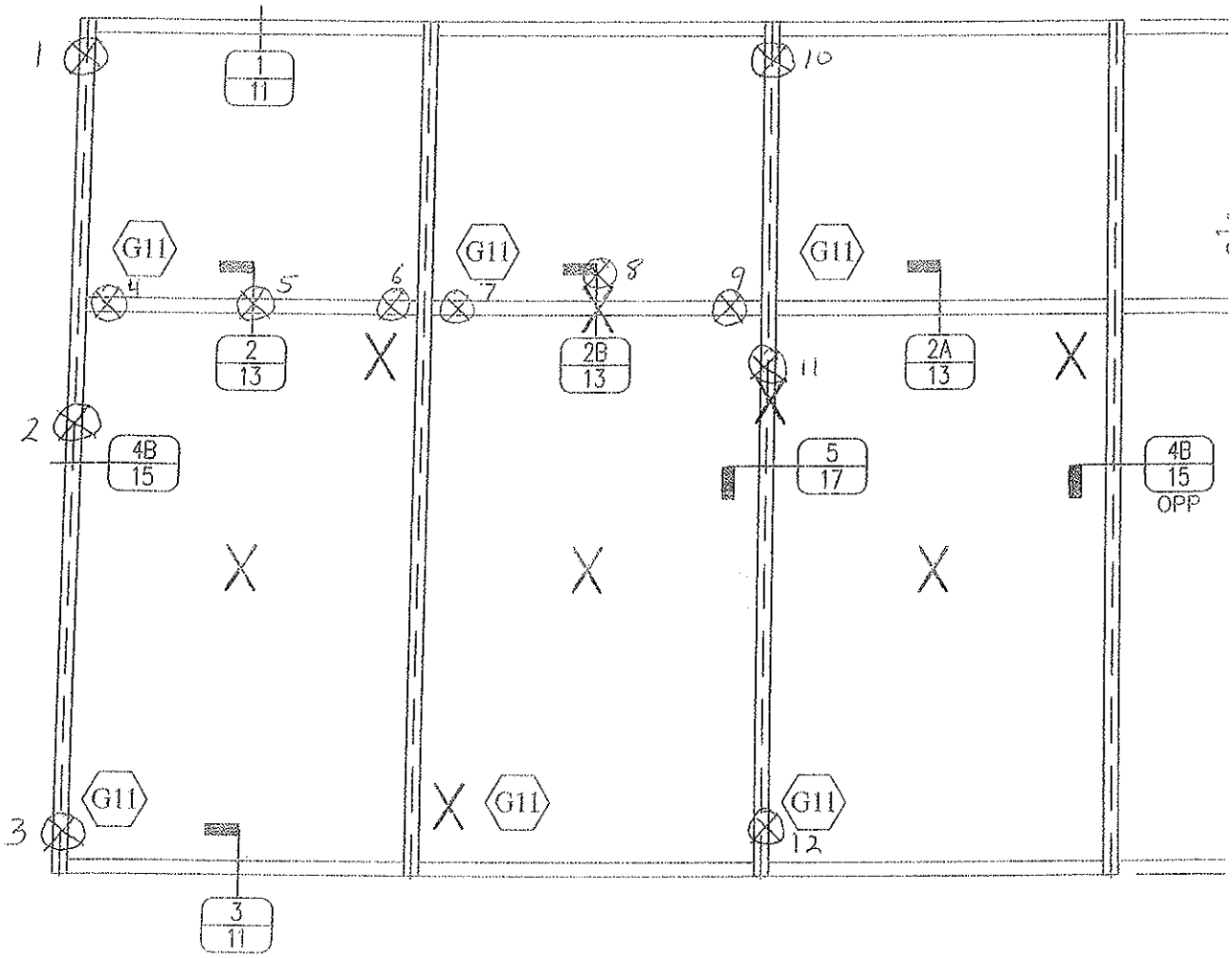


Sketch #3

= Indicator Locations

= Impact Locations

TEST UNIT E3

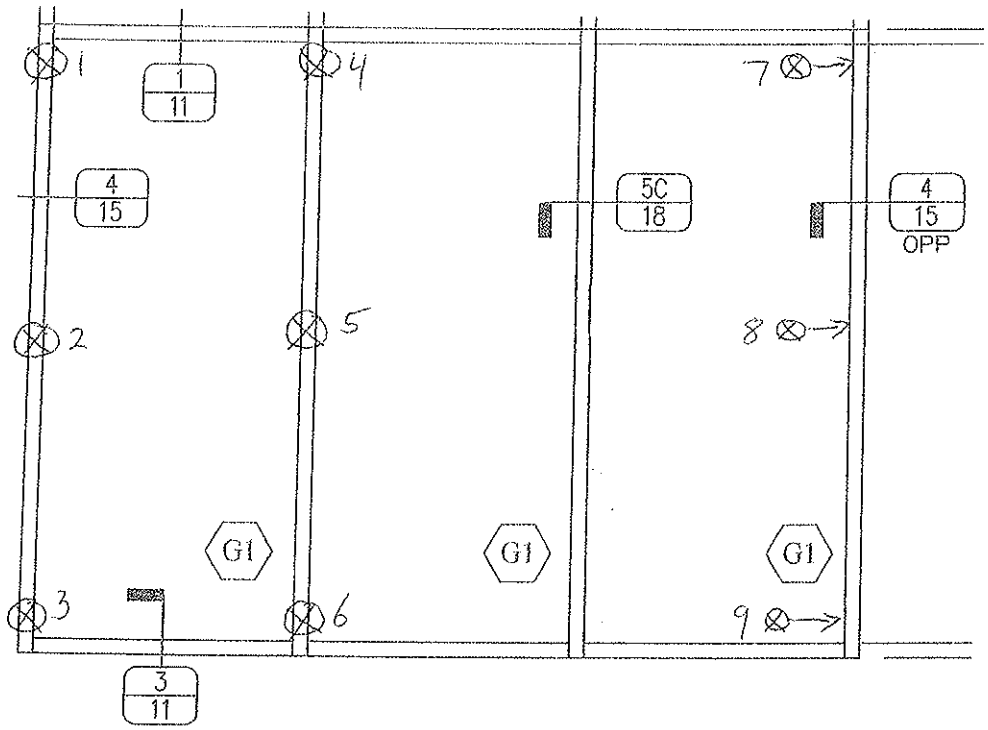


Sketch #4

⊗ = Indicator Locations

X = Impact Locations

TEST UNIT E4

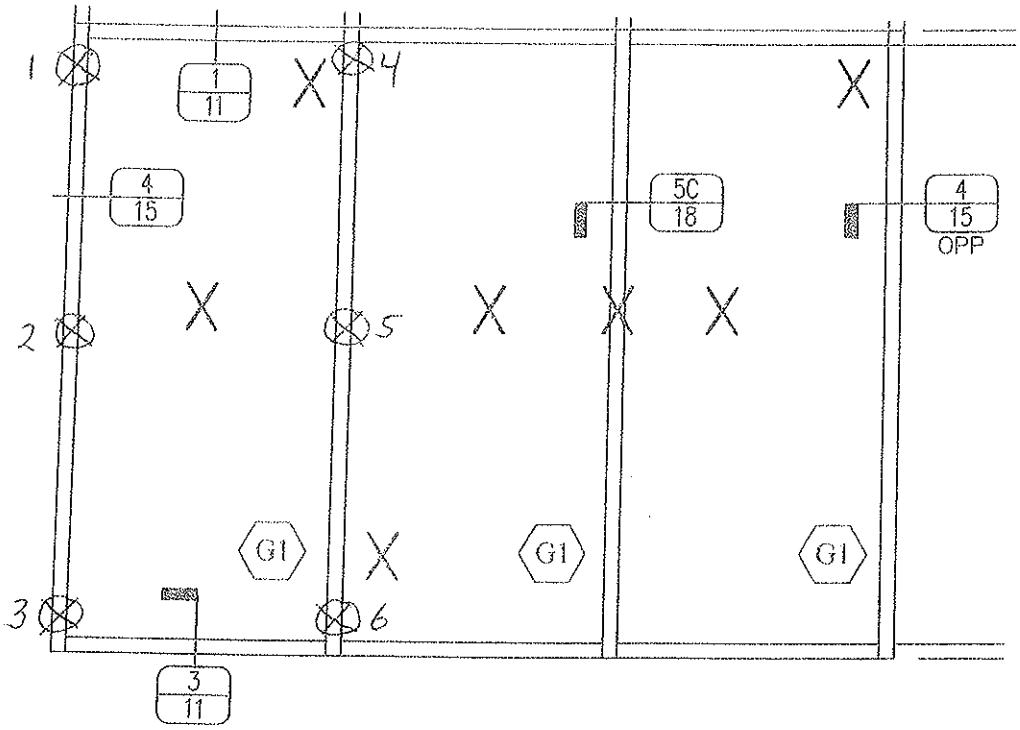


Sketch #5

⊗ = Indicator Locations

Note: Indicator readings 7-9 were taken on the lateral face of the jamb

TEST UNIT E4

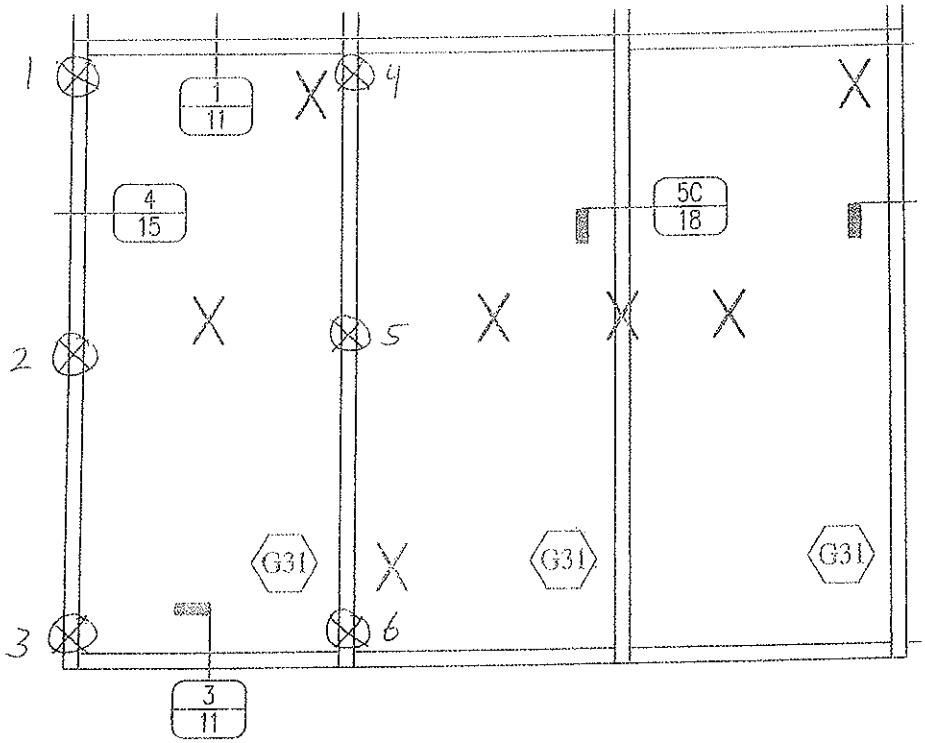


Sketch #6

⊗ = Indicator Locations

× = Impact Locations

TEST UNIT E5

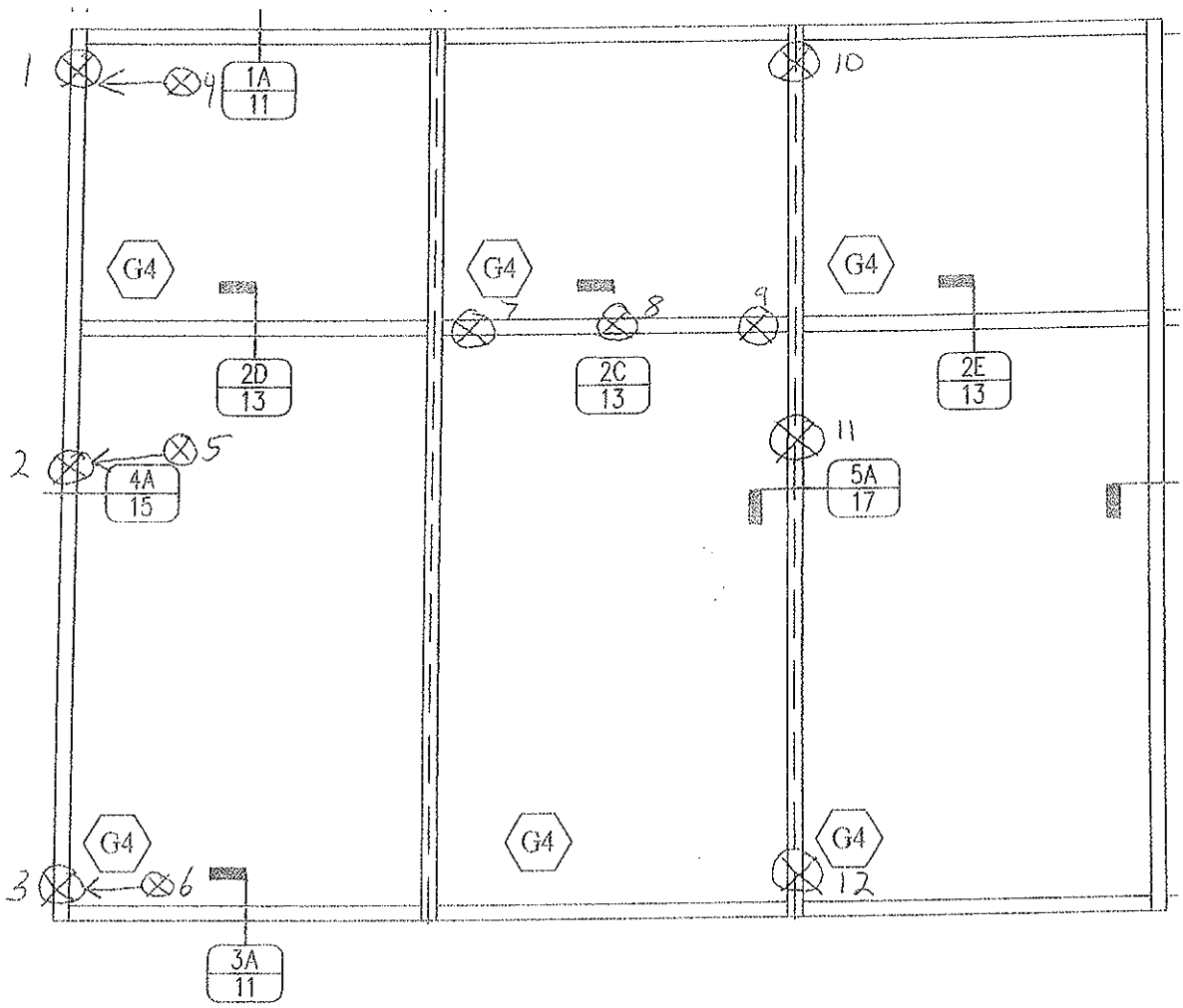


Sketch #7

⊗ = Indicator Locations

X = Impact Locations

TEST UNIT E6

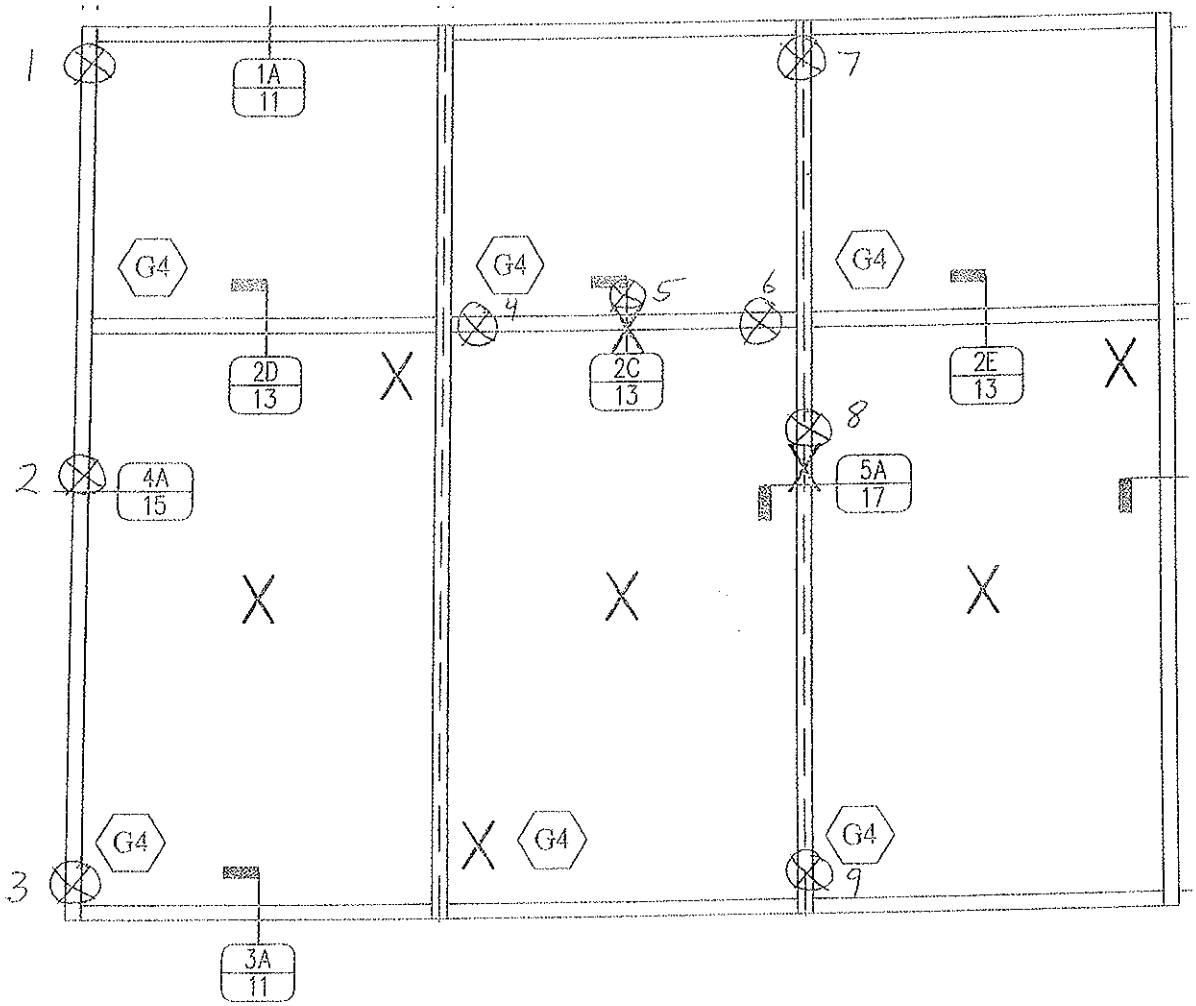


Sketch #8

⊗ = Indicator Locations

Note: Indicator readings 4-6 were taken on the lateral face of the jamb

TEST UNIT E6

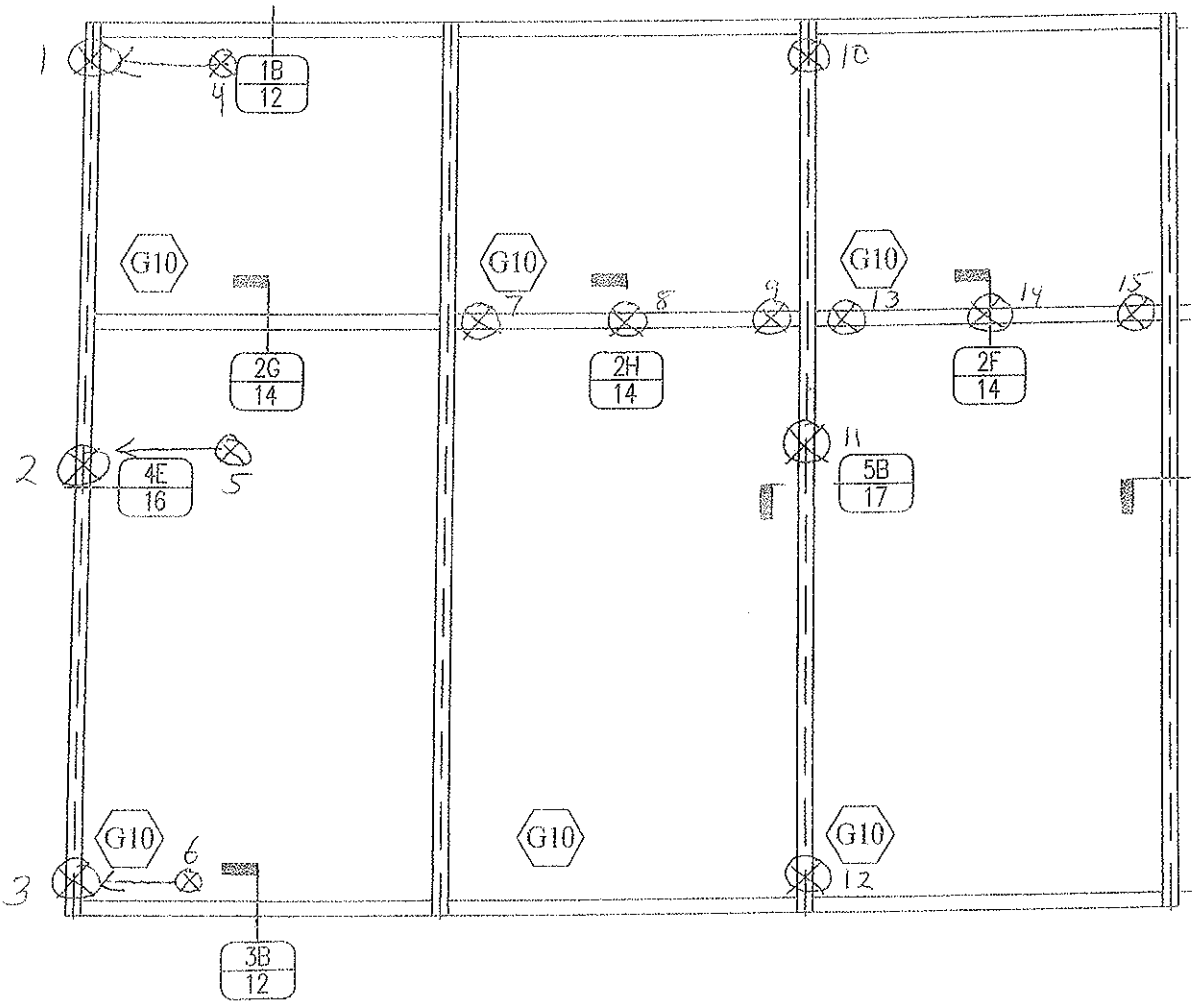


Sketch #9

= Indicator Locations

= Impact Locations

TEST UNIT E7

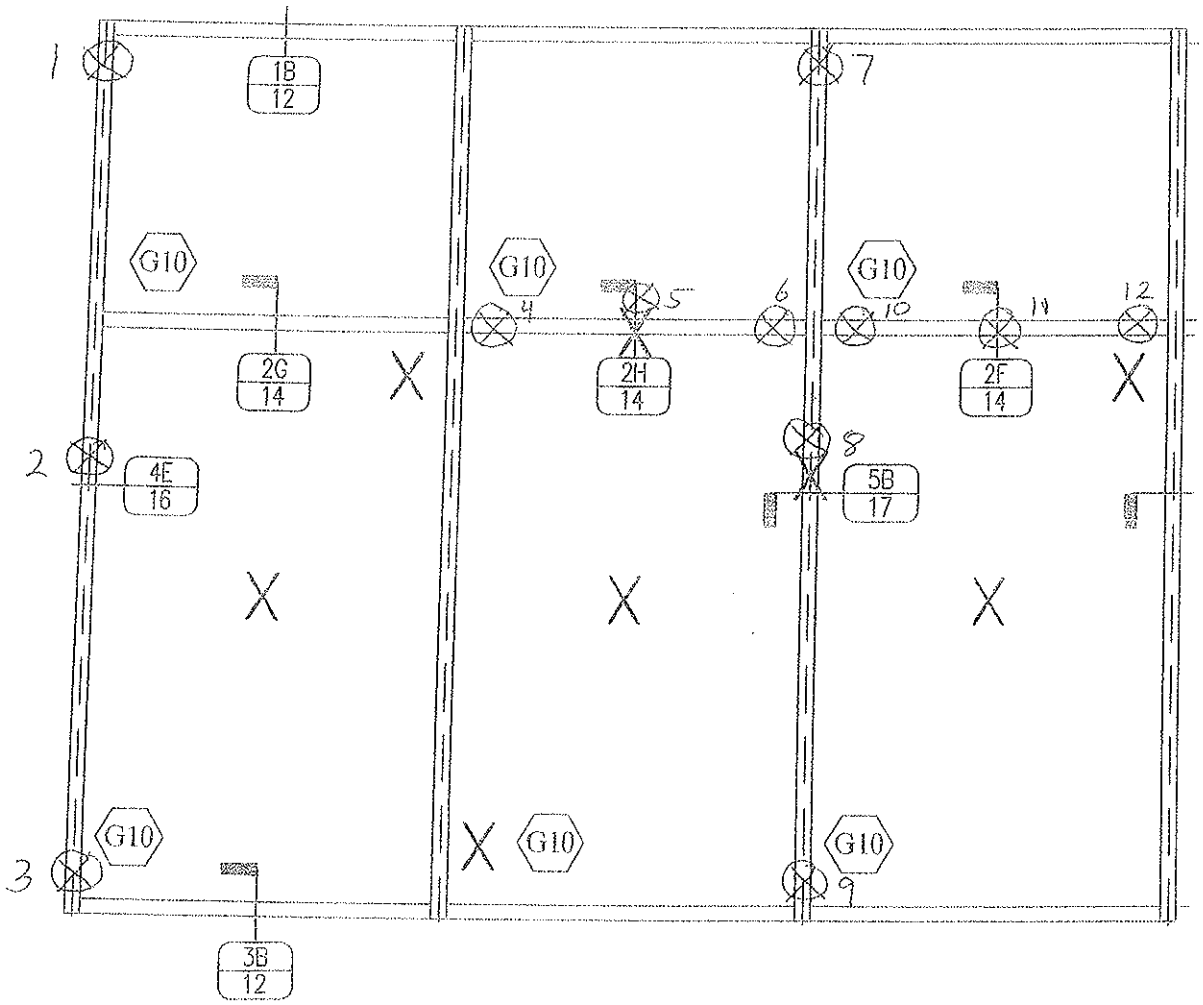


Sketch #10

⊗ = Indicator Locations

Note: Indicator readings 4-6 were taken on the lateral face of the jamb

TEST UNIT E7

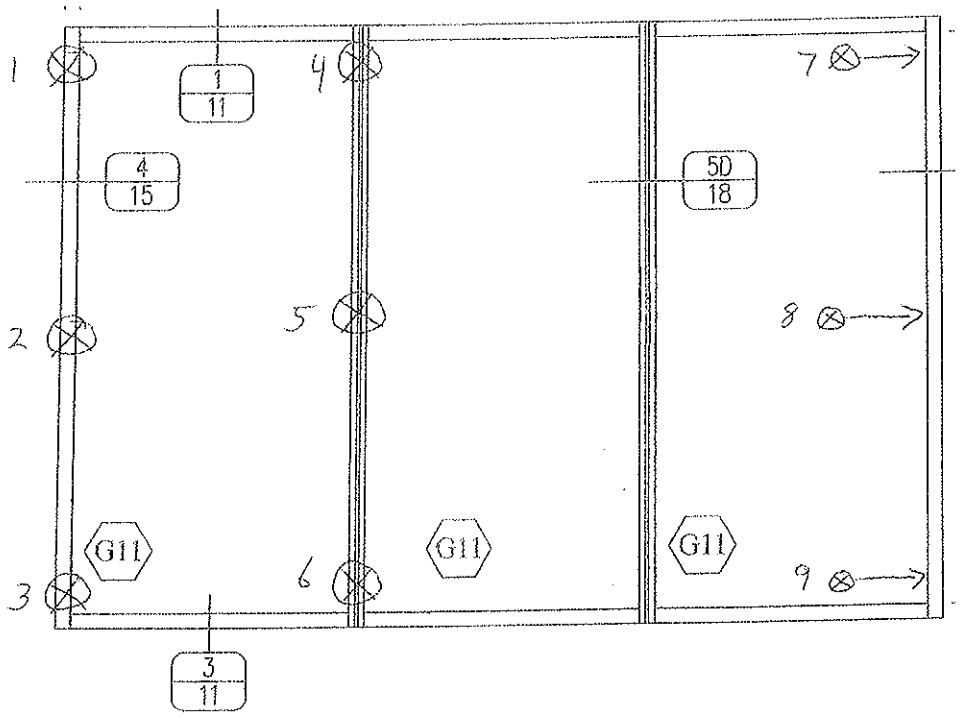


Sketch #11

= Indicator Locations

= Impact Locations

TEST UNIT E8

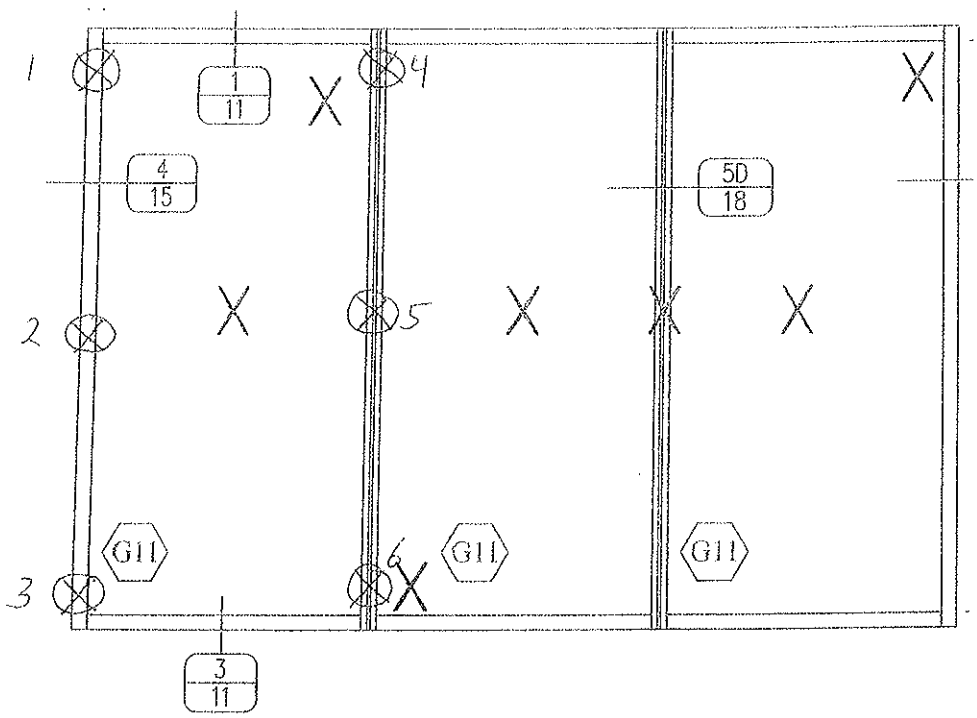


Sketch #12

⊗ = Indicator Locations

Note: Indicator readings 7-9 were taken on the lateral face of the jamb

TEST UNIT E8

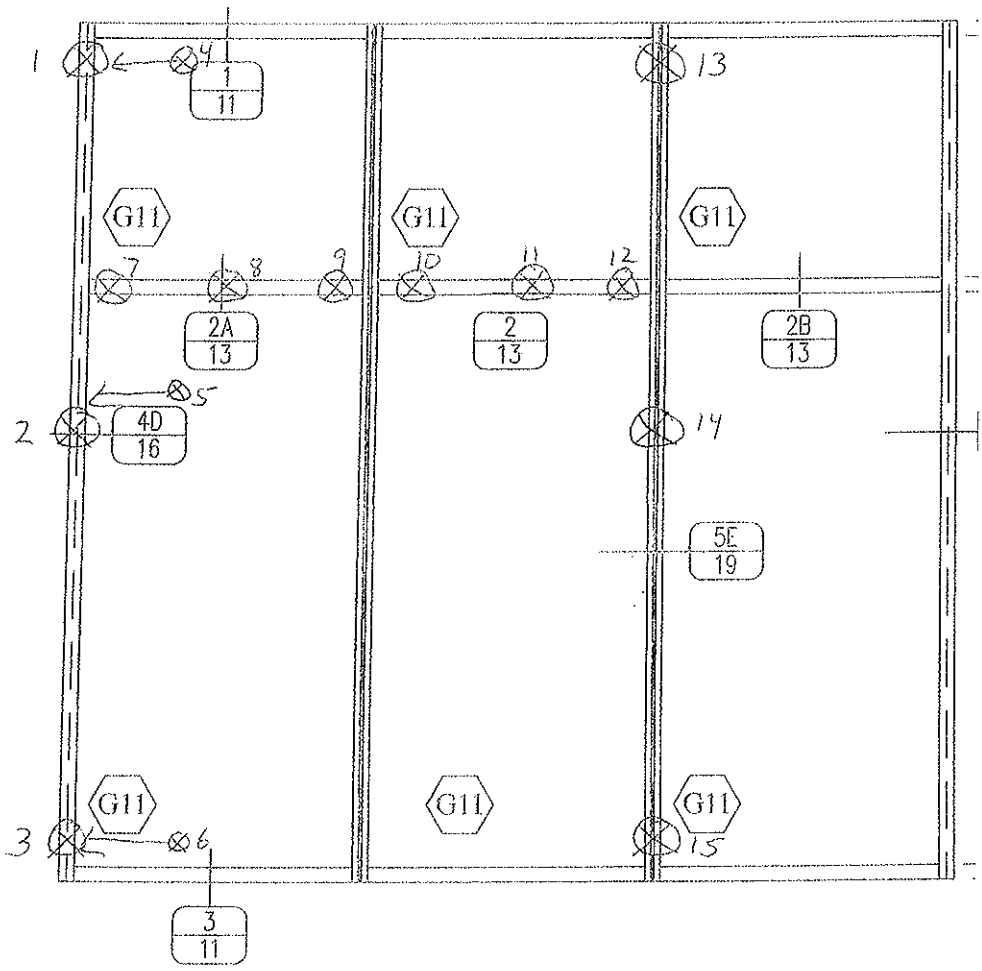


Sketch #13

⊗ = Indicator Locations

X = Impact Locations

TEST UNIT E9

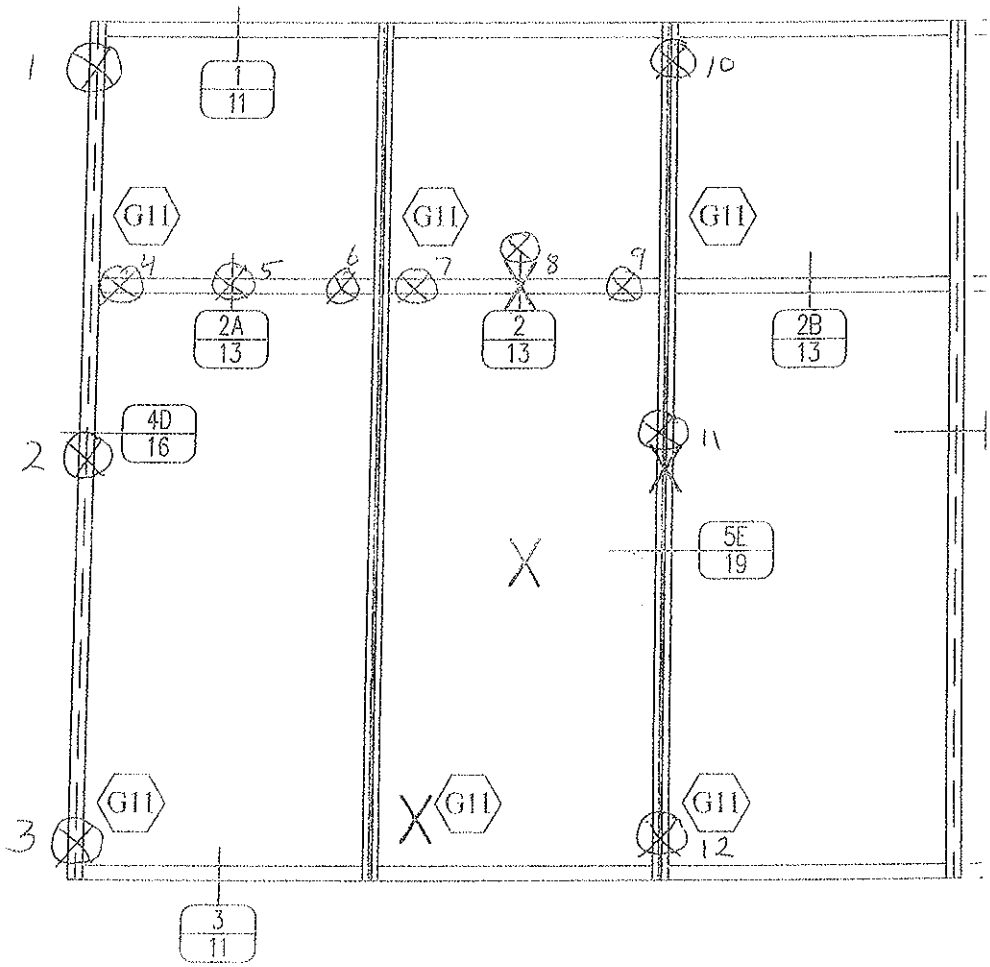


Sketch #14

⊗ = Indicator Locations

Note: Indicator readings 4-6 were taken on the lateral face of the jamb

TEST UNIT E9



Sketch #15

= Indicator Locations

= Impact Locations

Appendix B

Drawings

Test sample complies with details shown herein. Any deviations are noted in the test report drawings.

Report#: a8744.04-801-18

Date: 09/15/16 By: AC

TEST DRAWINGS
STORM WALL XL CURTAIN WALL SYSTEM
SINGLE SPAN ELEVATIONS
FOR USE IN HURRICANE ZONES REQUIRING LARGE MISSILE IMPACT PROTECTION

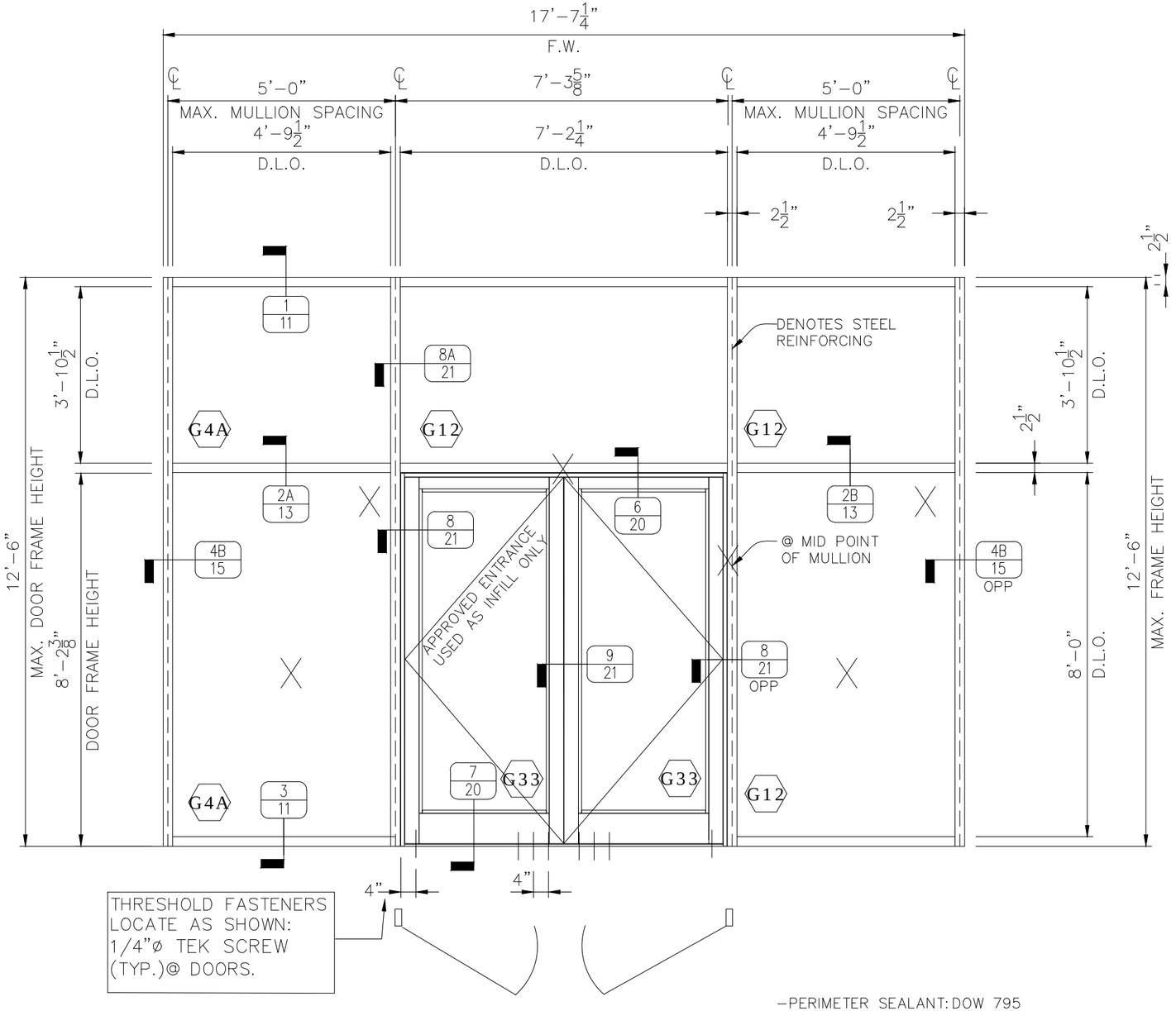
REVISIONS

C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

Job Name: TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611



THRESHOLD FASTENERS LOCATE AS SHOWN: 1/4"ø TEK SCREW (TYP.)@ DOORS.

- PERIMETER SEALANT: DOW 795
- GLAZING POCKET SEALANT: DOW 995
- JAMB ANCHORING DETAILS: SHEET 25
- DOOR JAMB ANCHORING SILL DETAILS: SHEET 26
- DOOR JAMB ANCHORING HEAD DETAILS: SHEET 29

GENERAL TEST INFORMATION

ELEVATION E1 CAPTURED MULLION –ENTRANCE– WITH STEEL FOR ENTRANCE DOORS, IN STEEL BUCK FRAME.

X = IMPACT LOCATIONS

X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +70/–80 PSF

TAS 201–203, ASTM E1886, E1996

TESTING

IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	MANUFACTURER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G4A	1 5/16" SENTRY GLASS INSULATED GLASS CONSISTING OF 1/4"TEMP 1/2" AIR SPACE –1/4" H.S. 0.090 SENTRYGLAS INTERLAYER – 1/4" H.S.	SENTRY GLASS	57 1/2" X 96"	38.3
G12	1 5/16" STORMGLASS INSULATED GLASS CONSISTING OF 1/4" TEMP– 1/2" AIR SPACE –1/4" H.S. 0.075 INTERLAYER – 1/4" H.S.	VANCEVA STORMGLASS	57 1/2" X 96"	38.3
G33	9/16" STORMGLASS LAMINATED GLASS CONSISTING OF 1/4" HS – 0.075 INTERLAYER – 1/4" H.S.	VANCEVA STORMGLASS	32 11/16" X 83 15/16"	19.05

APPROVAL STAMP

Intertek

Architectural Testing

Test sample complies with details shown herein. Any deviations are noted in the test report drawings.

Report#: a8744.04-801-18

Date: 09/15/16 By: AC

REVISIONS

CERTIFIED ISO9000 COMPANY

C.R.LAURENCE CO.

ARCHITECTURAL PRODUCTS

2100 E. 38TH Street, Los Angeles, CA 90058

www.crlaurence.com

Job Name: TEST DRAWINGS STORM WALL XL CURTAIN WALL PROTOCALS:TAS 201–202–203 ASTM E1886–E1996

Glazing Contractor:

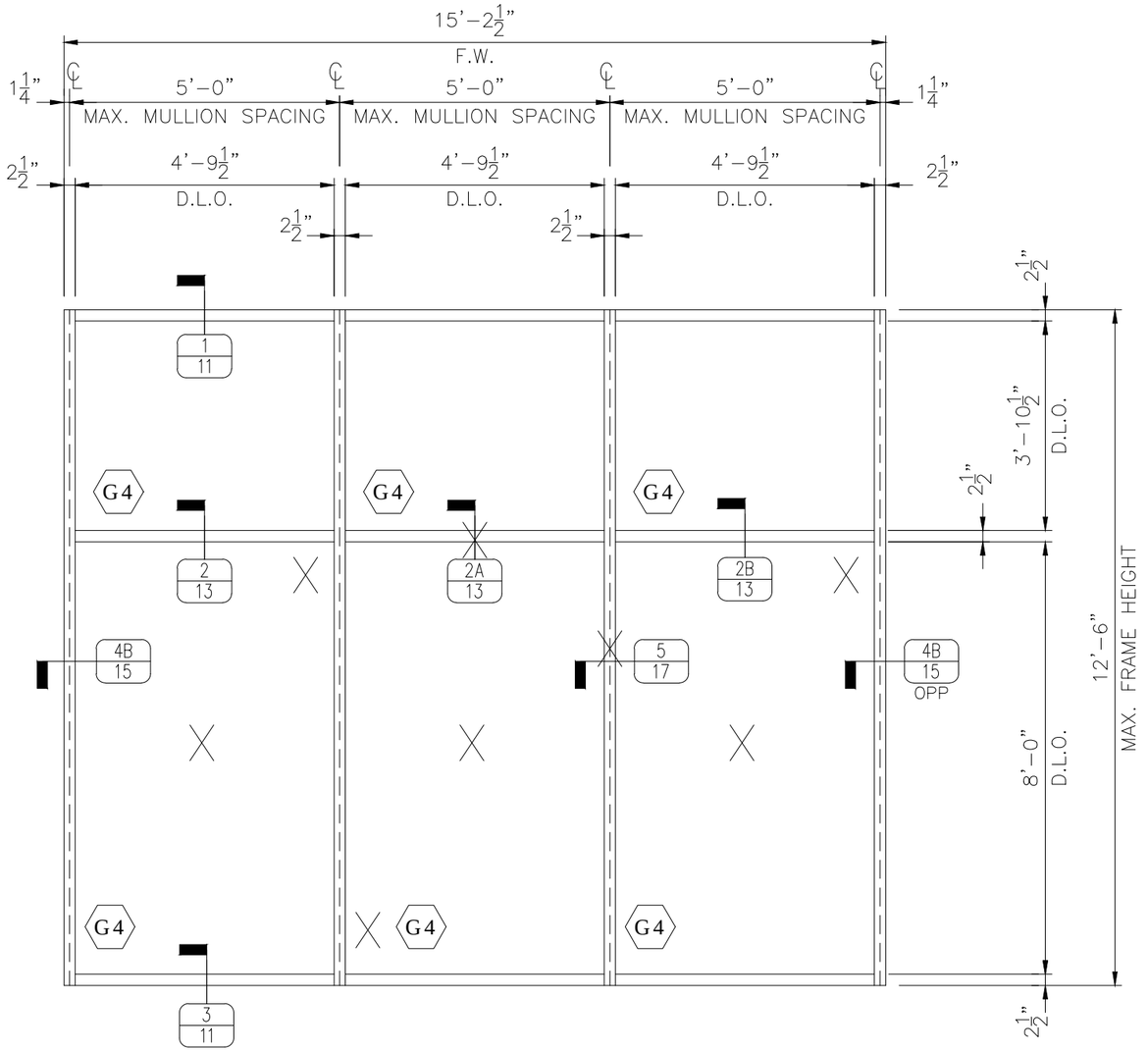
DATE: 7.27.2016

DRAWN BY: GDO

CHECKED BY: XX

SCALE: AS SHOWN

JOB #: PTC581611



-PERIMETER SEALANT: GE SCS 2000
-GLAZING POCKET SEALANT: GE SSG 4600 CTG
-JAMB ANCHORING DETAILS: SHEET 25
-MULLION ANCHORING DETAILS: SHEET 29

GENERAL TEST INFORMATION

ELEVATION E2 CAPTURED MULLION -LONG SPAN- with STEEL REINFORCEMENT IN STEEL BUCK FRAME.

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +100/-100 PSF

TAS 201-202-203, ASTM E1886, E1996

TESTING
AIR, WATER, STRUCTURAL, IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G4	1 5/16" SENTRYGLASS INSULATED GLASS CONSISTING OF 1/4" HS - 1/2" AIR SPACE - 1/4" H.S. 0.090 SENTRYGLASS INTERLAYER - 1/4" H.S.	SENTRY GLASS	57 1/2" X 96"	38.33

Intertek Architectural Testing

Test sample complies with details shown herein. Any deviations are noted in the test report drawings.

Report#: a8744.04-801-18

Date: 09/15/16 By: AC

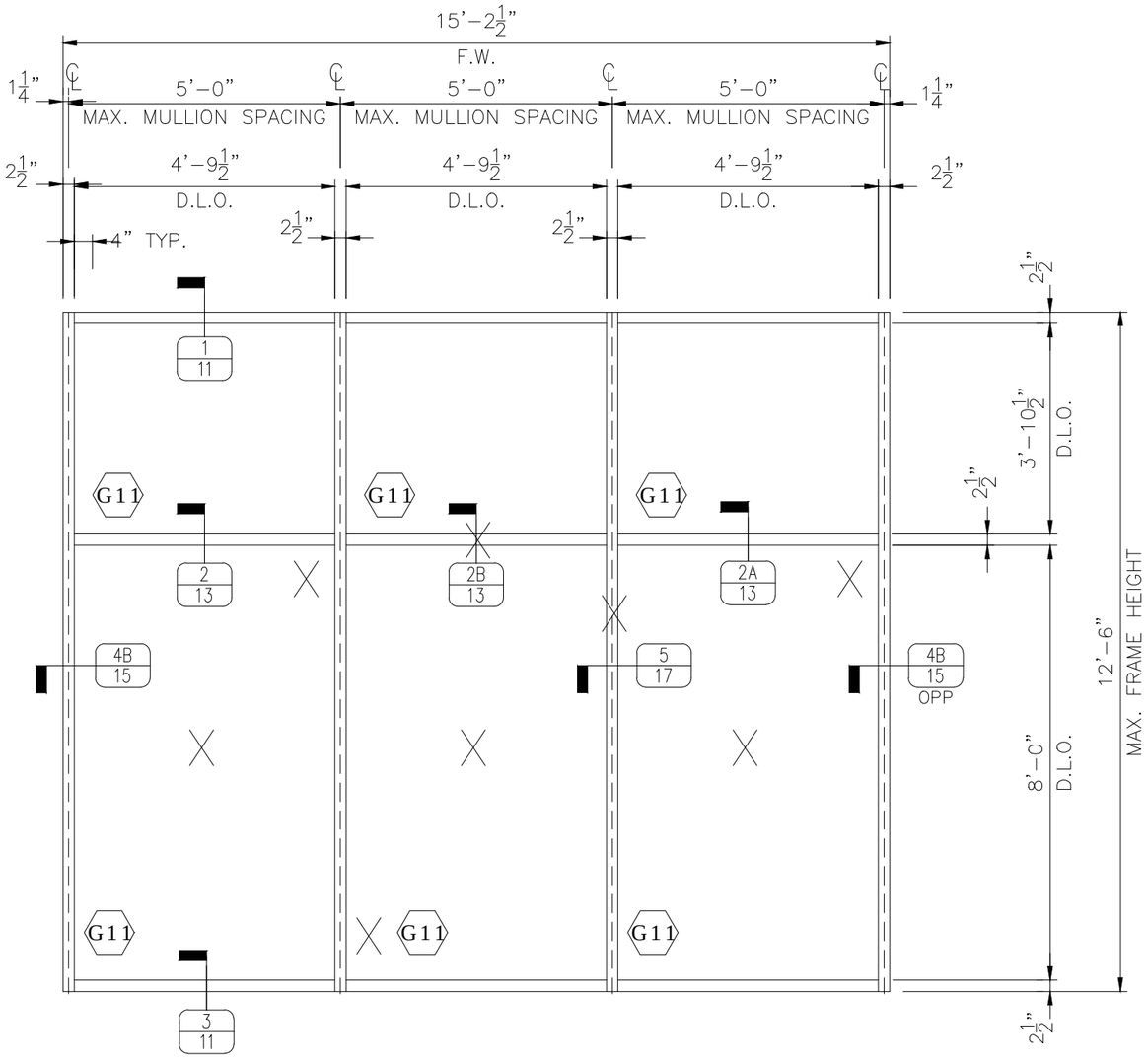
REVISIONS

C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611



-PERIMETER SEALANT: DOW 795
-GLAZING POCKET SEALANT: DOW 995
-JAMB ANCHORING DETAILS: SHEET 25
-MULLION ANCHORING DETAILS: SHEET 29

GENERAL TEST INFORMATION

ELEVATION E3 CAPTURED MULLION -LONG SPAN- WITH STEEL REINFORCEMENT IN STEEL BUCK FRAME.

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +100/-100 PSF

TAS 201-203, ASTM E1886, E1996

TESTING

IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G11	1 5/16" STORMGLASS INSULATED GLASS CONSISTING OF 1/4" HS - 1/2" AIR SPACE - 1/4" H.S. 0.075 VANCEVA/STORGLASS INTERLAYER - 1/4" H.S.	VANCEVA STORMGLASS	57 1/2" X 96"	38.33

Intertek Architectural Testing

Test sample complies with details shown herein. Any deviations are noted in the test report drawings.

Report#: a8744.04-801-18

Date: 09/15/16 By: AC

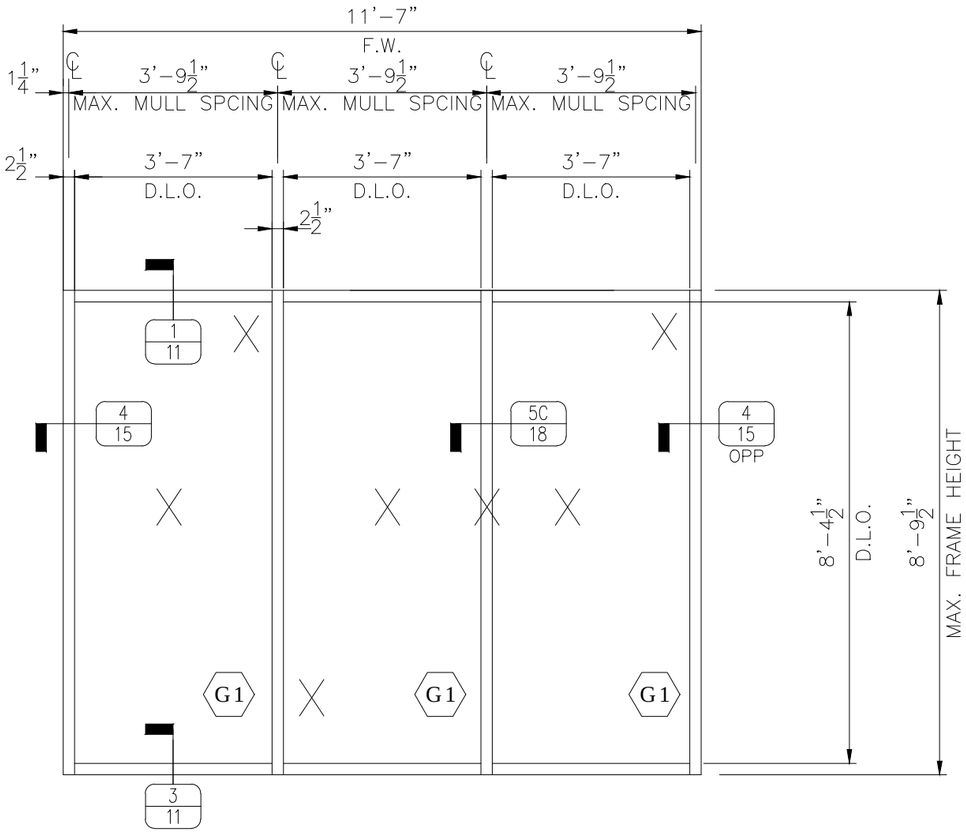
REVISIONS

CERTIFIED ISO9000 COMPANY
C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611



-PERIMETER SEALANT: DOW 795
-GLAZING POCKET SEALANT: DOW 995
-JAMB ANCHORING DETAILS: SHEET 32
-MULLION ANCHORING DETAILS: SHEET 34

GENERAL TEST INFORMATION

ELEVATION E4 CAPTURED MULLION -SHORT SPAN- IN WOOD BUCK FRAME. BUTACITE PVB

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +65/-65 PSF

TAS 201,202, 203, ASTM E1886, E1996

TESTING
STRUCTURAL, IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G1	1 5/16" INSULATED LAMINATED GLASS CONSISTING OF 1/4" HS - 1/2" AIR SPACE - 1/4" H.S. 0.090 PVB INTERLAYER - 1/4" H.S.	BUTACITE	43" X 100 1/2"	30.1

Intertek

Architectural Testing

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ARCHITECTURAL PRODUCTS
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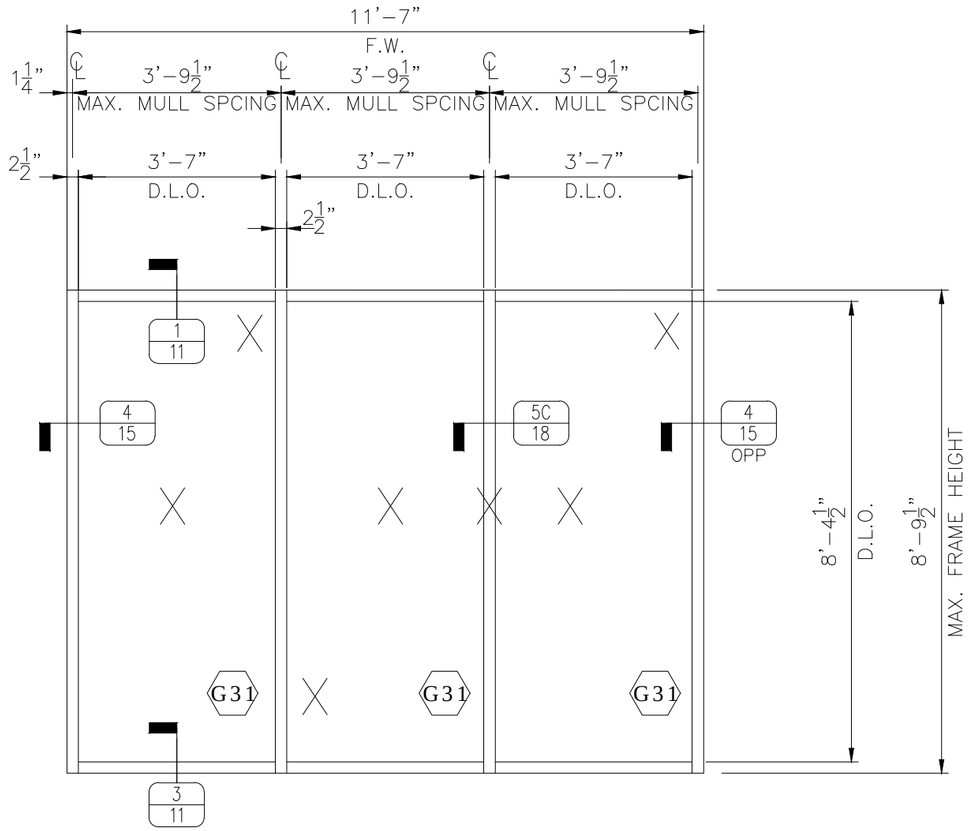
www.crlaurence.com

Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611



–PERIMETER SEALANT: GE SCS 2000
–GLAZING POCKET SEALANT: GE SSG 4600 CTG
–JAMB ANCHORING DETAILS: SHEET 32
–MULLION ANCHORING DETAILS: SHEET 34

GENERAL TEST INFORMATION

ELEVATION E5 CAPTURED MULLION –SHORT SPAN– IN WOOD BUCK FRAME. SAFLEX PVB

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +65/–65 PSF

TAS 201& 203, ASTM E1886, E1996

TESTING

IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G31	1 5/16" STORMGLASS INSULATED GLASS CONSISTING OF 1/4" HS – 1/2" AIR SPACE – 1/4" H.S. 0.090 PVB INTERLAYER – 1/4" H.S.	SAFLEX	43" X 100 1/2"	30.1

Intertek

Architectural Testing

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REVISIONS

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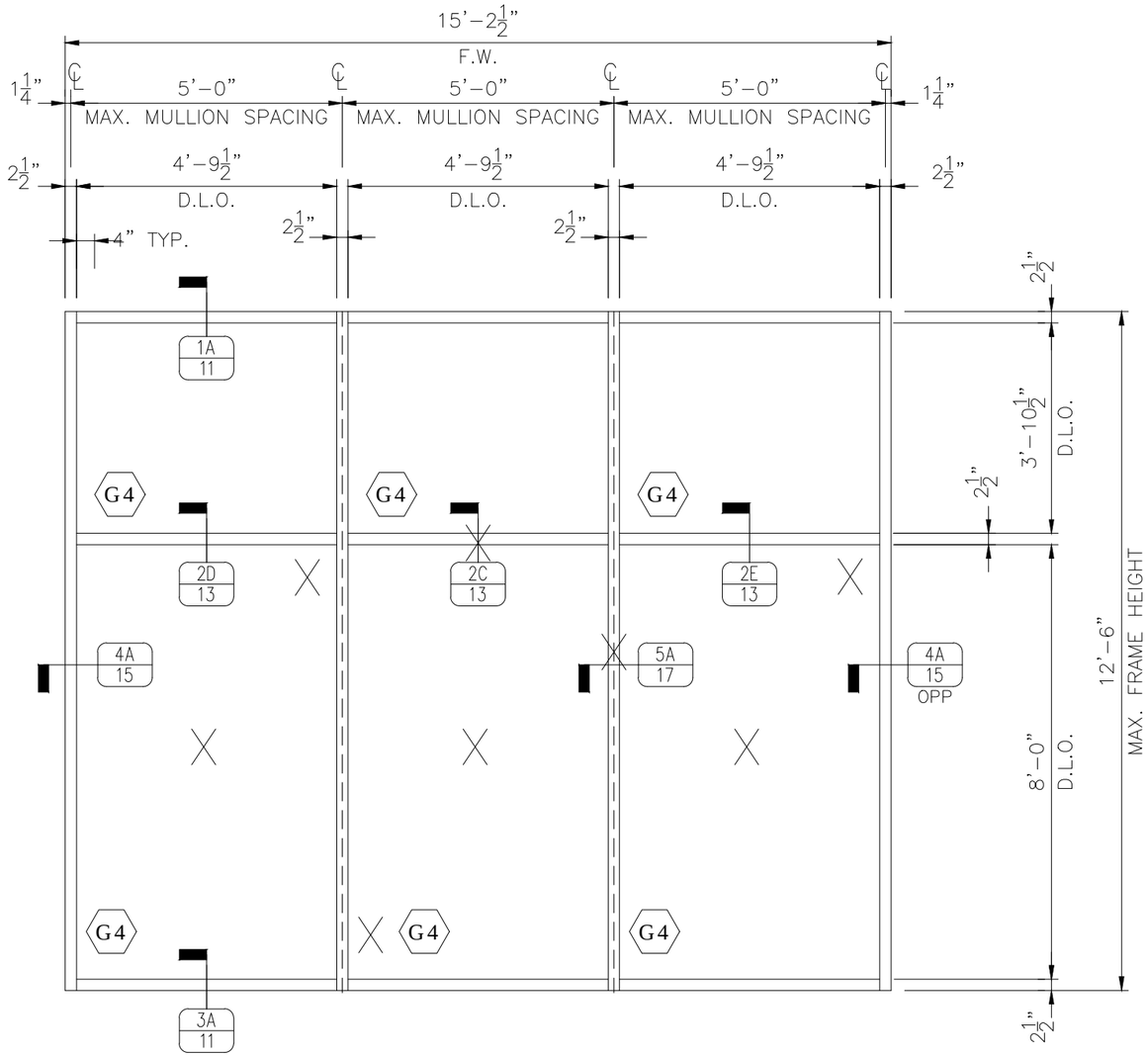
C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201–202–203
ASTM E1886–E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611



-PERIMETER SEALANT: DOW 795
-JAMB ANCHORING DETAILS: SHEET 27
-MULLION ANCHORING DETAILS: SHEET 30

GENERAL TEST INFORMATION

ELEVATION E6 CAPTURED MULLION -LONG SPAN- WITH STEEL REINFORCEMENT IN STEEL BUCK FRAME. DRY GLAZE SENTRY GLASS

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +70/-70 PSF

AIR AND STRUCTURAL

WATER 20 PSF

TAS 201-202-203, ASTM E1886, E1996

TESTING

IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G4	1 5/16" SENTRYGLASS INSULATED GLASS CONSISTING OF 1/4" HS - 1/2" AIR SPACE - 1/4" H.S. 0.090 SENTRYGLASS INTERLAYER - 1/4" H.S.	SENTRY GLASS	57 1/2" X 96"	38.33

APPROVAL STAMP

Intertek

Architectural Testing

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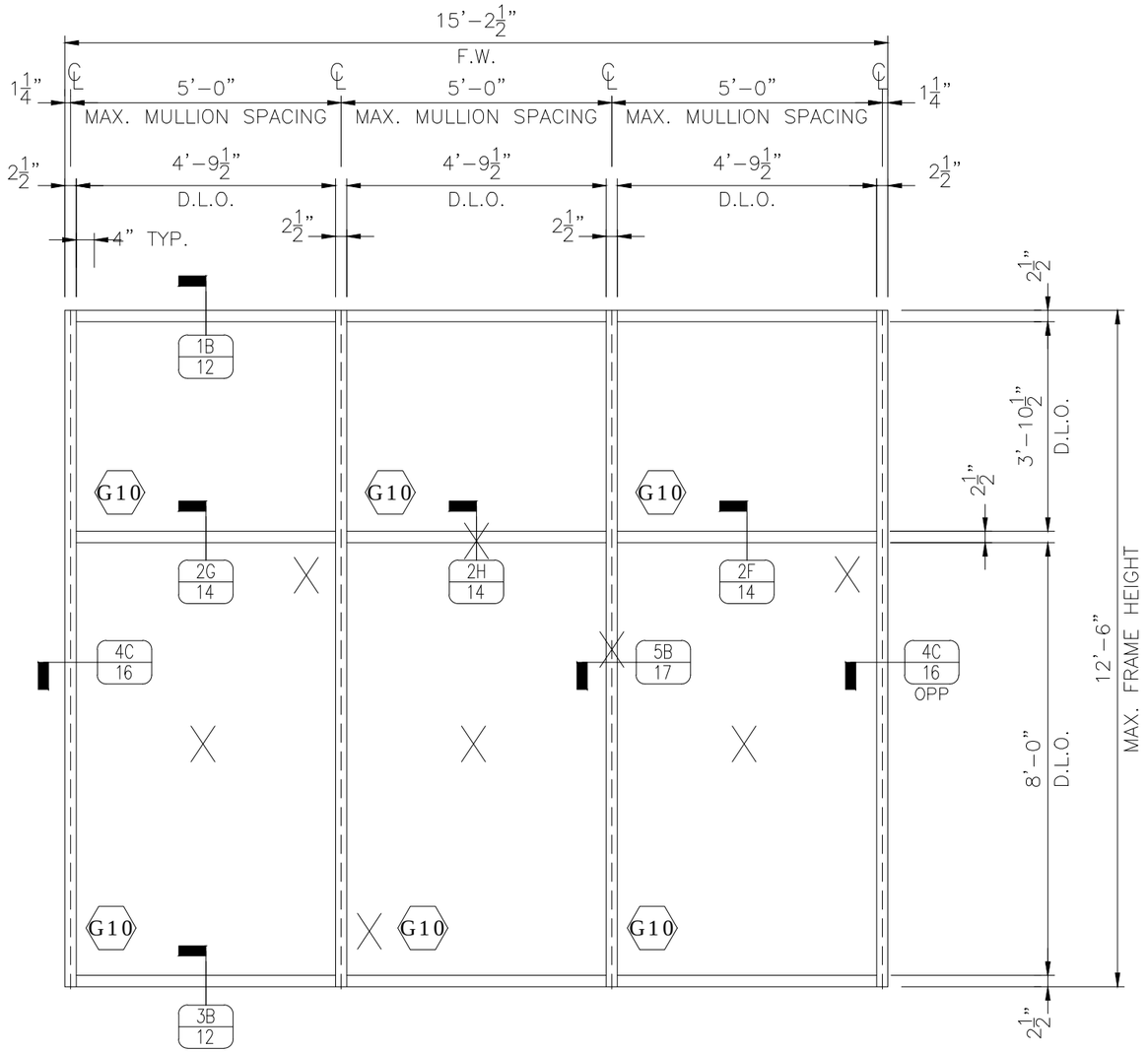
Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611



-PERIMETER SEALANT: GE SCS 2000
-GLAZING POCKET SEALANT: GE SSG 4600 CTG
-JAMB ANCHORING DETAILS: SHEET 28
-MULLION ANCHORING DETAILS: SHEET 31

GENERAL TEST INFORMATION

ELEVATION E7 CAPTURED MULLION -LONG SPAN- WITH STEEL REINFORCEMENT IN STEEL BUCK FRAME. 9/16" INFILL

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +100/-100 PSF

AIR

WATER 20 PSF

TAS 201-202-203, ASTM E1886, E1996

TESTING

AIR, WATER, STRUCTURAL, IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G10	9/16" VANCEVA / STORMGLAS CONSISTING OF 1/4" H.S. 0.090 VANCEVA / STORMGLAS INTERLAYER - 1/4" H.S.	VANCEVA STORMGLAS	57 1/2" X 96"	38.33

Intertek

Architectural Testing

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Job Name:
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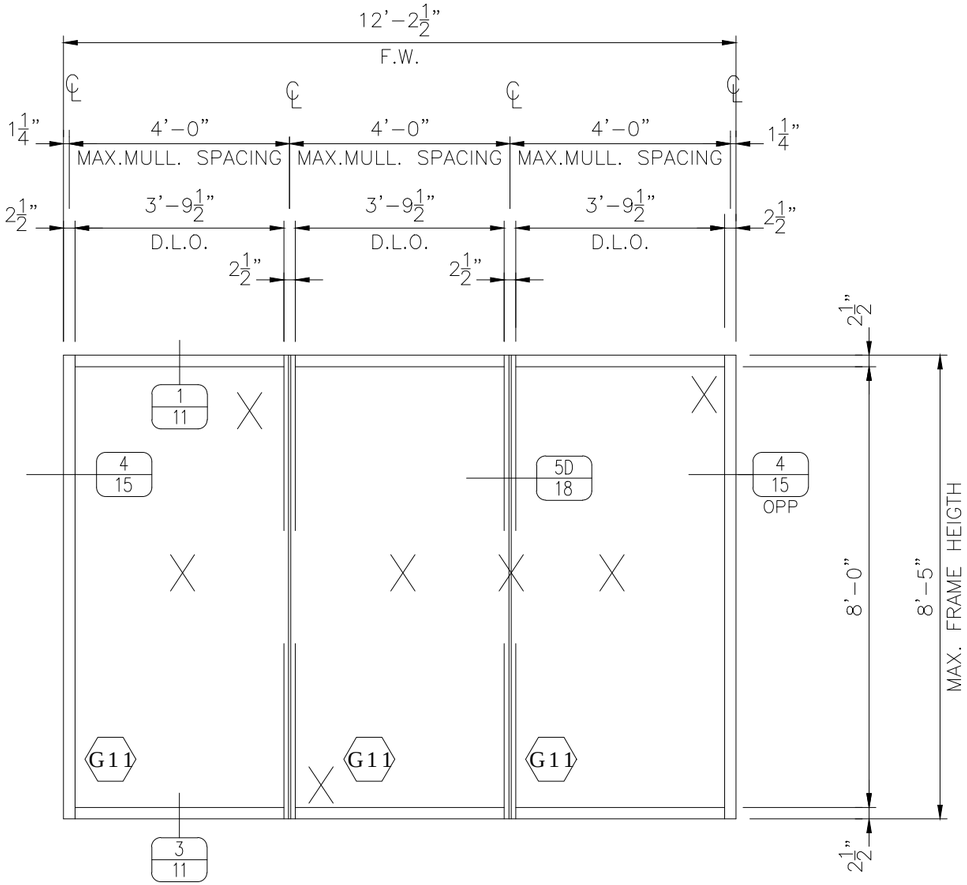
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611



- PERIMETER SEALANT: GE SCS 2000
- GLAZING POCKET SEALANT: GE SSG 4600 CTG
- JAMB ANCHORING DETAILS: SHEET 32
- MULLION ANCHORING DETAILS: SHEET 34

GENERAL TEST INFORMATION

ELEVATION E8 SSG MULLION
–SHORT SPAN– WOOD BUCK FRAME.

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +70/–70 PSF

TAS 201–202–203, ASTM E1886, E1996

TESTING

STRUCTURAL IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G11	1 5/16" STORMGLASS INSULATED GLASS CONSISTING OF 1/4" HS – 1/2" AIR SPACE – 1/4" H.S. 0.075 VANCEVA/STORGLASS INTERLAYER – 1/4" H.S.	VANCEVA STORMGLASS	45 1/2" X 96"	30.33

Intertek

Architectural Testing

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Job Name:
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PROTOCALS:TAS 201–202–203
ASTM E1886–E1996

Glazing Contractor:

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DRAWN BY: GDO
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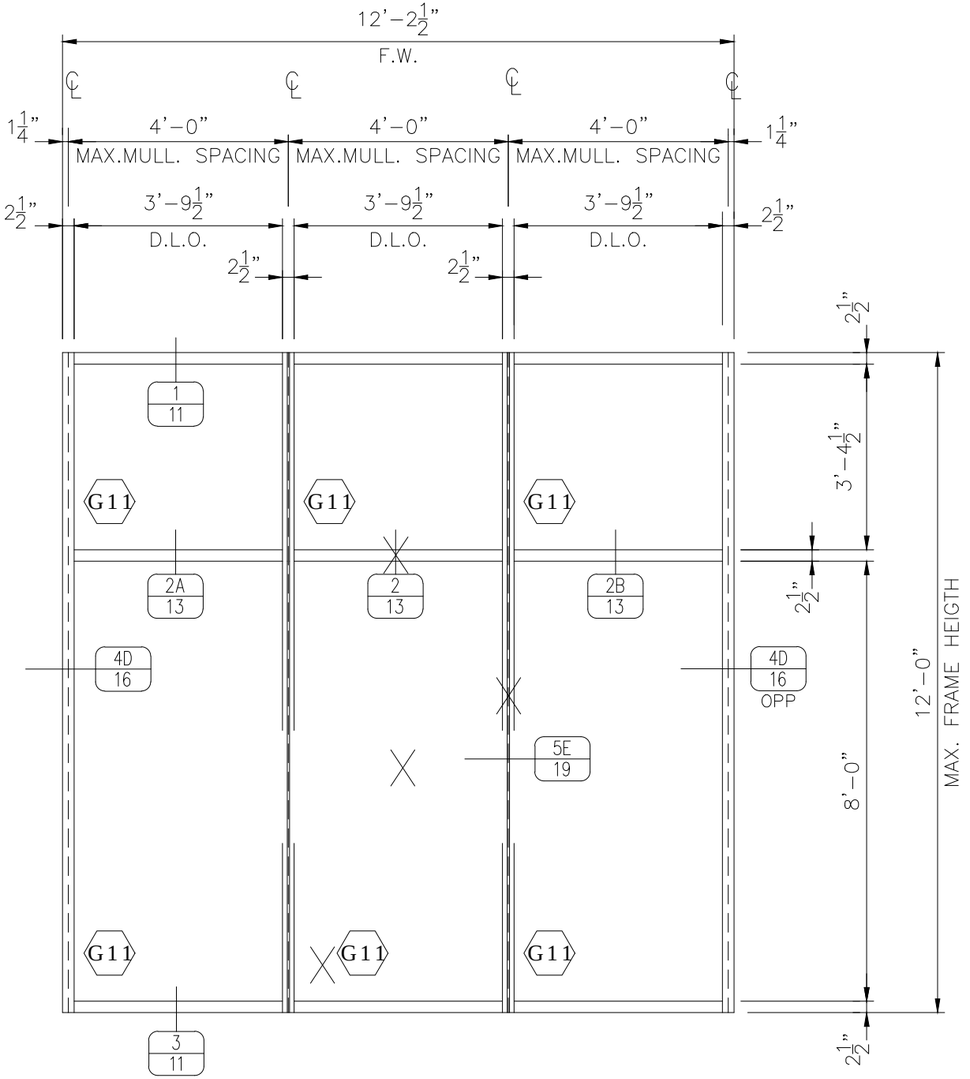
SCALE: AS SHOWN
JOB #: PTC581611



-PERIMETER SEALANT: DOW 795
-GLAZING POCKET SEALANT: DOW 995
-JAMB ANCHORING DETAILS: SHEET 33
-MULLION ANCHORING DETAILS: SHEET 35

GENERAL TEST INFORMATION

ELEVATION E9 SSG MULLION
-LONG SPAN- WITH STEEL
REINFORCEMENT IN WOOD BUCK

X = IMPACT LOCATIONS
X = LARGE MISSILE IMPACT

DESIGN PRESSURE: +70/-70 PSF

STRUCTUAL ONLY

TAS 201-202-203, ASTM E1886, E1996

TESTING

IMPACT & CYCLE

GLAZING SCHEDULE

GLASS LABEL	GLASS COMPOSITION	INTERLAYER NAME	MAXIMUM D.L.O. SIZE	MAXIMUM SQUARE FEET
G11	1 5/16" STORMGLASS INSULATED GLASS CONSISTING OF 1/4" HS - 1/2" AIR SPACE - 1/4" H.S. 0.075 VANCEVA/STORGLASS INTERLAYER - 1/4" H.S.	VANCEVA STORMGLASS	57 1/2" X 96"	38.33

Intertek

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Job Name:
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PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

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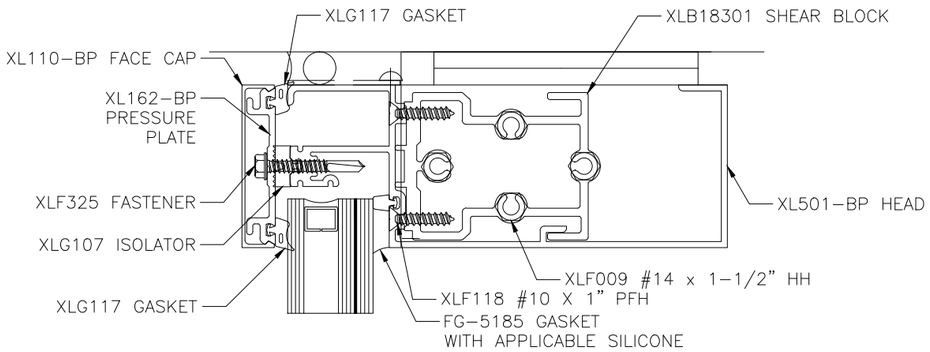
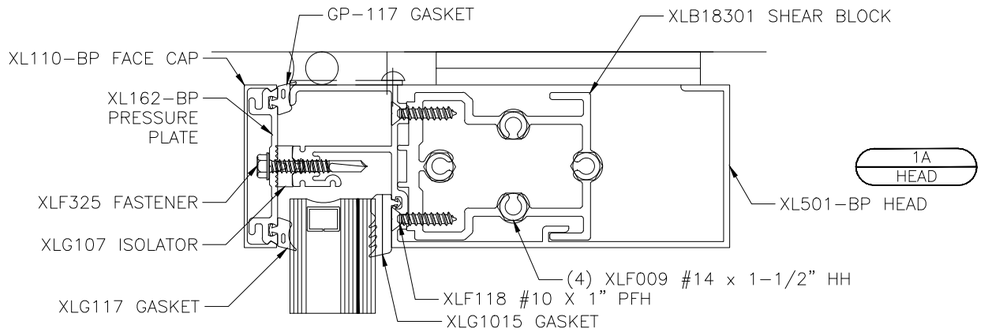
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611

SHT 10 OF 39





Intertek

Architectural Testing

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Report#: a8744.04-801-18

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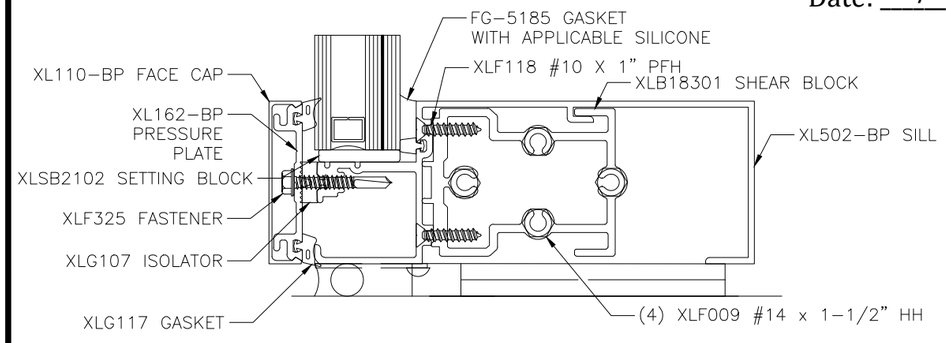

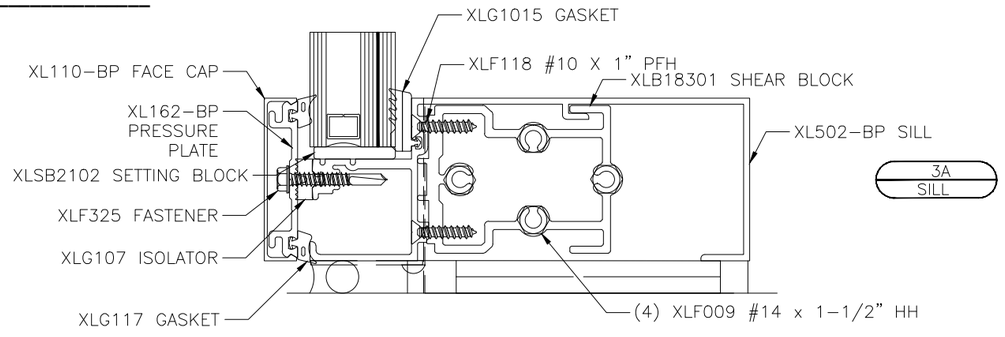

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2100 E. 38TH Street, Los Angeles, CA 90058
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Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201–202–203
ASTM E1886–E1996

Glazing Contractor:

DATE:	7.27.2016
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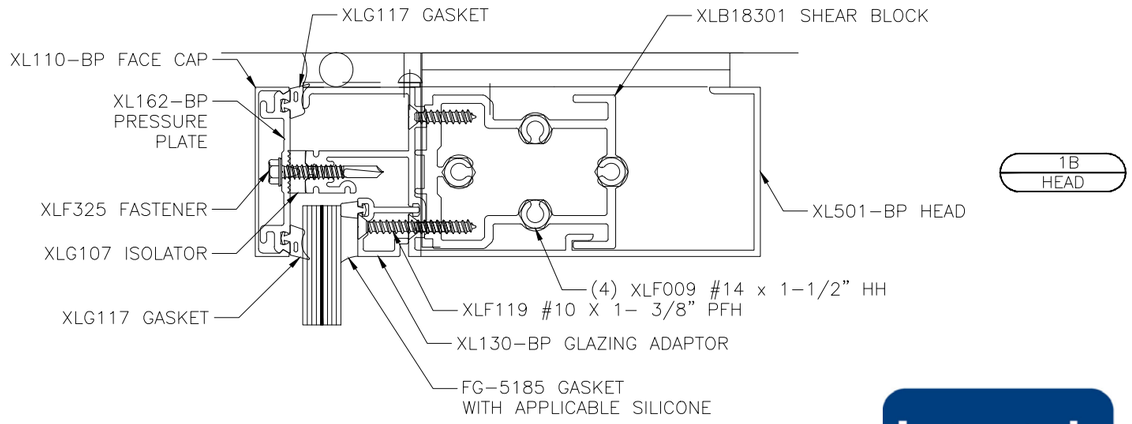
SCALE:	AS SHOWN
JOB #:	PTC581611

SHT 11 OF 39



1B
HEAD

Intertek | Architectural Testing

Test sample complies with details shown herein. Any deviations are noted in the test report drawings.

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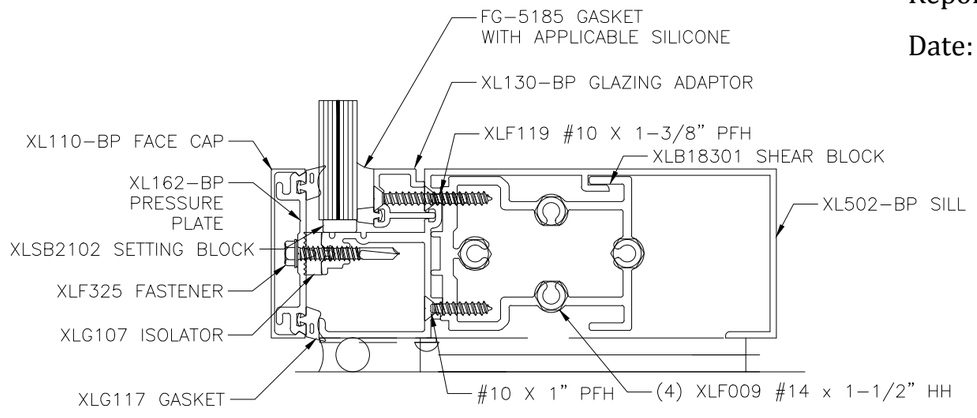

3B
SILL

REVISIONS

CERTIFIED ISO9000 COMPANY
C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
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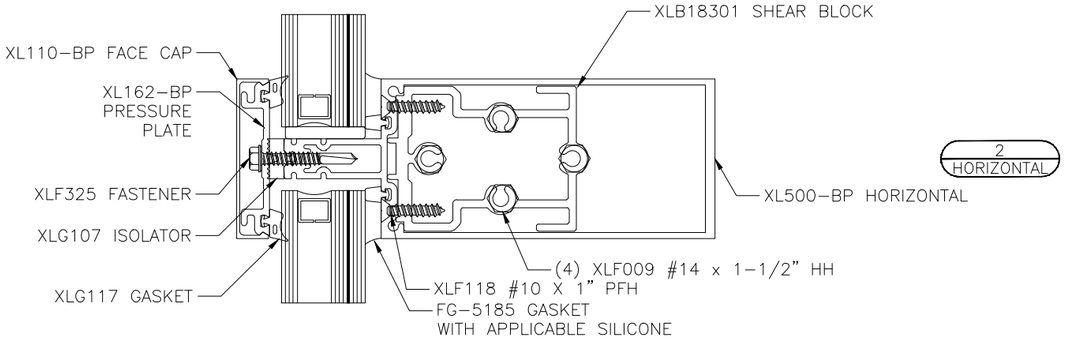
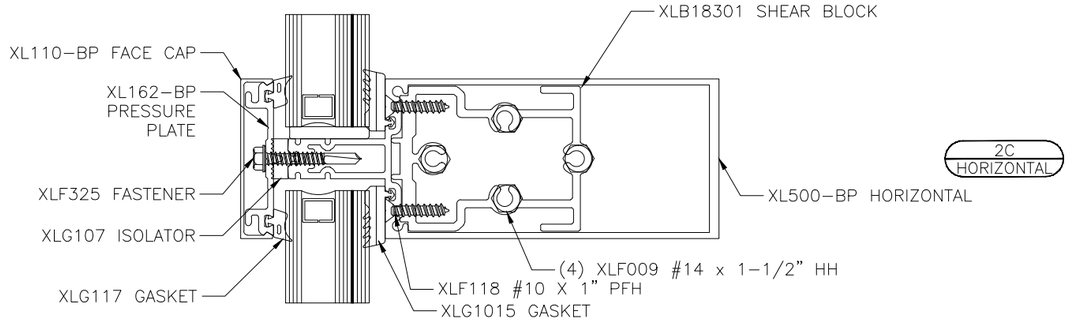
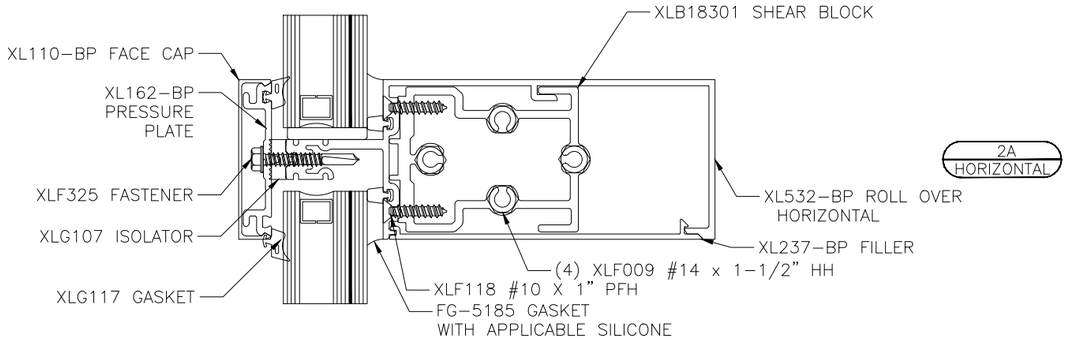
Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201–202–203
ASTM E1886–E1996

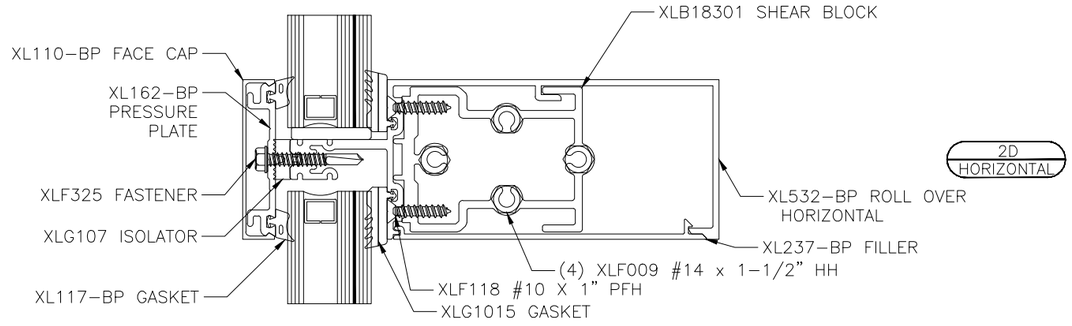
Glazing Contractor:

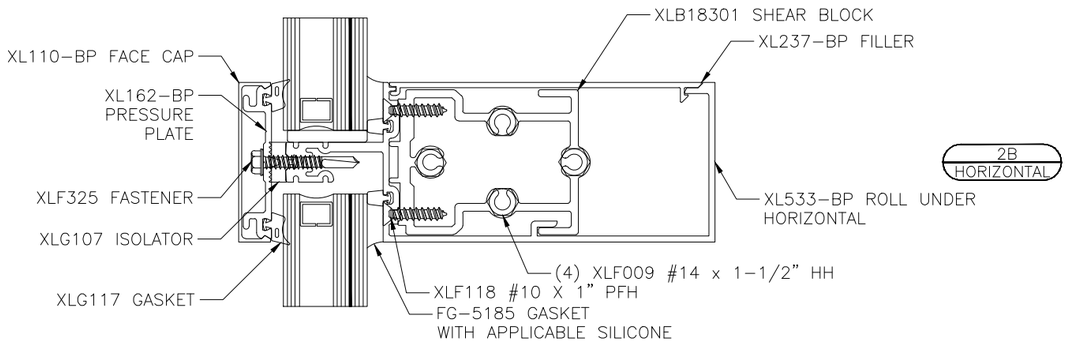
DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

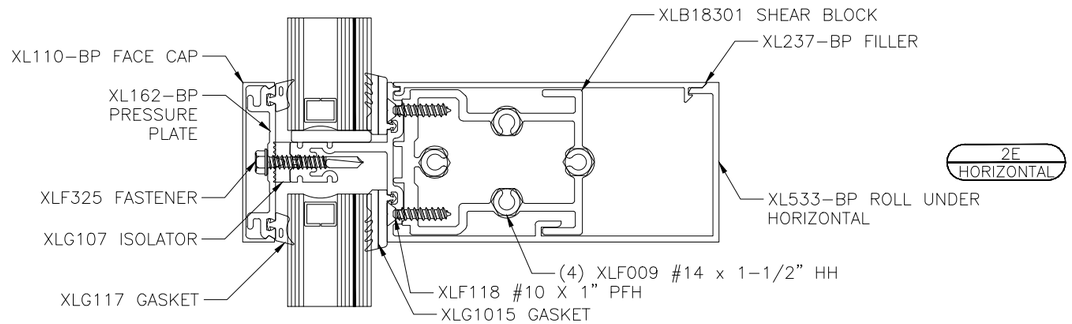












Intertek | Architectural Testing

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REVISIONS

CERTIFIED ISO9000 COMPANY
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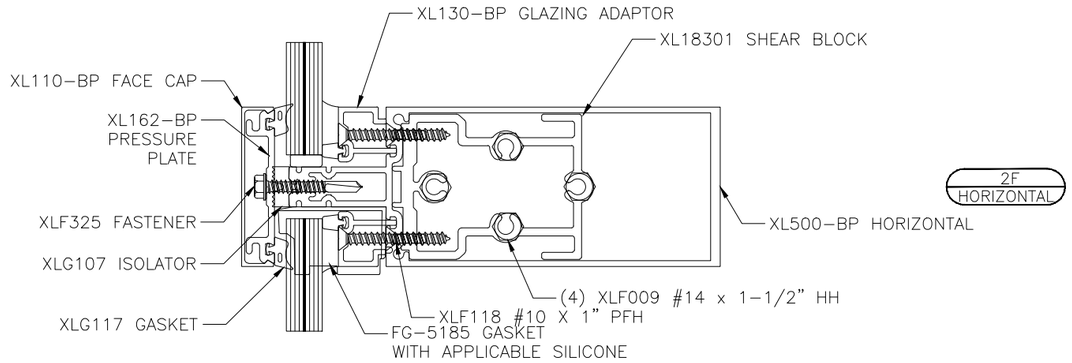
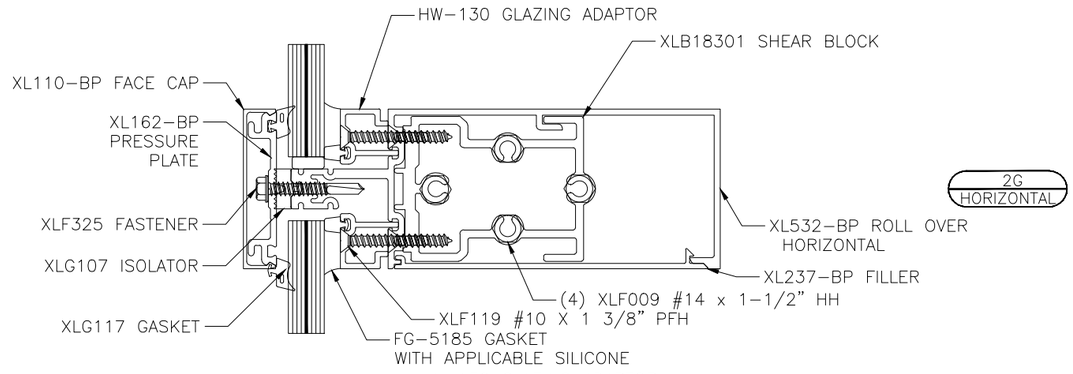
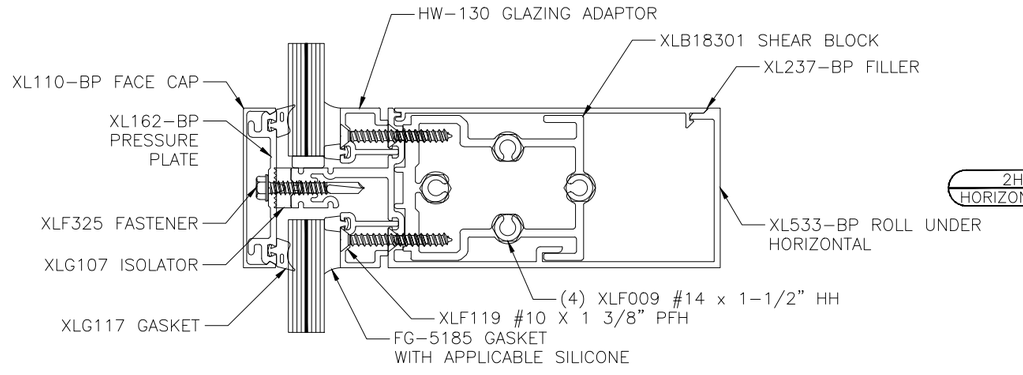
Job Name: TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201–202–203
ASTM E1886–E1996

Glazing Contractor:

DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611







Intertek | Architectural Testing

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PROTOCALS:TAS 201–202–203
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Glazing Contractor:

DATE:	7.27.2016
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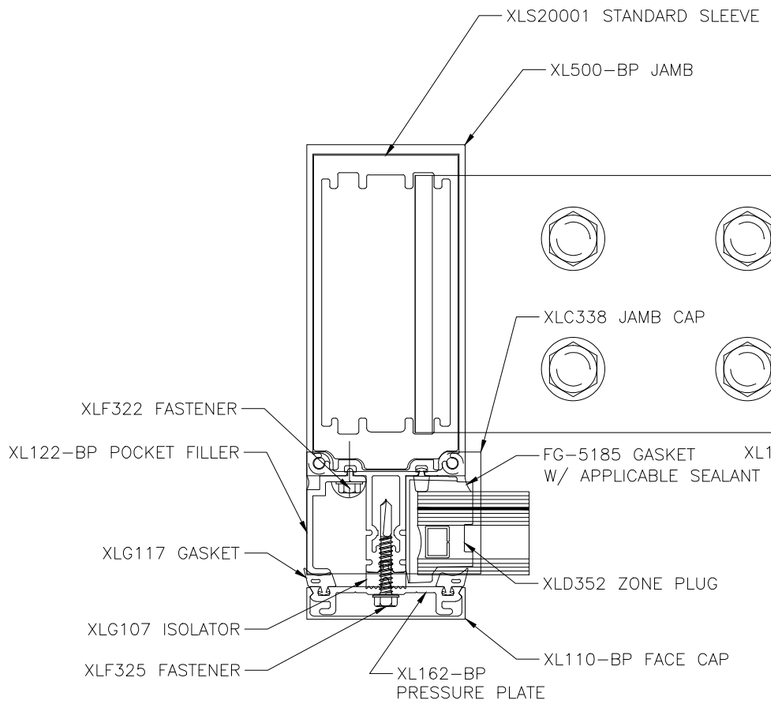
JOB #:	PTC581611



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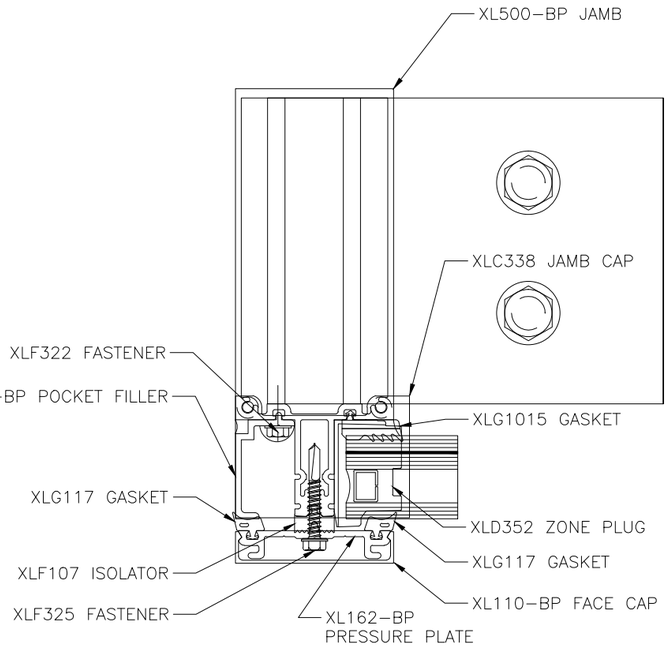

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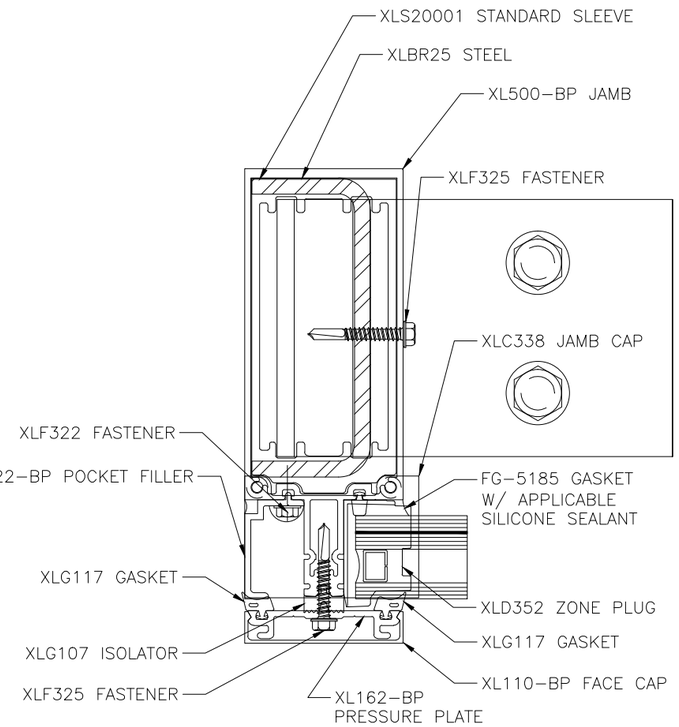
JAMB



4B
JAMB

Intertek | Architectural Testing

Test sample complies with details shown herein. Any deviations are noted in the test report drawings.

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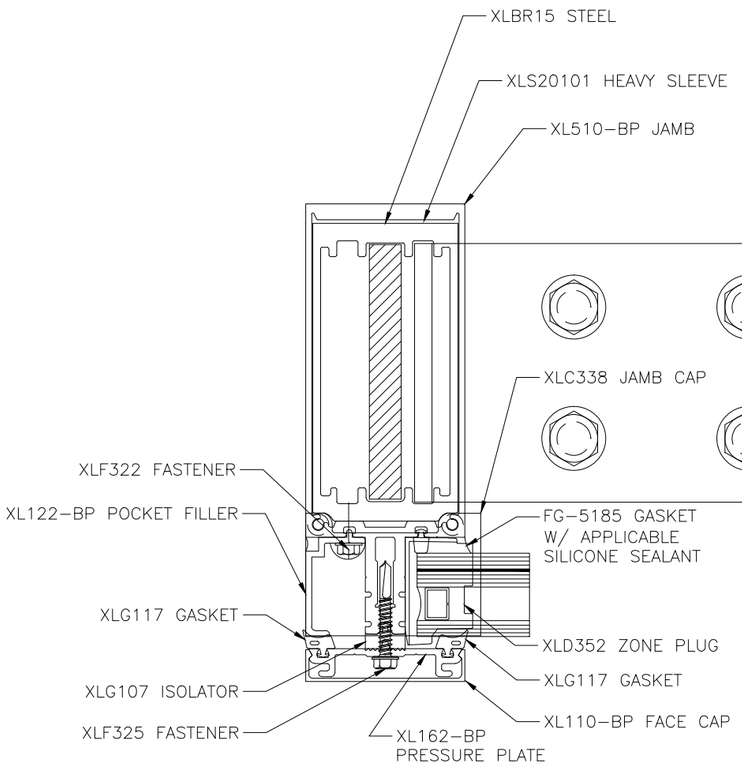
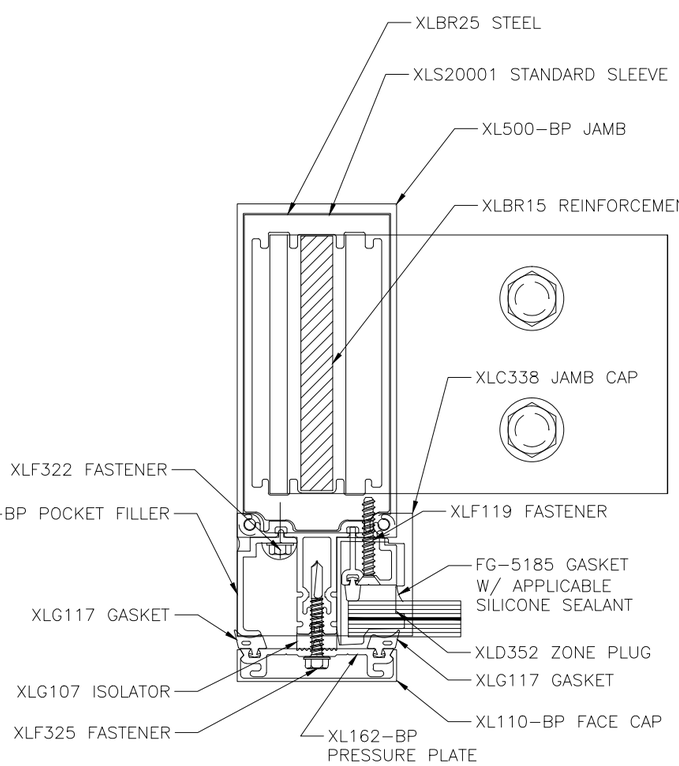
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611

SHT 15 OF 39



4C
JAMB



4D
JAMB

Intertek | Architectural Testing

Test sample complies with details shown herein. Any deviations are noted in the test report drawings.

Report#: a8744.04-801-18

Date: 09/15/16 By: AC

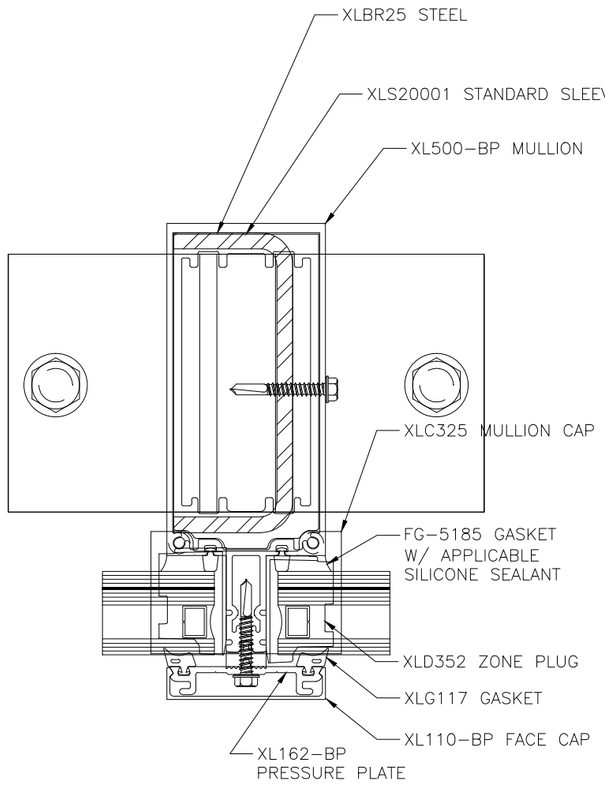
REVISIONS

CERTIFIED ISO9000 COMPANY
C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

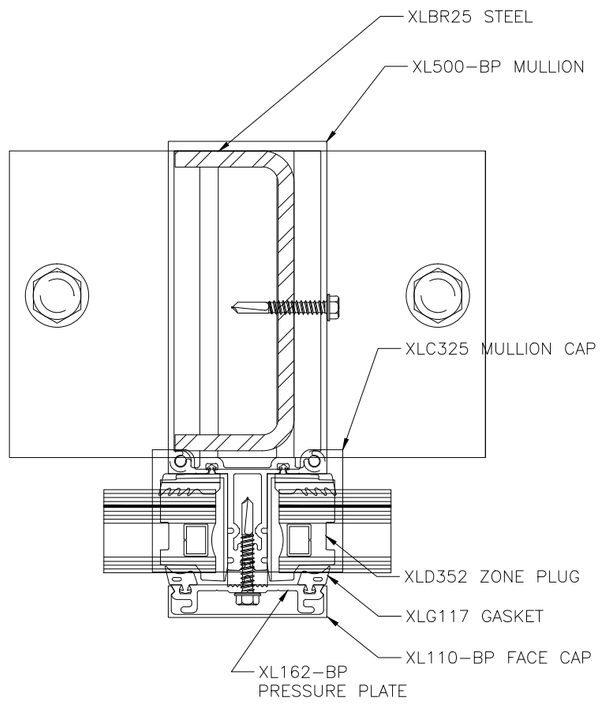
Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201–202–203
ASTM E1886–E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611



5
MULLION



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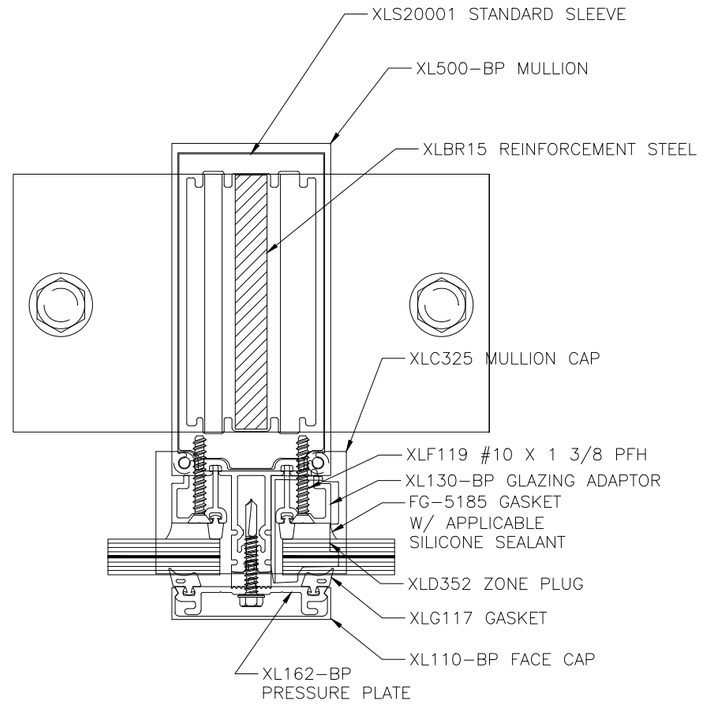

5B
MULLION

Intertek | Architectural Testing

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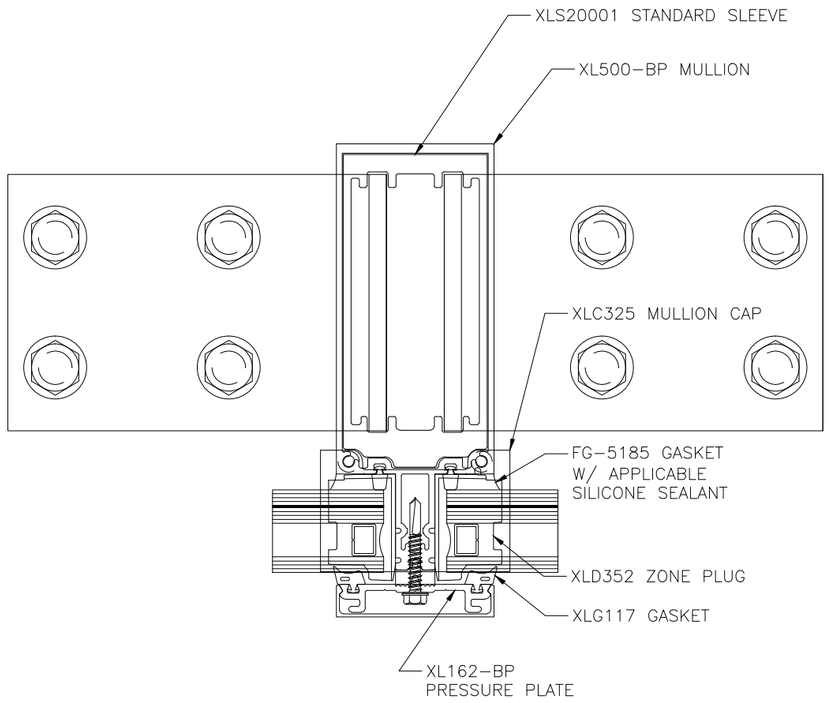
Glazing Contractor:

DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

SHT 17 OF 39



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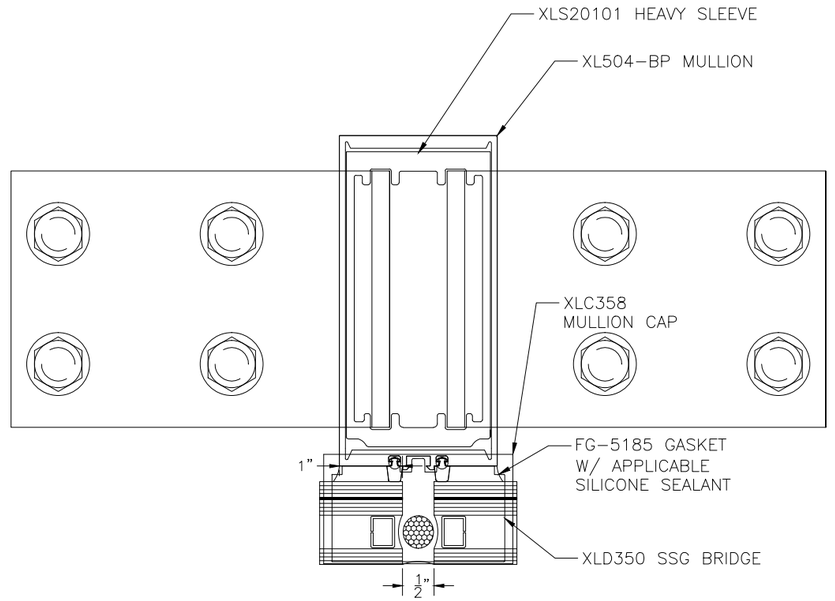

5D
MULLION

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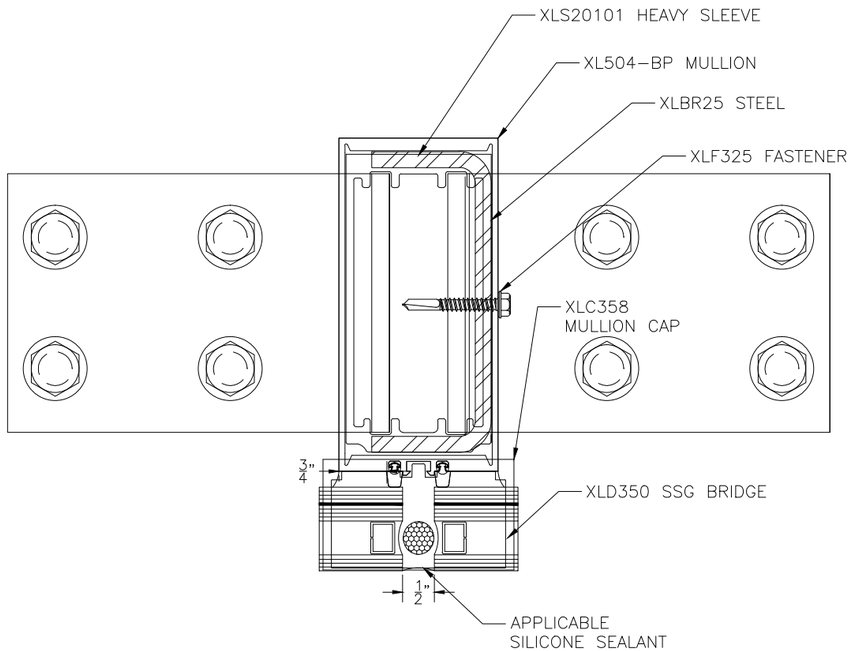
SCALE:	AS SHOWN
JOB #:	PTC581611



5E
MULLION

Intertek | Architectural Testing

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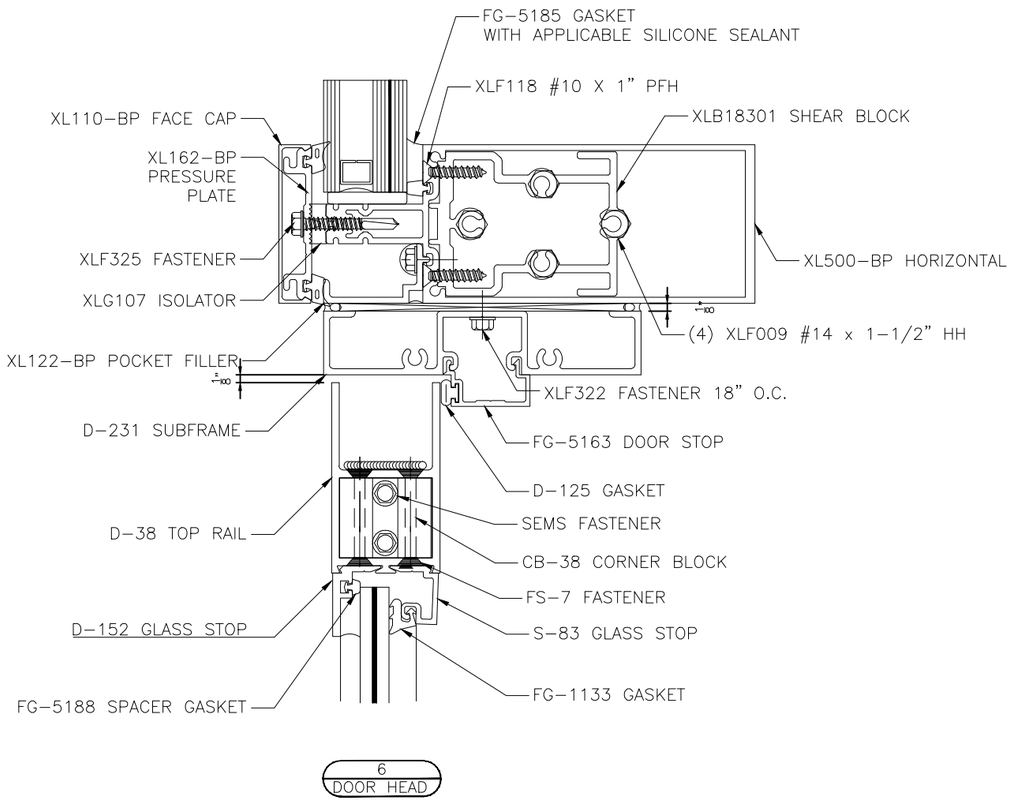
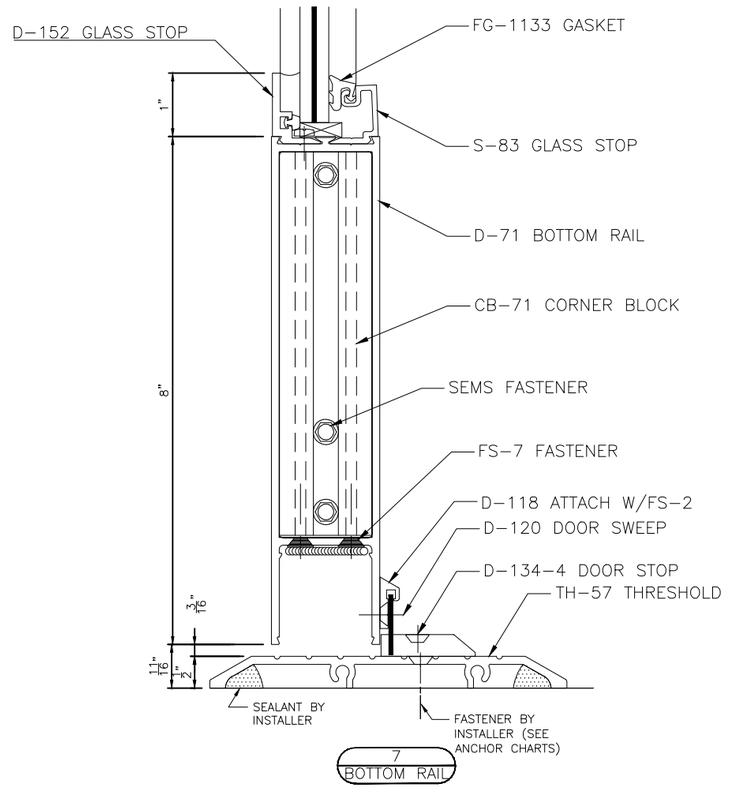


6
DOOR HEAD



7
BOTTOM RAIL

Intertek | Architectural Testing

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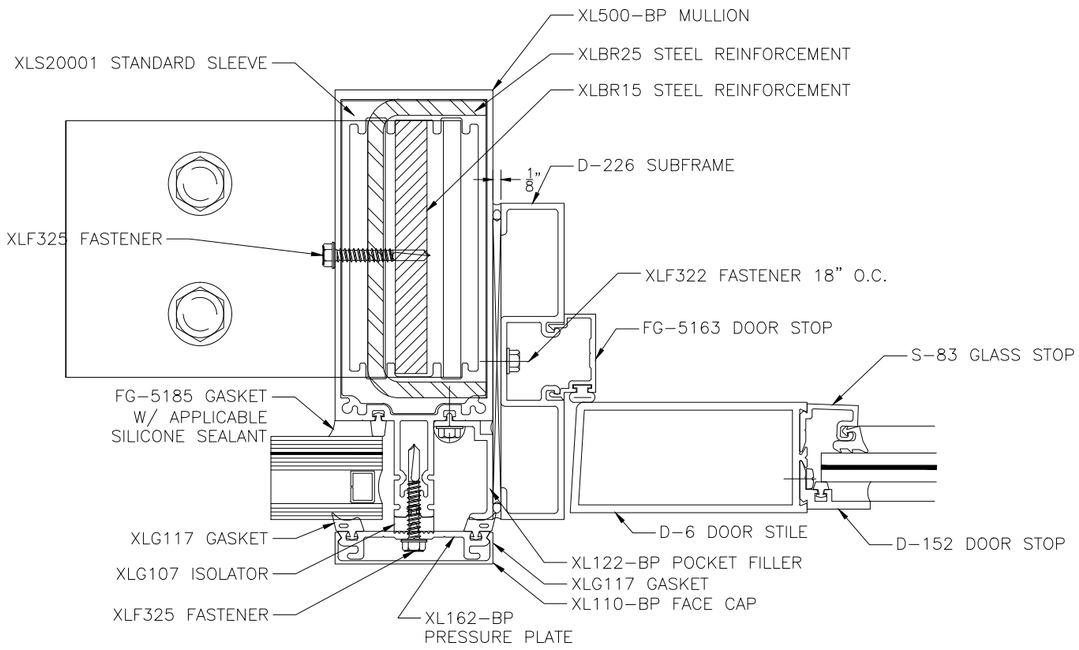
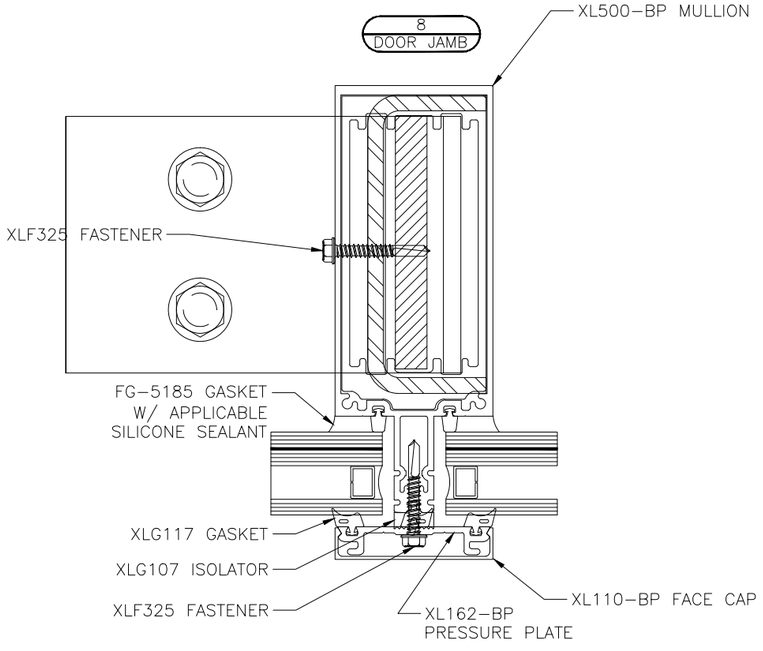
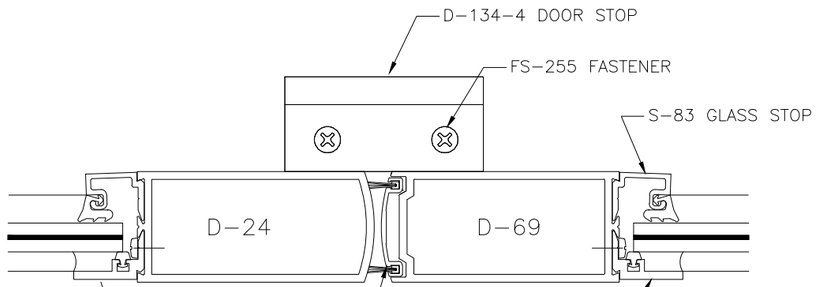
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611



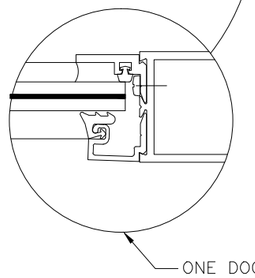
8
DOOR JAMB



8A
TRANSOM



9
MEETING STILE



Intertek | Architectural Testing

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CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

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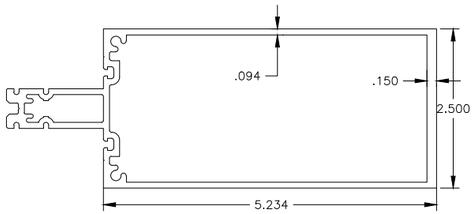
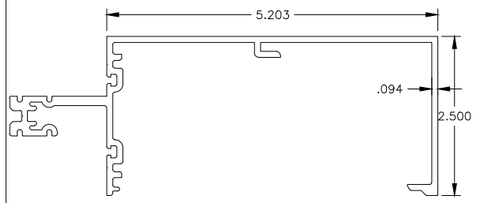
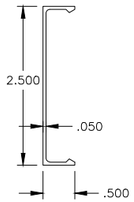
DIE DRAWINGS



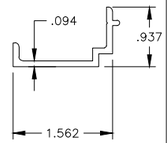
XL500-BP MULLION



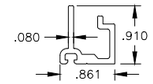
XL532-BP ROLL OVER HORIZONTAL



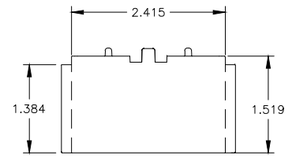
XL110-BP FACE CAP



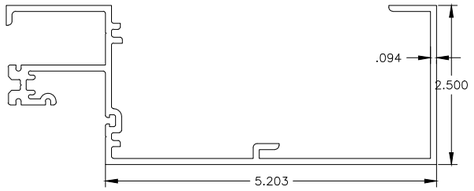
XL122-BP FILLER



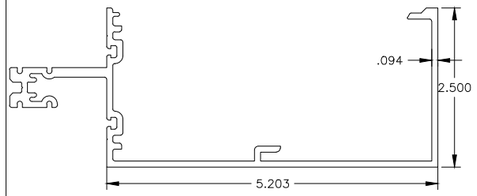
XL130-BP
ADAPTOR



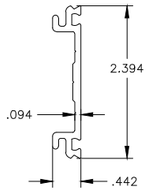
XLD350 SSG BRIDGE



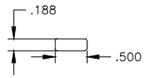
XL501-BP HEAD



XL533-BP ROLL UNDER HORIZONTAL



XL162-BP PRESSURE PLATE



XLSB2101
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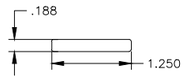

XLSB2102
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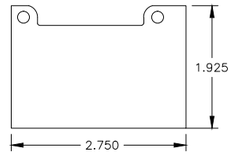
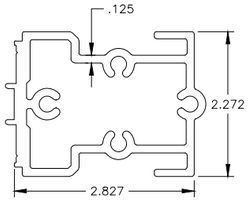


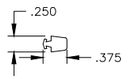
XLC338 JAMB CAP

XL502-BP SILL

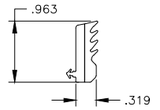
XLS200 STANDARD SLEEVE



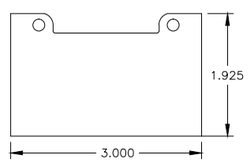
XLB18301 SHEAR BLOCK



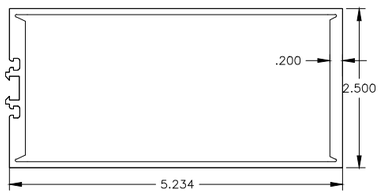
FG-5185 GASKET



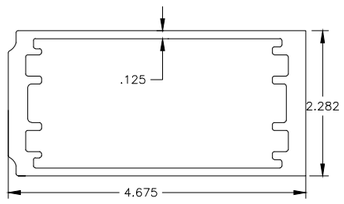
XLG1015 GASKET



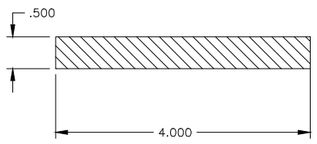
XLC325 MULL CAP



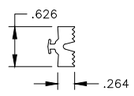
XL504-BP SSG MULLION



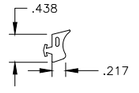
XLS20101 HEAVY SLEEVE



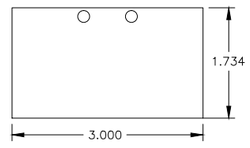
XLBR15
STEEL REINFORCEMENT



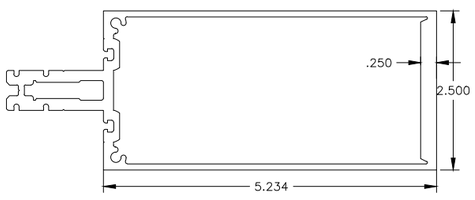
XLG107
ISOLATOR



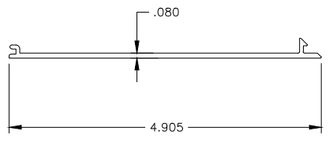
XLG117 GASKET



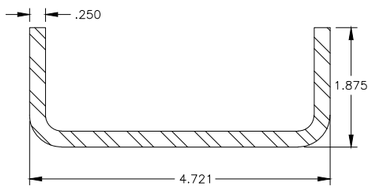
XLS358 SSG MULL CAP



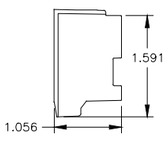
XL510-BP HEAVY MULLION



XL237-BP FILLER



XLBR25
STEEL REINFORCEMENT



XLD352 ZONE PLUG

REVISIONS

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ASTM E1886-E1996

ontractor:

Intertek
Architectural Testing

	7.27.2016
BY:	GDO
CHECKED BY:	XX
	AS SHOWN
JOB #:	PTC581611

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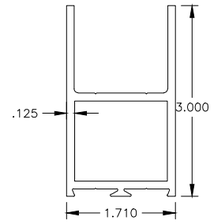
Report#: a8744.04-801-18

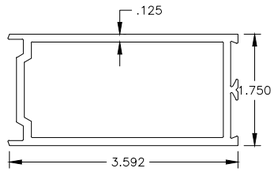
Date: 09/15/16 By: AC

SHT 22 OF 39

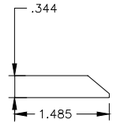
DIE DRAWINGS



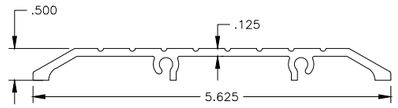
D-38 TOP RAIL



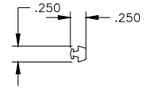
D-69 STILE



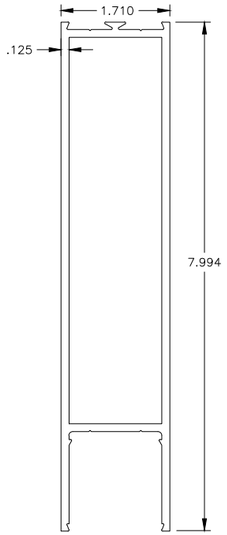
D-134-4 DOOR STOP



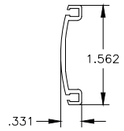
TH-57 THRESHOLD



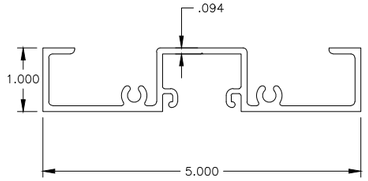
FG-5188 GASKET



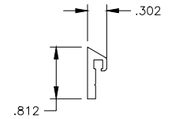
D-71 BOTTOM RAIL



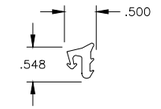
AS-6 ASTRAGAL



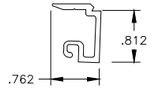
D-231 SUBFRAME



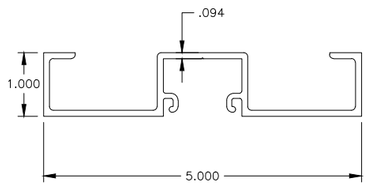
D-118 SWEEP RETAINER



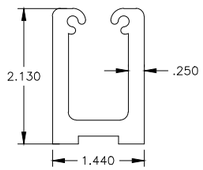
FG-1133 GASKET



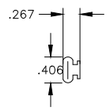
S-83 GLASS STOP



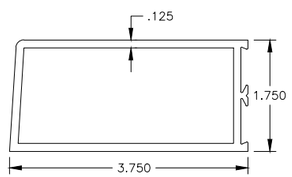
D-226 SUBFRAME



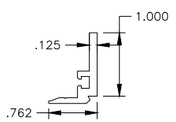
CB-38 CORNER BLOCK



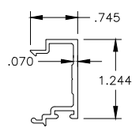
D-125 GASKET



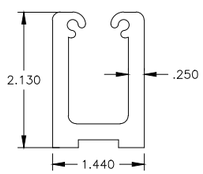
D-6 STILE



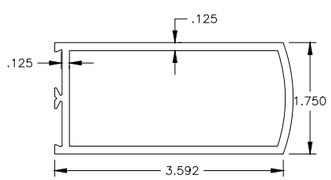
D-152 GLASS STOP



FG-5163 DOOR STOP



CB-71 CORNER BLOCK



D-24 STILE

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Architectural Testing

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Report#: a8744.04-801-18

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REVISIONS

CERTIFIED ISO9000 COMPANY

C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
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Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611

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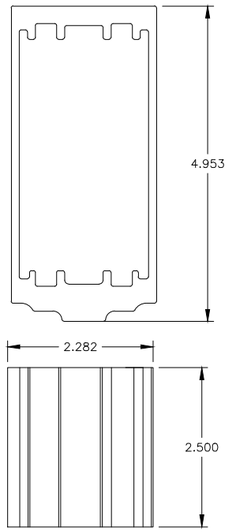
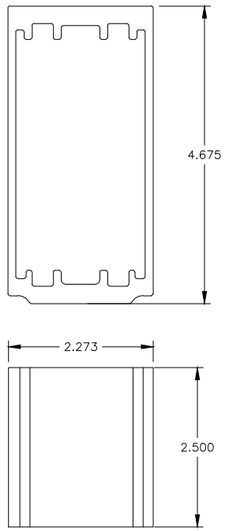
FABRICATED PARTS DETAIL

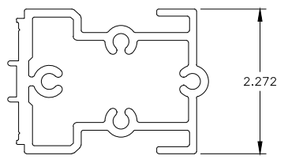
XLS20001
STANDARD ANCHOR SLEEVE



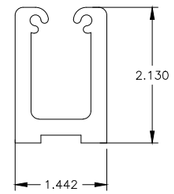
XLS20101 HEAVY
ANCHOR SLEEVE



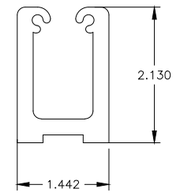
XLB18301
SHEAR BLOCK



CB-38 DOOR HEADER
CORNER BLOCK



CD-71 DOOR
BOTTOM RAIL
CORNER BLOCK



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Glazing Contractor:

DATE:	7.27.2016
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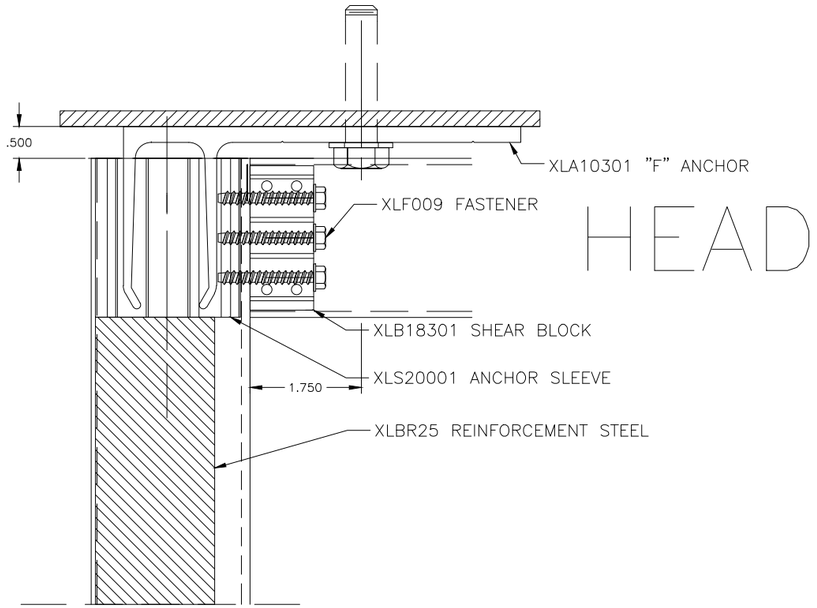
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

JAMB ANCHORING DETAILS STEEL BUCK
ELEVATIONS - E1,E2 & E3



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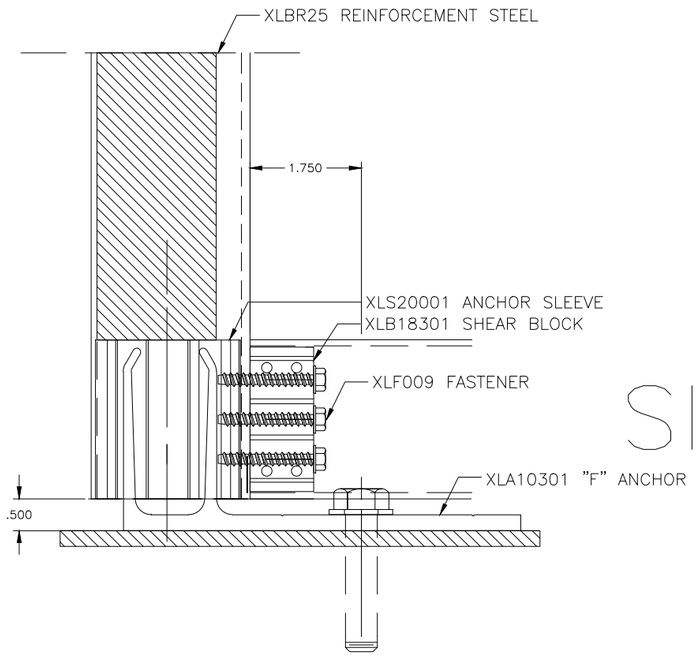
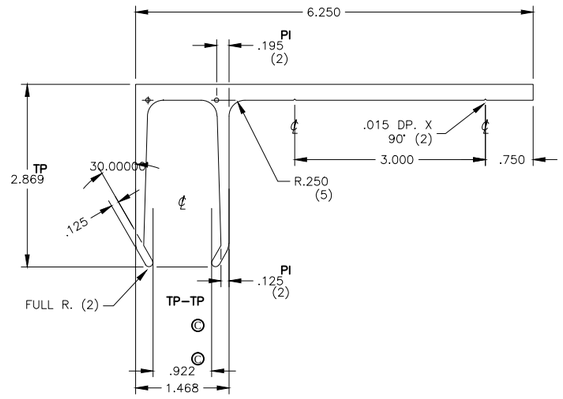
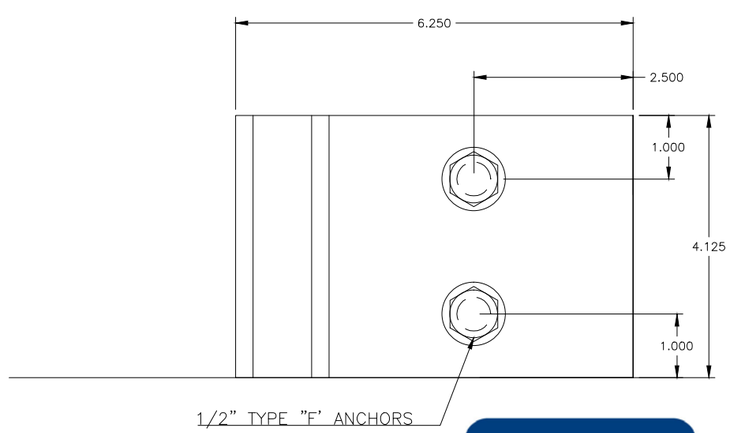


SILL

XLA10301





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DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

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DOOR JAMB ANCHORING DETAILS STEEL BUCK
ELEVATIONS - E1 SILL

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Report#: a8744.04-801-18

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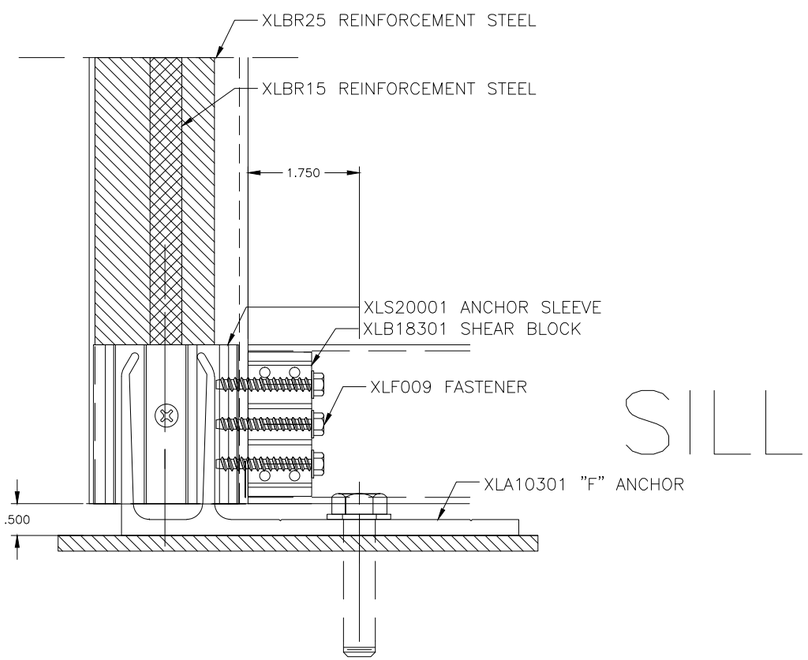

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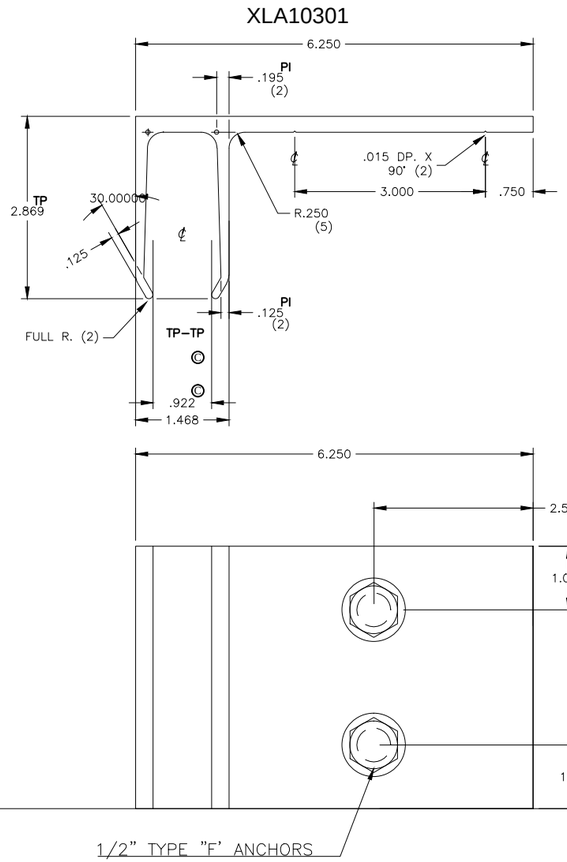

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Glazing Contractor:

DATE:	7.27.2016
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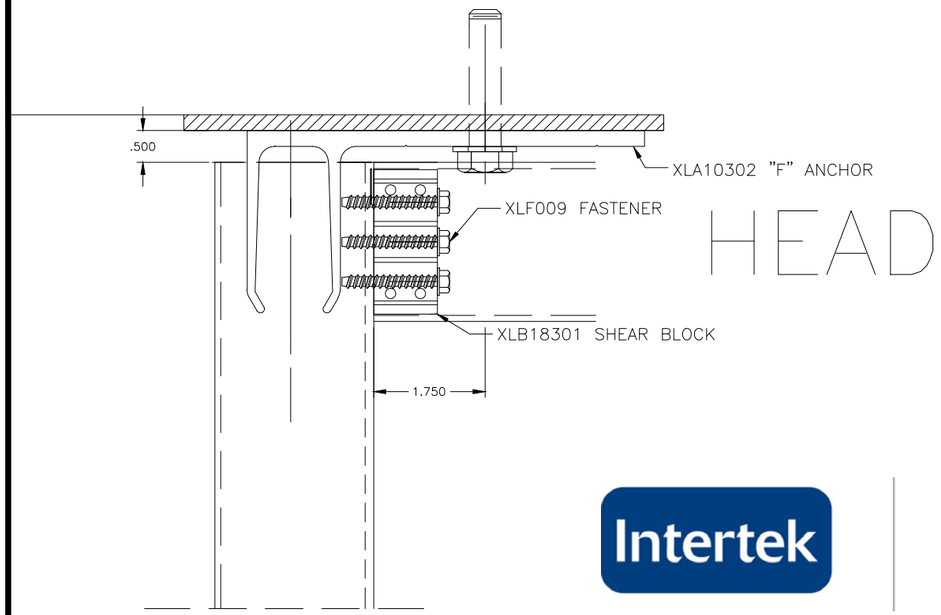
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

JAMB ANCHORING DETAILS STEEL BUCK
ELEVATION - E6



HEAD

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Architectural Testing

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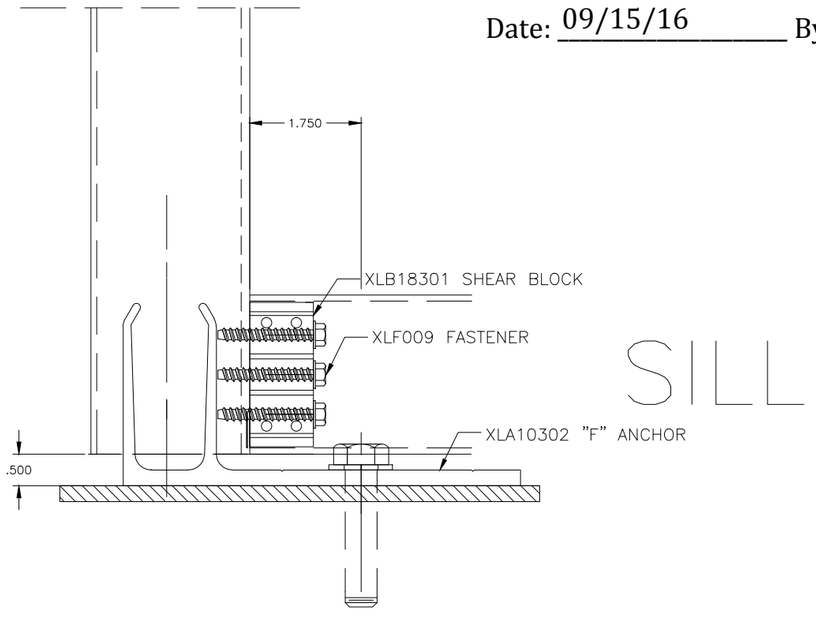

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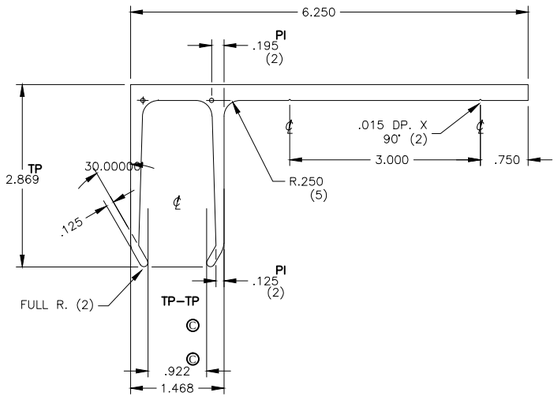
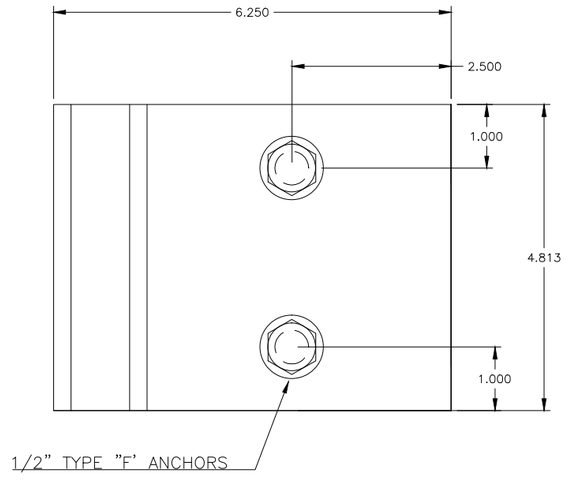
XLA10302





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PROTOCALS:TAS 201-202-203
ASTM E1886-E1996

Glazing Contractor:

DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

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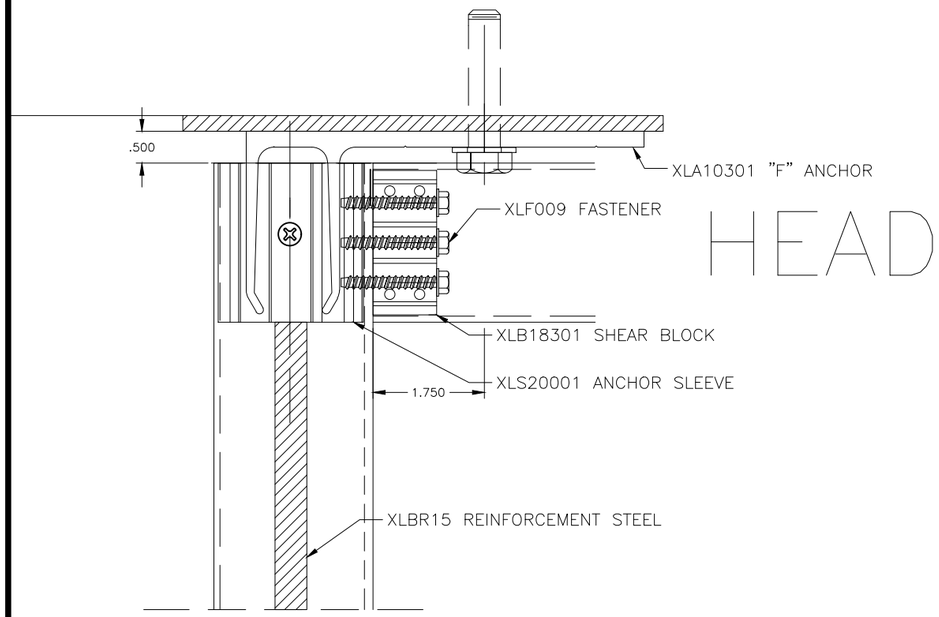
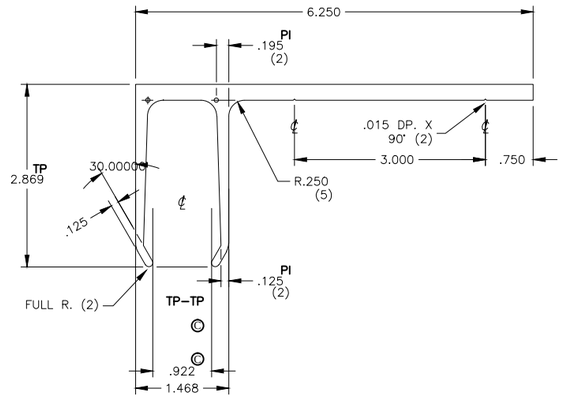
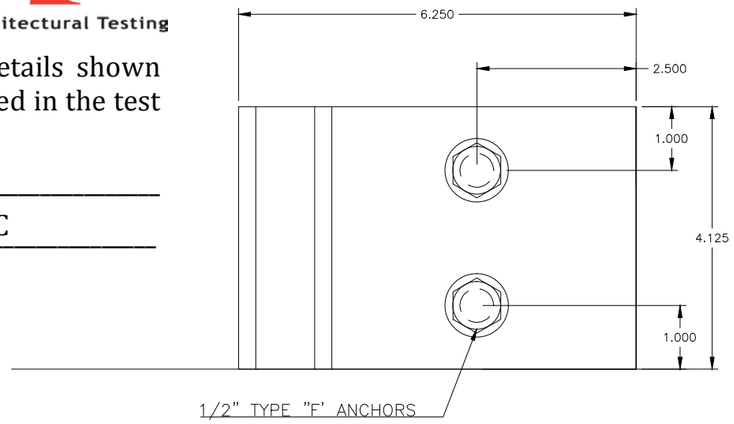
DOOR JAMB ANCHORING DETAILS STEEL BUCK ELEVATIONS - E7



HEAD

XLA10301





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Architectural Testing

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Report#: a8744.04-801-18

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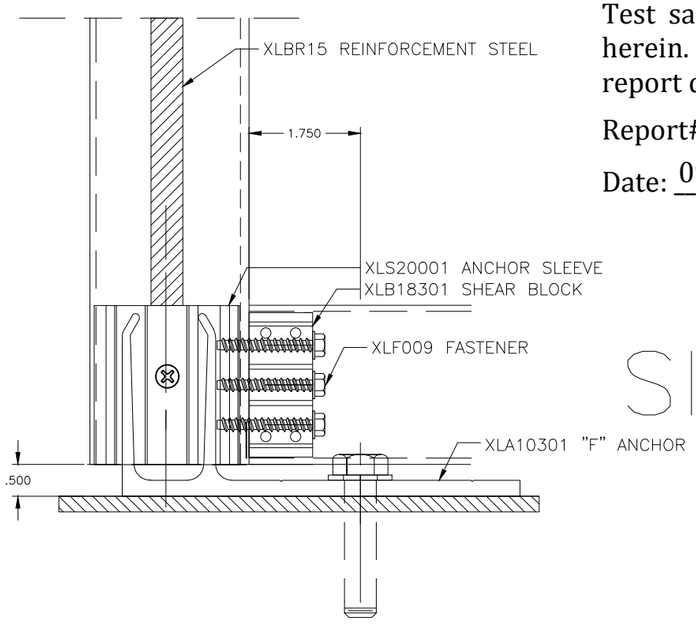

SILL

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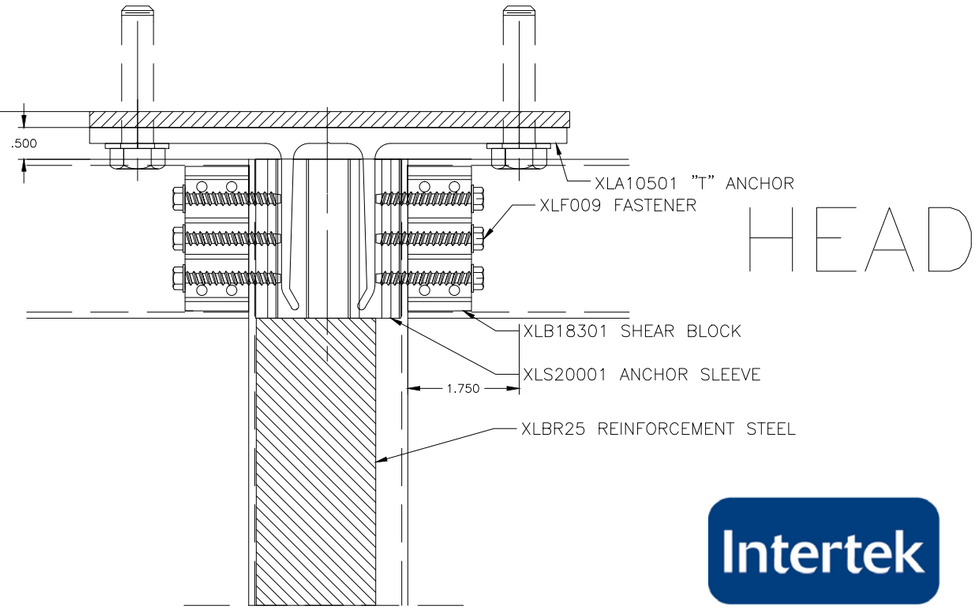
Glazing Contractor:

DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

MULLION ANCHORING DETAILS STEEL BUCK ELEVATIONS - E1 (HEAD),E2 & E3



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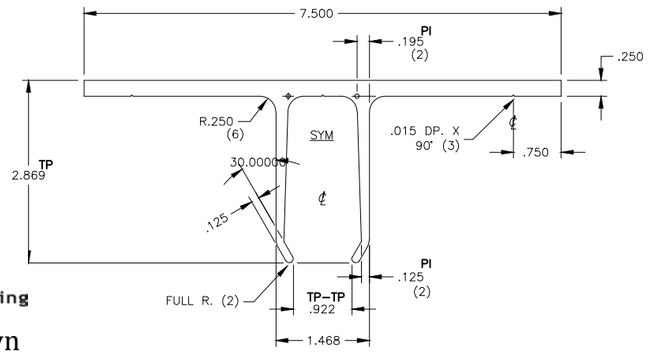

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Architectural Testing

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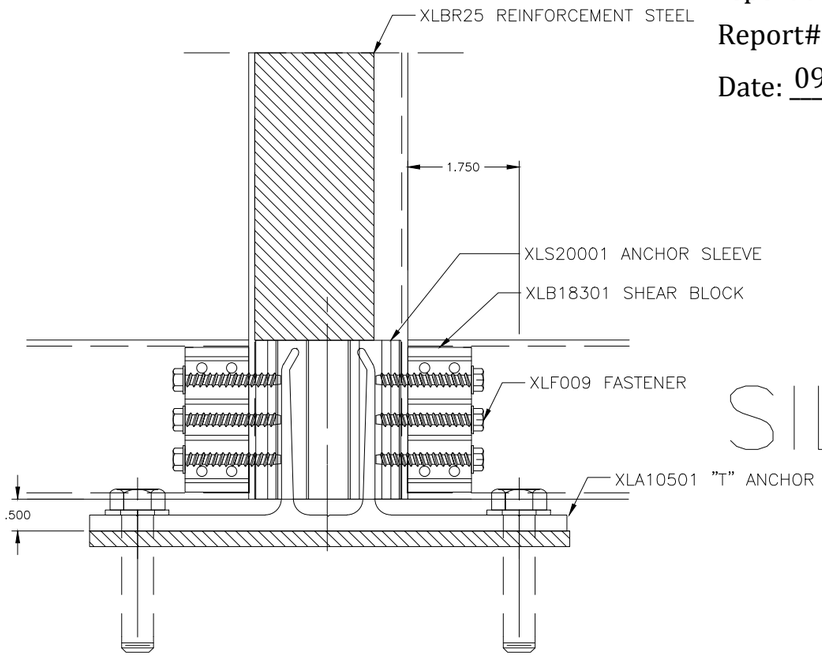
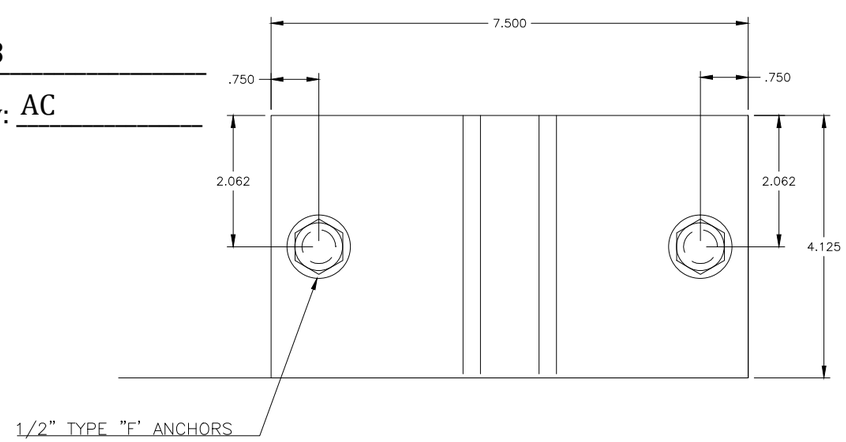


SILL



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Glazing Contractor:

DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

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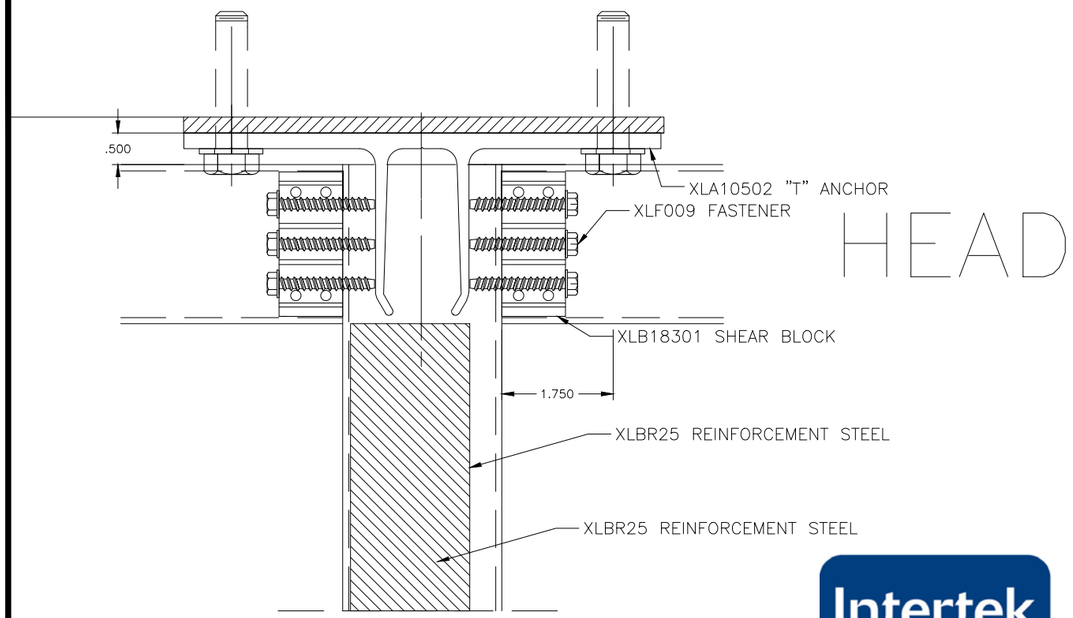
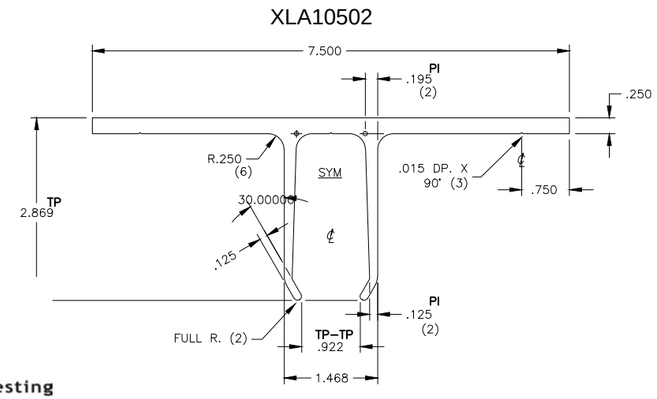
MULLION ANCHORING DETAILS STEEL BUCK ELEVATIONS - E6



HEAD



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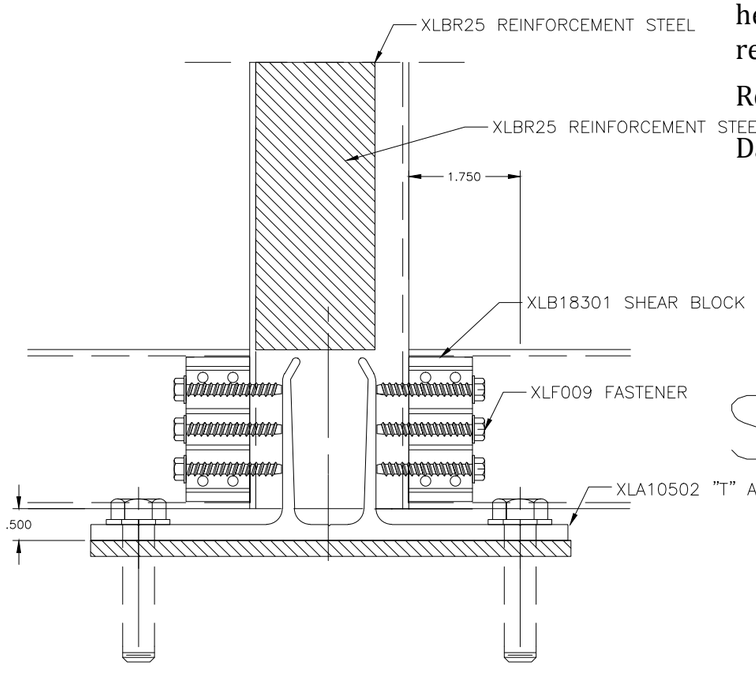

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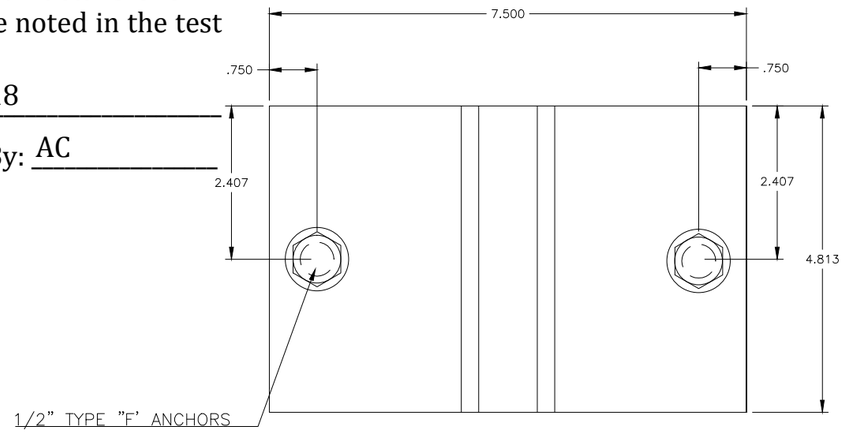

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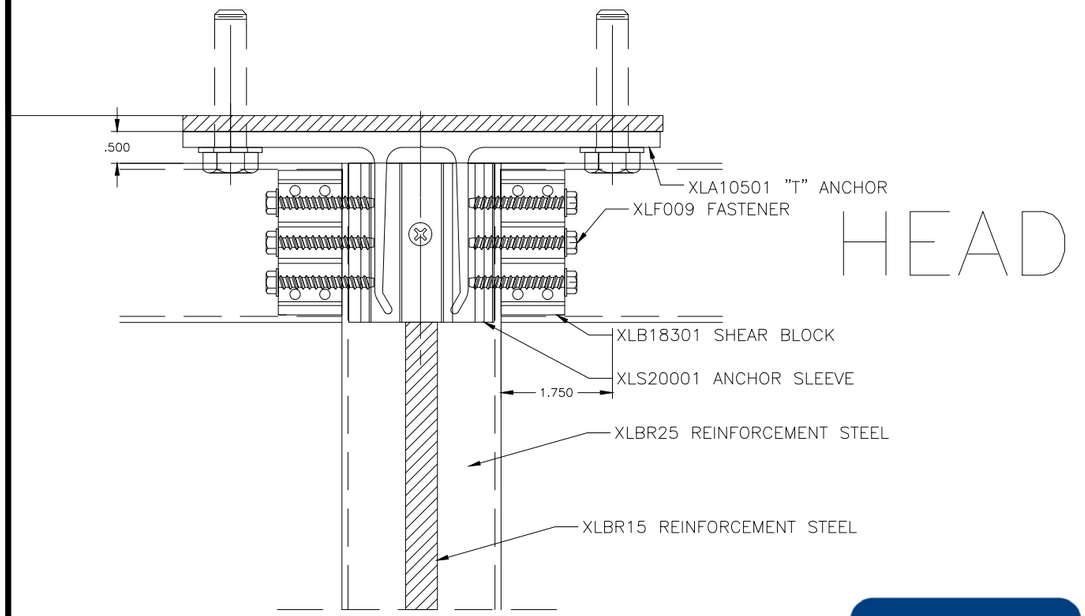
Glazing Contractor:

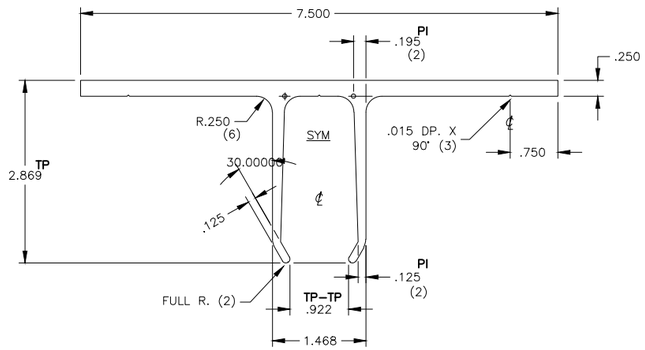
DATE:	7.27.2016
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC581611

MULLION ANCHORING DETAILS STEEL BUCK ELEVATIONS - E7



HEAD

XLA10501



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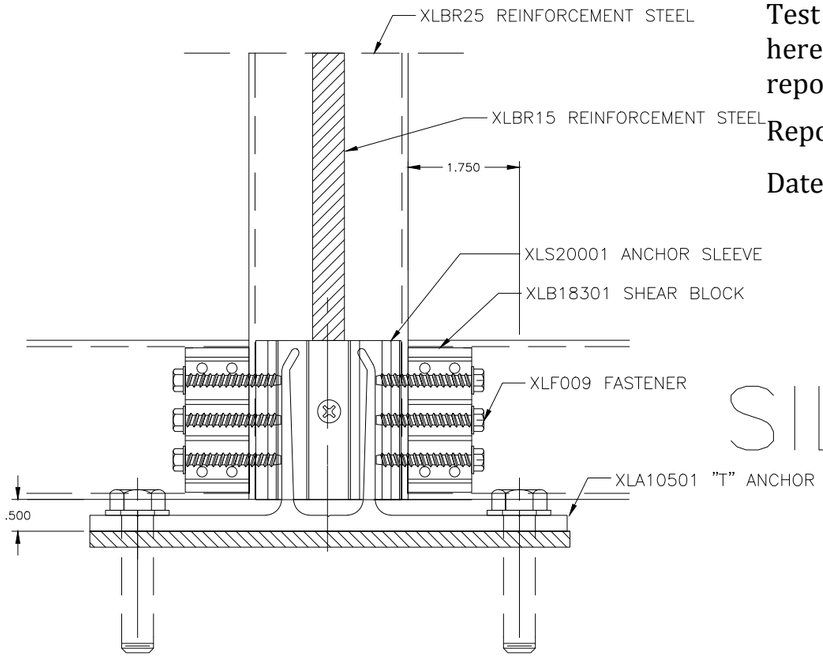

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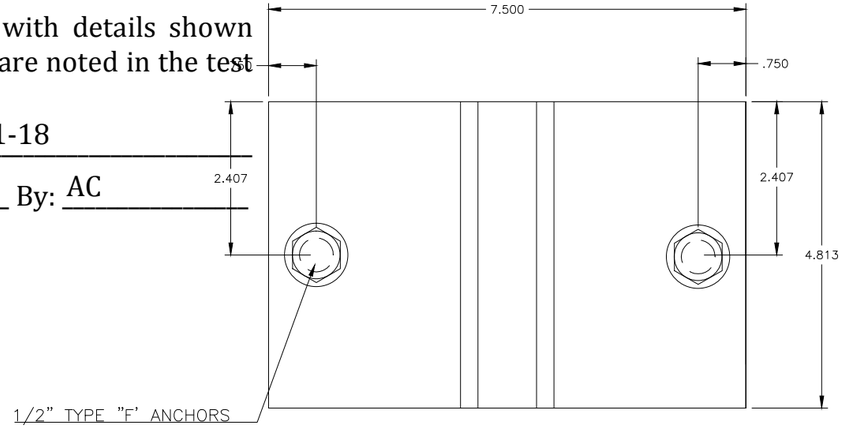


REVISIONS

C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

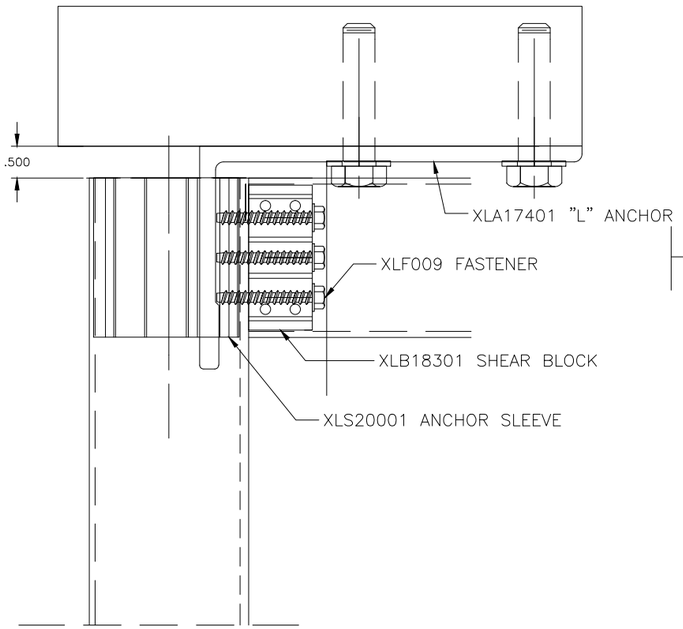
Job Name:
TEST DRAWINGS
STORM WALL XL CURTAIN WALL
PROTOCALS:TAS 201–202–203
ASTM E1886–E1996

Glazing Contractor:

DATE: 7.27.2016
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #: PTC581611

SHT 31 OF 39

JAMB ANCHORING DETAILS WOOD BUCK
ELEVATIONS - E4, E5 & E8



HEAD

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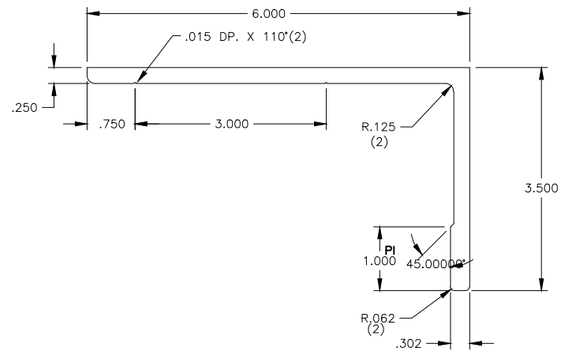
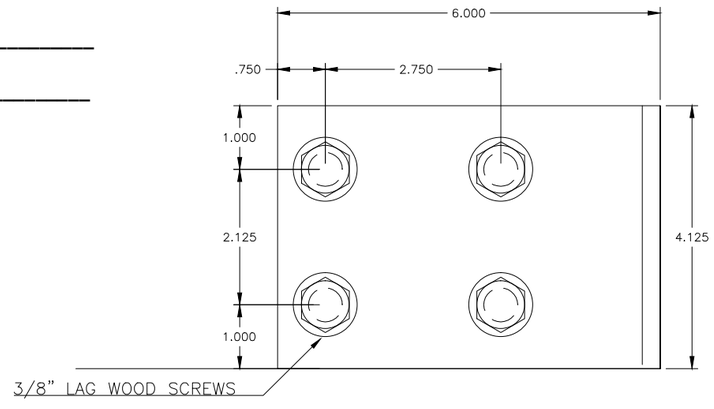
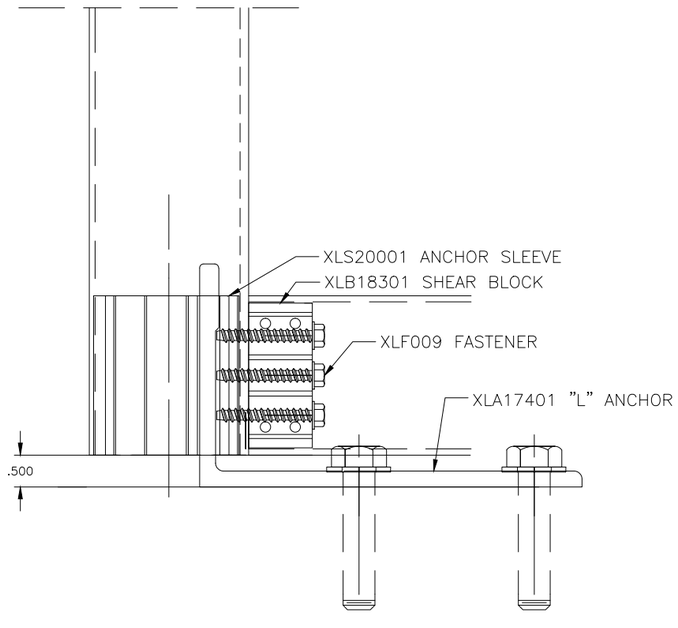
Report#: a8744.04-801-18

Date: 09/15/16 By: AC

XLA17401







SILL

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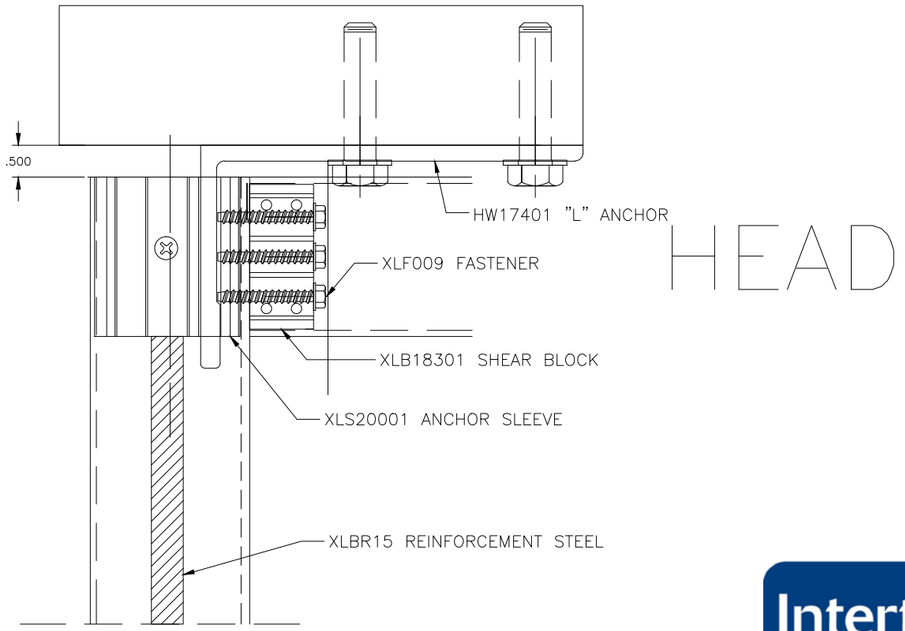
JAMB ANCHORING DETAILS WOOD BUCK
ELEVATIONS - E9



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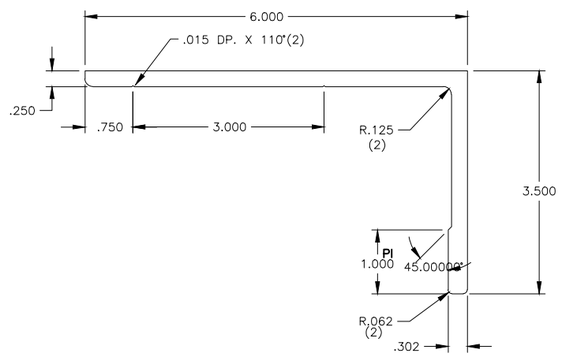

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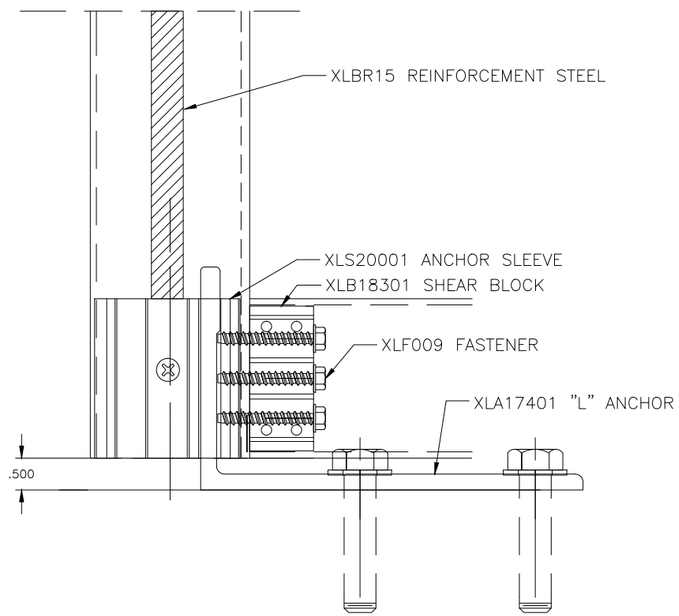

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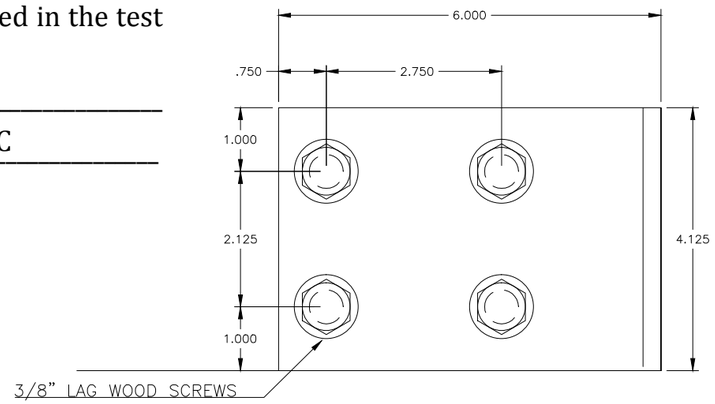

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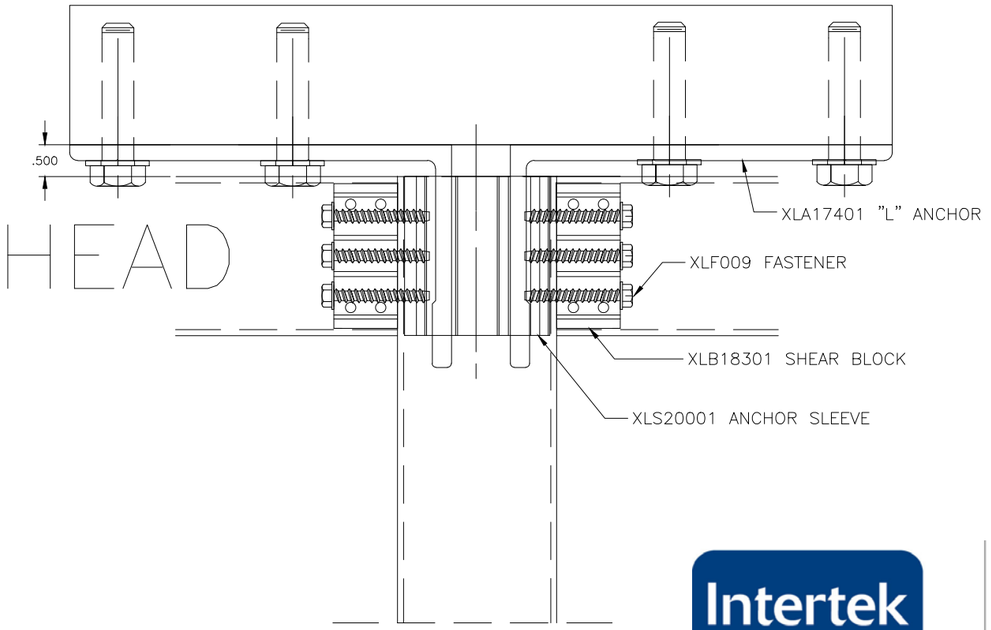
SHT 33 OF 39

MULLION ANCHORING DETAILS WOOD BUCK ELEVATIONS - E4, E5 & E8



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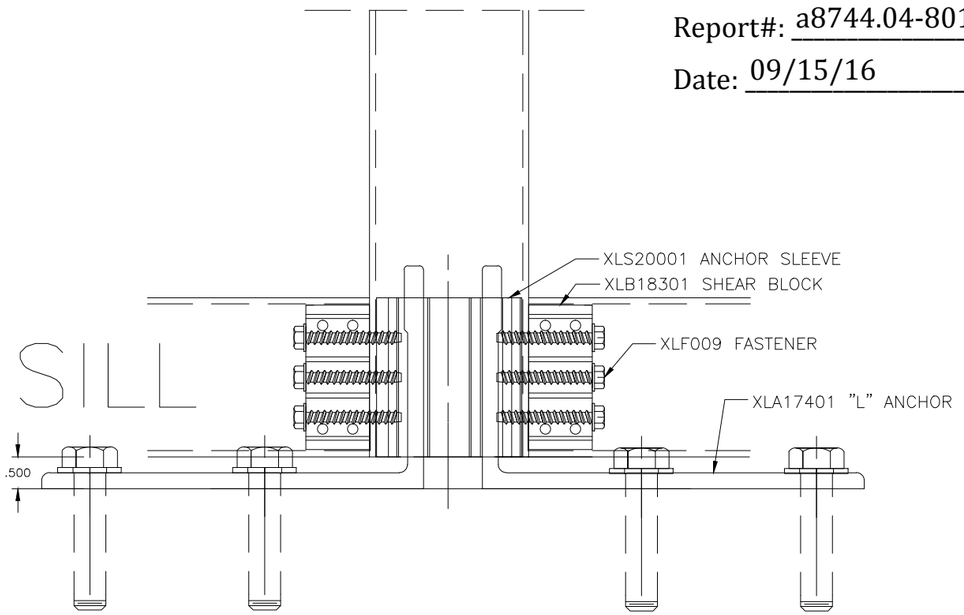

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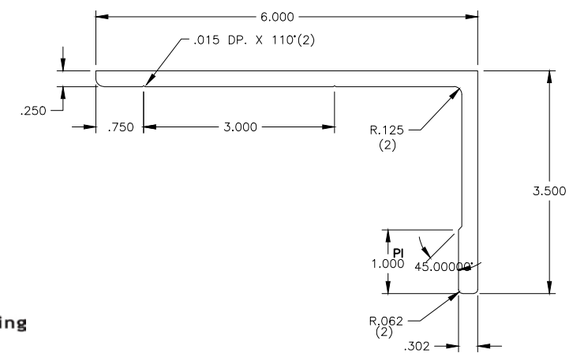

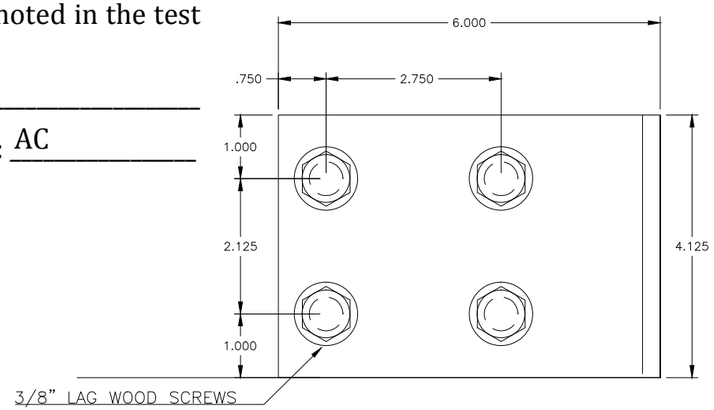

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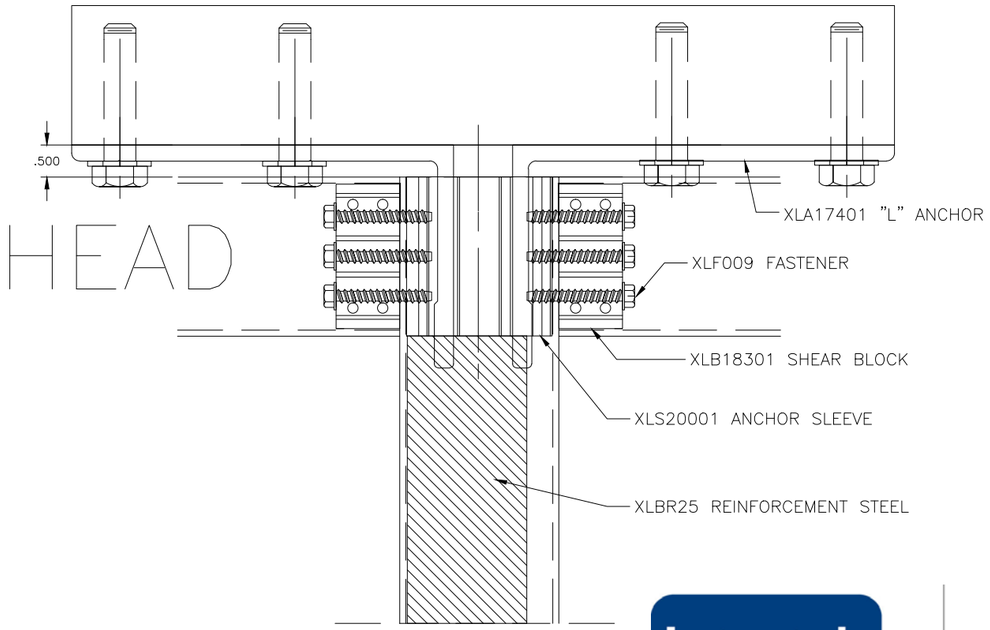
SHT 34 OF 39

MULLION ANCHORING DETAILS WOOD BUCK ELEVATIONS - E9



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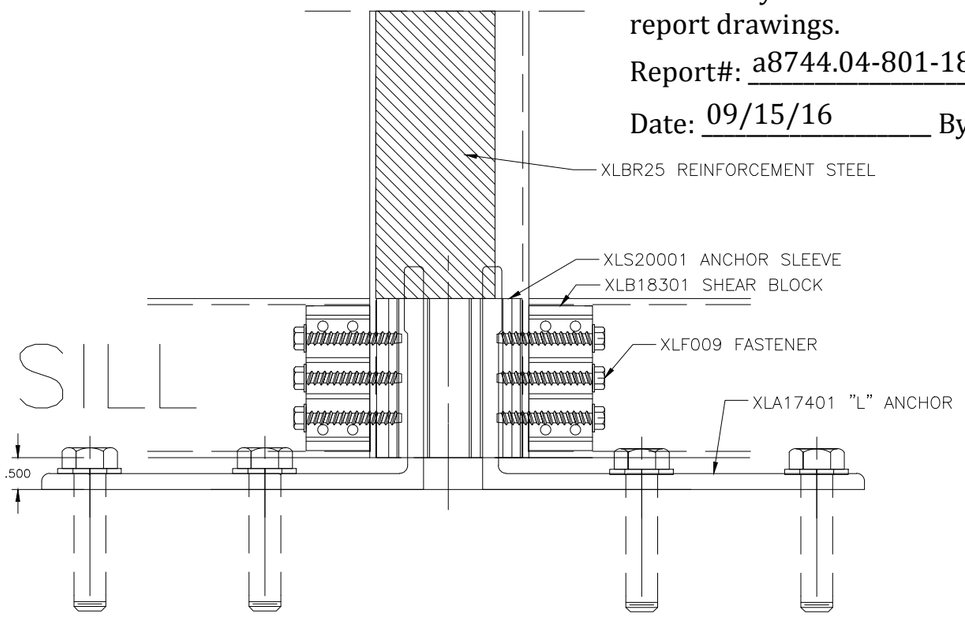

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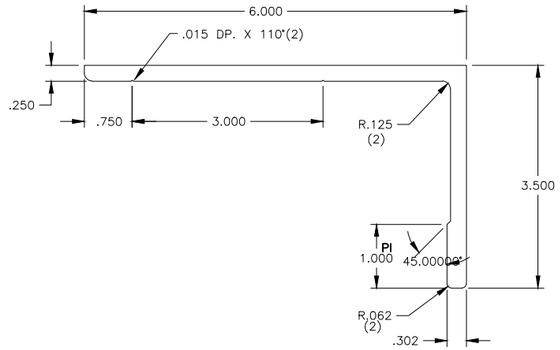

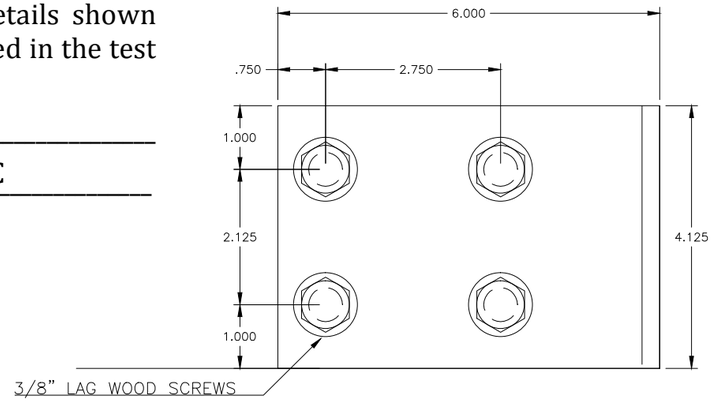

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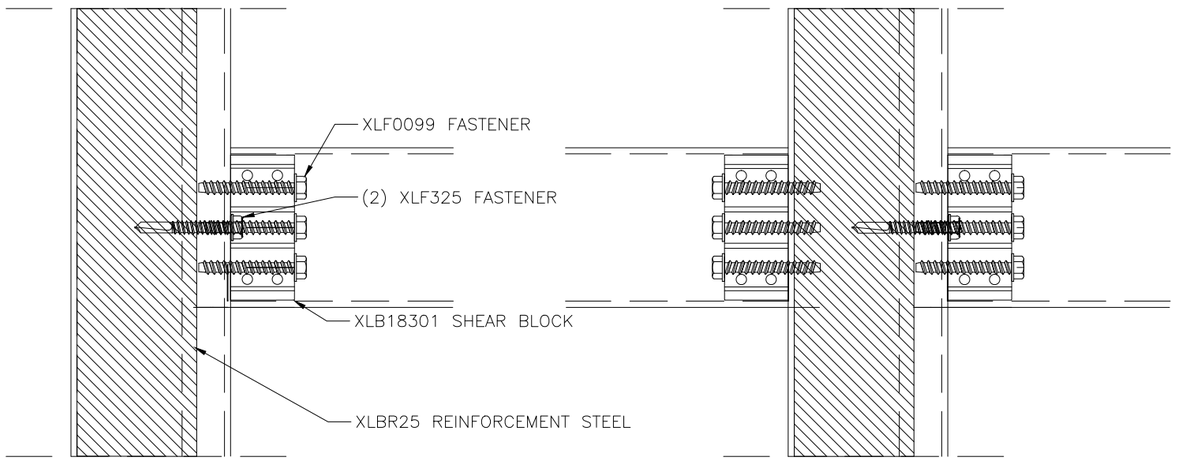
STEEL ATTACHMENT AT HORIZONTAL

ATTACH STEEL AT HORIZONTAL



JAMB MULLION

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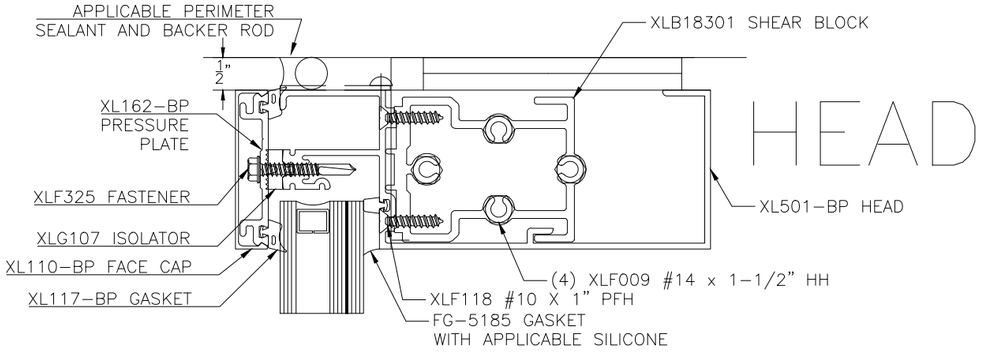
PERIMETER SEALANT DETAIL



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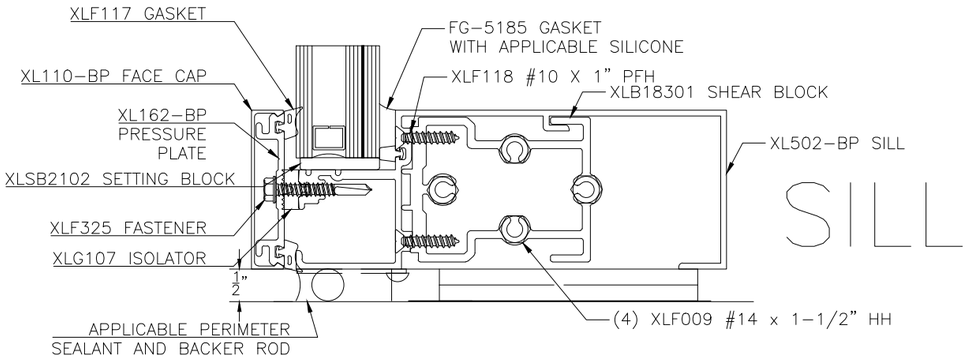

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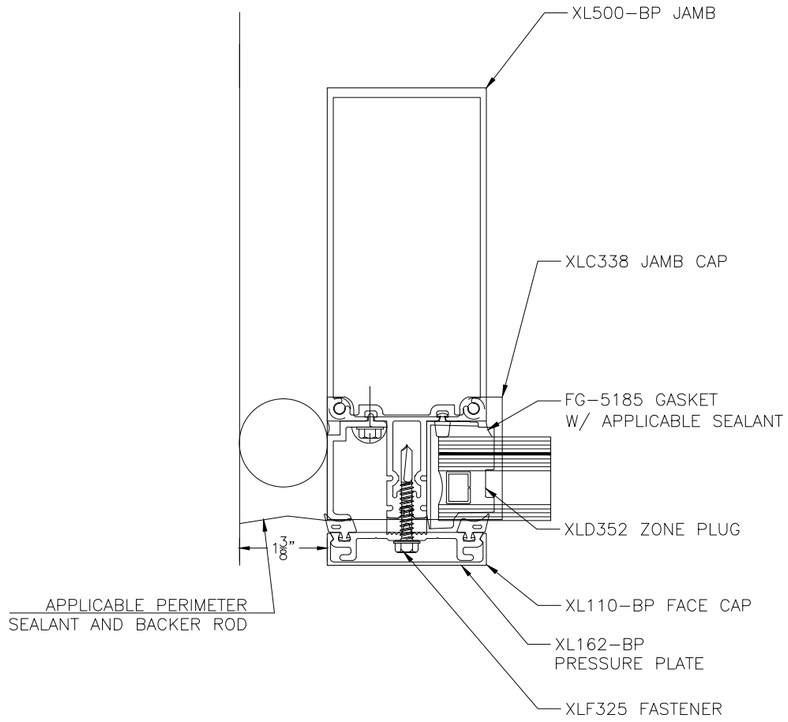

JAMB

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BILL OF MATERIALS

ITEM No.	PART NUMBER	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	NOTES
1.	AS–6	ASTRAGAL	.331 X 1.5262	6063–T6 ALUMINUM	CRL	
2.	XLSB2101	SETTING BLOCK	.500 X .188 X 4.00	EPDM 80 DUROMETER	EPG	
3.	XLSB2102	SETTING BLOCK	1.250 X .188 X 4.00	EPDM 80 DUROMETER	EPG	
4.	D–6	STILE	1.75 X 3.75 X .125	6063–T5 ALUMINUM	CRL	
5.	D–24	STILE	1.750X 3.592 X .125	6063–T5 ALUMINUM	CRL	
6.	D–38	TOP RAIL	1.710 X 3.00 X .125	6063–T5 ALUMINUM	CRL	
7.	D–69	STILE	1.750 X 3.592 X .125	6063–T5 ALUMINUM	CRL	
8.	D–71	BOTTOM RAIL	1.710 X 3.00 X .125	6063–T5 ALUMINUM	CRL	
9.	D–118	DOOR SWEEP RETAINER	.812 X .302	6063–T5 ALUMINUM	CRL	
10.	D–134–4	DOOR STOP	.334 X 1.485	6063–T5 ALUMINUM	CRL	
11.	D–125	DOOR GASKET	.350 X .365	EPDM	EPG	
12.	D–152	DOOR GLASS STOP	1.00 X .762 X .125	6063–T6 ALUMINUM	CRL	
13.	D–231	SUBFRAME HEADER	1.00 X 5.00 X .094	6063–T6 ALUMINUM	CRL	
14.	D–226	SUBFRAME JAMB	1.00 X 5.00 X .094	6063–T6 ALUMINUM	CRL	
15.	FG–1133	DOOR GASKET	.500 X .548 X .100	EPDM	EPG	
16.	FG–5163	DOOR STOP	1.240 X .745 X .070	6063–T6 ALUMINUM	CRL	
17.	FG–5185	INTERIOR SPACER GASKET	.375 X .25	EPDM 70 DUROMETER	EPG	
18.	FG–5188	INTERIOR SPACER GASKET	.25 X .25	EPDM 70 DUROMETER	EPG	
19.	FS–7	HORIZ. TO SHEAR BLOCK FASTENER	#10 x 3/4" PFH	ZINC COATED STEEL	VARIES	
20.	XLF009	SHEAR BLOCK ASSEMBLY SCREW	#14 x 1–1/2" HH	ZINC COATED STEEL	VARIES	
21.	XLF118	HORIZONTAL ASSEMBLY @ SHEAR BLOCK	#10 x 1" PFH A PT	ZINC COATED STEEL	VARIES	
22.	XLF119	ADAPTOR ATTACHEMENT SCREW	#10 X 1–3/8" PFH	ZINC COATED STEEL	VARIES	
23.	XLF320	END CAP ATTACHMENT SCREW	#10 X 1/2" DR. SCREW	ZINC COATED STEEL	VARIES	
24.	XLF322	POCKET FILLER ATTACHMENT	#12–14 x 1" HH	ZINC COATED STEEL	VARIES	
25.	XLF325	PRESSURE PLATE SCREW	12–14 x 1–1/2" HH	STALGARD STEEL	ELCO	
26.	XLG107	ISOLATOR GASKET	.264 X .626	EPDM 70 DUROMETER	EPG	
27.	XLG117	EXTERIOR GASKET	.217 X .438	EPDM 60 DUROMETER	EPG	
28.	XLG1015	DRY GLAZE GASKET	.319 X .962	EPDM/SPONGE 70 DU	EPG	
29.	XLA10301&02	"F" ANCHOR	6.250 X 2.869 X .25	6063–T6 ALUMINUM	CRL	
30.	XLA10501&02	"T" ANCHOR	7.50 X 2.869 X .25	6063–T6 ALUMINUM	CRL	
31.	XL122–BP	POCKET FILLER	1.562 X .937 X .094	6063–T5 ALUMINUM	CRL	
32.	XL130–BP	GLAZING ADAPTOR	.861 X .910 X .080	6063–T5 ALUMINUM	CRL	

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33.	XLA17401	"L" ANCHOR	6.00 X 3.50 X .25	6063–T6 ALUMINUM	CRL	
34.	XLB18301	SHEAR BLOCK	2.827 X 2.272 X .125	6063–T6 ALUMINUM	CRL	
35.	XLS20001	STANDARD MULL ANCHOR SLEEVE	2.282 X 4.953 X .125	6063–T6 ALUMINUM	CRL	
36.	XLS20101	HEAVY MULL ANCHOR SLEEVE	2.282 X 4.675 X .125	6063–T6 ALUMINUM	CRL	
37.	XLC325	MULL CAP	3.00 X 1.925 X .063	5005 H32 ALUMINUM	CRL	
38.	XLC338	JAMB CAP	2.75 X 1.925 X .063	5005 H32 ALUMINUM	CRL	
39.	XLD352	ZONE PLUG	1.056 X 1.591	ABS PLASTIC	CHARLOMA	
40.	XLC358	SSG MULL CAP	3.00 X 1.925 X .063	5005 H32 ALUMINUM	CRL	
41.	XLD500	MULLION, JAMB OR HORIZONTAL	2.50 X 5.00 X .094	6063–T6 ALUMINUM	CRL	
42.	XL500–BP	HEAD	2.50 X 5.203 X .094	6063–T6 ALUMINUM	CRL	
43.	XL502–BP	SILL	2.50 X 5.203 X .094	6063–T6 ALUMINUM	CRL	
44.	XL504–BP	SSG MULLION	2.50 X 5.234 X .200	6063–T6 ALUMINUM	CRL	
45.	XL510–BP	HEAVY JAMB OR MULLION	2.50 X 5.234 X .250	6063–T6 ALUMINUM	CRL	
46.	XL532–BP	ROLL OVER HORIZONTAL	2.50 X 5.203 X .094	6063–T6 ALUMINUM	CRL	
47.	XL533–BP	ROLL UNDER HORIZONTAL	2.50 X 5.203 X .094	6063–T6 ALUMINUM	CRL	
48.	XLBR15	REINFORCEMENT STEEL	.50 X 4.00	ZINC PAINTED STEEL	CRL	
49.	XLBR25	REINFORCEMENT STEEL	1.875 X 4.721 X .25	ZINC PAINTED STEEL	CRL	
50.	S–83	DOOR GLASS STOP	.812 X .762 X .094	6063–T6 ALUMINUM	CRL	
51.	SEMS	DOOR CORNER BLOCK ATTACHMENT	1/4–20 X 1"	ZINC COATED STEEL	VARIES	
52.	TH–57	THRESHOLD	5.625 X .500 X .125	6063–T5 ALUMINUM	CRL	
53.	XL110–BP	FACE CAP	.50 X 2.50 X .050	6063–T5 ALUMINUM	CRL	
54.	XL162–BP	PRESSURE PLATE	.442 X 2.394 X .094	6063–T6 ALUMINUM	CRL	
55.	XL237–BP	FILLER	.204 X 4.905 X .080	6063–T5 ALUMINUM	CRL	
56.	XLD350	SSG BRIDGE	2.415 X 1.519 X .750	ABS PLASTIC	CHARLOMA	
57.	795	PERIMETER SEAL		SILICONE	DOW CORNING	
58.	995	GLAZING POCKET SEAL		SILICONE	DOW CORNING	
59.	SCS 2000	PERIMETER SEAL		SILICONE	GE	
60.	SSG4600 CTG	GLAZING POCKET SEAL		SILICONE	GE	

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