Architectural Testing

NFRC U-FACTOR, SHGC, VT, & CONDENSATION RESISTANCE COMPUTER SIMULATION REPORT

(Revised)

Rendered to:
PROFORMANCE MANUFACTURING, INC.

SERIES/MODEL:
Fiberglass Double Hung

Report Number:	**B2517.02-201-45**
Original Report Date:	**09/08/11**
Expiration Date:	**09/08/15**
Revised Report Date:	**05/11/12**

849 Western Avenue North
St. Paul, MN 55117
phone: 651-636-3835
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www.archtest.com

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COMPUTER SIMULATION REPORT

(Revised)

Rendered to:
PROFORMANCE MANUFACTURING, INC.
750 North Country Line Road
Lone Rock, Wisconsin 53556

Report Number:	B2517.02-201-45
Simulation Date:	09/08/11
Original Report Date:	09/08/11
Expiration Date:	09/08/15
Revised Report Date:	05/11/12

Project Summary:

Architectural Testing, Inc. was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance, and Condensation Resistance* computer simulations in accordance with the National Fenestration Rating Council (NFRC). The products were evaluated in full compliance with NFRC requirements to the standards listed below.

**NFRC's Condensation Resistance rating is NOT equivalent to a Condensation Resistance Factor (CRF) determined in accordance with AAMA 1503.*

Standards:

NFRC 100-2010:	*Procedure for Determining Fenestration Product U-Factors*
NFRC 200-2010:	*Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*
NFRC 500-2010:	*Procedure for Determining Fenestration Product Condensation Resistance Values*

Software:

Frame and Edge Modeling:	THERM 6.3.38
Center-of-Glass Modeling:	WINDOW 6.3.54
Total Product Calculations:	WINDOW 6.3.54
Spectral Data Library:	23.0

Simulations Specimen Description:

Series/Model:	Fiberglass Double Hung
Type:	Vertical Slider , Double Hung
Frame Material:	FG Fiberglass
	FF Fiberglass with Foam-Filled Insulation
Sash Material:	FG Fiberglass
Standard Size:	1200mm x 1500mm

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Modeling Assumptions/Technical Interpretations:

1) Dividers were not modeled on the dual options because there was at least 3mm of air/gas space between the divider and both adjacent glazing surfaces per NFRC 100-2010, section 4.2.4.1.D.ii.a.
2) Multi-purpose products grouped for one validation matrix per NFRC 100-2010, section 4.2.3.2: This product validated the Fiberglass Slider in Architectural Testing, Inc. report number B2518.02-201-45.
3) Divider grouping per NFRC 100-2010, section 4.2.4.1.E.i: 0.187" x 0.625" and 0.217" x 0.709" dividers were grouped with 0.217" x 0.709" as group leader.
4) Foam was modeled as separate options and was allowable per NFRC 100-2010, section 4.2.1.F.

Specialty Products Table:

The specialty products method allow the manufacturer to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using WINDOW 6.3.54. The method gives overall product SHGC and VT indexed on center of glass properties. All values used in the calculations are truncated to six decimal place precision.

	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.004702	0.007295	0.009731
SHGC1	0.701987	0.624784	0.552264
VT0	0.000000	0.000000	0.000000
VT1	0.697030	0.617233	0.542277

SHGC = SHGC0 + SHGCc (SHGC1 - SHGC0)

VT = VT0 + VTc (VT1 - VT0)

Validation Matrix:

The following products are part of a validation matrix. Only one is required for validation testing.

Product Line	*Report Number*
Fiberglass Double Hung	B2517.02-201-45
Fiberglass Slider	B2518.02-201-45

Spacer Option Description

	Sealant		
Spacer Type	*Primary*	*Secondary*	*Code*
Cardinal XL Edge	Polyisobutylene	Silicone	SS-D

Grid Option Description

Grid Size	*Grid Type*	*Grid Pattern*
0.188" x 0.625"	Aluminum Rectangular Grid	NFRC Standard
0.217" x 0.709"	Aluminum Contour Grid	NFRC Standard

Reinforcement Option Description

Location	*Material*
None	

Gas Filling Technique Description

Fill Type	*Method*
90% Argon	Single Probe
90% Krypton	Single Probe

Edge-of-Glass Construction

Interior Condition	Silicone
Exterior Condition	ABS Glazing Bead

Weatherstripping

Type	*Quantity*	*Location*
Mohair	2 Rows	Sash Perimeter
Mohair	1 Row	Head, Sill, and Meeting Rails

Frame/Sash Materials Finish

Interior	Fiberglass
Exterior	Fiberglass

NFRC 100/200/500 Summary Sheet
Fiberglass Double Hung

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance	
No Foam Options												
1	DS 366 Arg DS											
	0.117	0.500	0.117					ARG90	0.022(#2)	CL	SS-D	N,G,S
	U-Factor 0.30			**SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16**					**VT (N / <1 / >1) 0.45 / 0.40 / 0.35**		**CR 60**	
2	DS 366 Arg DS Arg 366 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#5)	CL	SS-D	N
	U-Factor 0.22			**SHGC (N) 0.17**					**VT (N) 0.32**		**CR 63**	
3	DS 272 Arg DS Arg 272 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.042(#2) / 0.042(#5)	CL	SS-D	N
	U-Factor 0.22			**SHGC (N) 0.25**					**VT (N) 0.40**		**CR 63**	
4	DS 366 Arg DS i81											
	0.117	0.500	0.117					ARG90	0.022(#2) / 0.149(#4)	CL	SS-D	N,G,S
	U-Factor 0.27			**SHGC (N / <1 / >1) 0.18 / 0.16 / 0.14**					**VT (N / <1 / >1) 0.40 / 0.36 / 0.31**		**CR 49**	
5	DS 366 Kry DS i81											
	0.117	0.500	0.117					KRY90	0.022(#2) / 0.149(#4)	CL	SS-D	N,G,S
	U-Factor 0.26			**SHGC (N / <1 / >1) 0.17 / 0.16 / 0.14**					**VT (N / <1 / >1) 0.40 / 0.36 / 0.31**		**CR 50**	
6	DS 366 Arg DS 366 Arg DS i81											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#4) / 0.149(#6)	CL	SS-D	N
	U-Factor 0.21			**SHGC (N) 0.14**					**VT (N) 0.29**		**CR 61**	
Cap Foam Filled Insulation Option												
7	DS 366 Kry DS 366 Kry DS i81											
	0.117	0.438	0.117	0.438	0.117			KRY90	0.022(#2) / 0.022(#4) / 0.149(#6)	CL	SS-D	N
	U-Factor 0.19			**SHGC (N) 0.14**					**VT (N) 0.29**		**CR 63**	
No Foam Options												
8	DS 366 Arg DS Arg 366 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#5)	CL	SS-D	G,S
	U-Factor 0.22			**SHGC (<1 / >1) 0.15 / 0.14**					**VT (<1 / >1) 0.29 / 0.25**		**CR 63**	
9	DS 272 Arg DS Arg 272 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.042(#2) / 0.042(#5)	CL	SS-D	G,S
	U-Factor 0.23			**SHGC (<1 / >1) 0.22 / 0.20**					**VT (<1 / >1) 0.35 / 0.31**		**CR 63**	
10	DS 366 Arg DS 366 Arg DS i81											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#4) / 0.149(#6)	CL	SS-D	G,S
	U-Factor 0.21			**SHGC (<1 / >1) 0.13 / 0.11**					**VT (<1 / >1) 0.26 / 0.23**		**CR 61**	

NFRC 100/200/500 Summary Sheet
Fiberglass Double Hung

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance	
Cap Foam Filled Insulation Option												
11	DS 366 Kry DS 366 Kry DS i81-Foam-Filled Insulation											
	0.117	0.438	0.117	0.438	0.117			KRY90	0.022(#2) / 0.022(#4) / 0.149(#6)	CL	SS-D	G,S
	U-Factor	**0.19**		**SHGC (<1 / >1)**	**0.13 / 0.11**				**VT (<1 / >1)**	**0.26 / 0.23**	**CR**	**63**
Outer Frame Hollow Foam Filled Insulation Options												
12	DS 272 Arg DS											
	0.117	0.500	0.117					ARG90	0.042(#2)	CL	SS-D	N
	U-Factor	**0.30**		**SHGC (N)**	**0.29**				**VT (N)**	**0.50**	**CR**	**60**
13	DS 366 Arg DS											
	0.117	0.500	0.117					ARG90	0.022(#2)	CL	SS-D	N
	U-Factor	**0.30**		**SHGC (N)**	**0.19**				**VT (N)**	**0.45**	**CR**	**61**
14	DS 366 Arg DS i81											
	0.117	0.500	0.117					ARG90	0.022(#2) / 0.149(#4)	CL	SS-D	N
	U-Factor	**0.26**		**SHGC (N)**	**0.18**				**VT (N)**	**0.40**	**CR**	**49**
15	DS 272 Arg DS Arg 272 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.042(#2) / 0.042(#5)	CL	SS-D	N
	U-Factor	**0.22**		**SHGC (N)**	**0.25**				**VT (N)**	**0.40**	**CR**	**64**
16	DS 272 Arg DS 272 Arg DS i81											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.042(#2) / 0.042(#4) / 0.149(#6)	CL	SS-D	N
	U-Factor	**0.21**		**SHGC (N)**	**0.21**				**VT (N)**	**0.36**	**CR**	**61**
17	DS 366 Arg DS Arg 366 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#5)	CL	SS-D	N
	U-Factor	**0.22**		**SHGC (N)**	**0.17**				**VT (N)**	**0.32**	**CR**	**64**
18	DS 366 Arg DS 366 Arg DS i81											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#4) / 0.149(#6)	CL	SS-D	N
	U-Factor	**0.20**		**SHGC (N)**	**0.14**				**VT (N)**	**0.29**	**CR**	**61**
Cap/Outer Frame Hollow/Inner Frame Hollow Foam Filled Insulation Options												
19	DS 272 Arg DS											
	0.117	0.500	0.117					ARG90	0.042(#2)	CL	SS-D	N
	U-Factor	**0.30**		**SHGC (N)**	**0.29**				**VT (N)**	**0.50**	**CR**	**60**
20	DS 366 Arg DS											
	0.117	0.500	0.117					ARG90	0.022(#2)	CL	SS-D	N
	U-Factor	**0.29**		**SHGC (N)**	**0.19**				**VT (N)**	**0.45**	**CR**	**61**

NFRC 100/200/500 Summary Sheet
Fiberglass Double Hung

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance	
Cap/Outer Frame Hollow/Inner Frame Hollow Foam Filled Insulation Options												
21	DS 366 Arg DS i81											
	0.117	0.500	0.117					ARG90	0.022(#2) / 0.149(#4)	CL	SS-D	N
	U-Factor		**0.26**	**SHGC (N)**			**0.18**		**VT (N)**	**0.40**	**CR**	**49**
22	DS 272 Arg DS Arg 272 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.042(#2) / 0.042(#5)	CL	SS-D	N
	U-Factor		**0.21**	**SHGC (N)**			**0.25**		**VT (N)**	**0.40**	**CR**	**65**
23	DS 272 Arg DS 272 Arg DS i81											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.042(#2) / 0.042(#4) / 0.149(#6)	CL	SS-D	N
	U-Factor		**0.20**	**SHGC (N)**			**0.21**		**VT (N)**	**0.36**	**CR**	**61**
24	DS 366 Arg DS Arg 366 DS											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#5)	CL	SS-D	N
	U-Factor		**0.21**	**SHGC (N)**			**0.17**		**VT (N)**	**0.32**	**CR**	**65**
25	DS 366 Arg DS 366 Arg DS i81											
	0.117	0.438	0.117	0.438	0.117			ARG90	0.022(#2) / 0.022(#4) / 0.149(#6)	CL	SS-D	N
	U-Factor		**0.20**	**SHGC (N)**			**0.14**		**VT (N)**	**0.29**	**CR**	**61**
No Foam Options												
26	DS 180 Arg DS											
	0.118	0.500	0.117					ARG90	0.068(#2)	CL	SS-D	N
	U-Factor		**0.31**	**SHGC (N)**			**0.45**		**VT (N)**	**0.55**	**CR**	**60**
27	DS 180 Arg DS Arg 180 DS											
	0.118	0.438	0.117	0.438	0.118			ARG90	0.068(#2) / 0.068(#5)	CL	SS-D	N
	U-Factor		**0.23**	**SHGC (N)**			**0.40**		**VT (N)**	**0.49**	**CR**	**63**

The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

Ratings values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes. The ratings values were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy.

Architectural Testing, Inc. is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The NFRC procedure requires that the computational results be verified through actual test results.

Detailed drawings, simulation data files, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. Results obtained are simulated values and were secured by using the designated test methods. 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 product simulated. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:

Digitally Signed by: Jessica Johnson

Jessica A. Johnson
Simulation Technician

REVIEWED BY:

Digitally Signed by: Heather Duneman

Heather M. Duneman
Senior Simluation Technician
Simulator-In-Responsible-Charge

JAJ:jaj
B2517.02-201-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (18)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
01-R0	9/8/2011	All	Original report issue. Work requested by Mr. Jerry Beranek of Proformance Manufacturing, Inc.
01-R1	9/20/2011	All	Revised report to include foam options 7 and 11.
02-R0	5/11/2012	All	Revised report issue. Added 16 glass options (IDs 12-27).

All drawings and Bills of Material used to simulate this product are enclosed in this Appendix

Appendix A

B2517.02-201-45

BOM for 44x75 Double Hung for AAMA testing

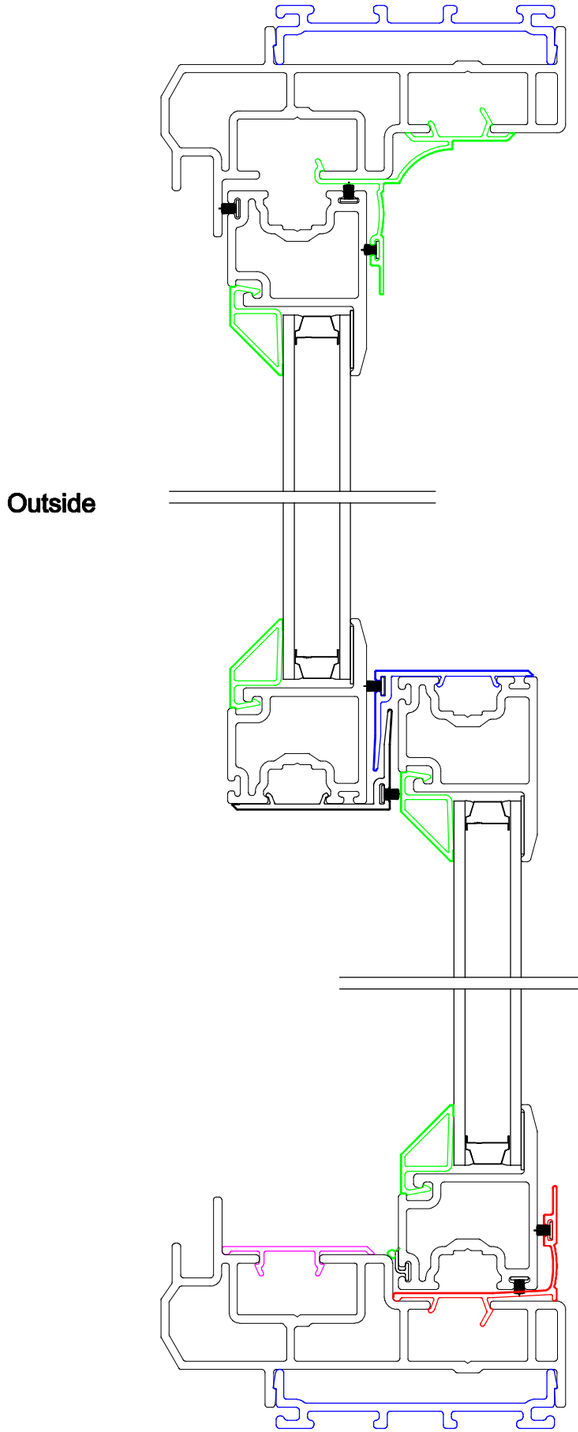
Description	Vendor	Part #	
Weep Doors	Ashland Hardware	64400-001	X
Locks (White)	Ashland Hardware	D1000AL-01	X
Keeper (White)	Ashland Hardware	14161-999-001	X
Lift Handle (White)	Ashland Hardware	13314-999-01-BG	X
Left Tilt Latches (White)	Ashland Hardware	80290	X
Right Tilt Latches (White)	Ashland Hardware	80291	X
Left Toggle tilt latches	Ashland Hardware	83100	X
Right Toggle tilt latches	Ashland Hardware	82100	X
Keys Sash	Flambeau	817710AE	X
Keys Frame	Flambeau	817711AE	X
Frame Material (White)	Teel Plastics	97097001	X
Sash Material (White)	Teel Plastics	97097002	X
Glazing Bead	Teel Plastics	P0136	X
Interlocks	Teel Plastics	P0135	X
Balance Covers	Teel Plastics	P0140	X
Weather strip	Ultra Fab	W33291NG	X
Chimney Blocks	Sureview	SV53	
Balance Shoes	Ashland Hardware	81003	X
Balance Holder	Ashland Hardware	14019	X
Balances	Ashland Hardware	13243	X
Balances	Ashland Hardware	13242	X
Balances	Ashland Hardware	13906	X
Pivot Bars	Ashland Hardware	12310	X
Sash Stop	Sureview	SV39	X
Sill Stop	Teel Plastics	P0133	X
Head Stop	Teel Plastics	P0132	X

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

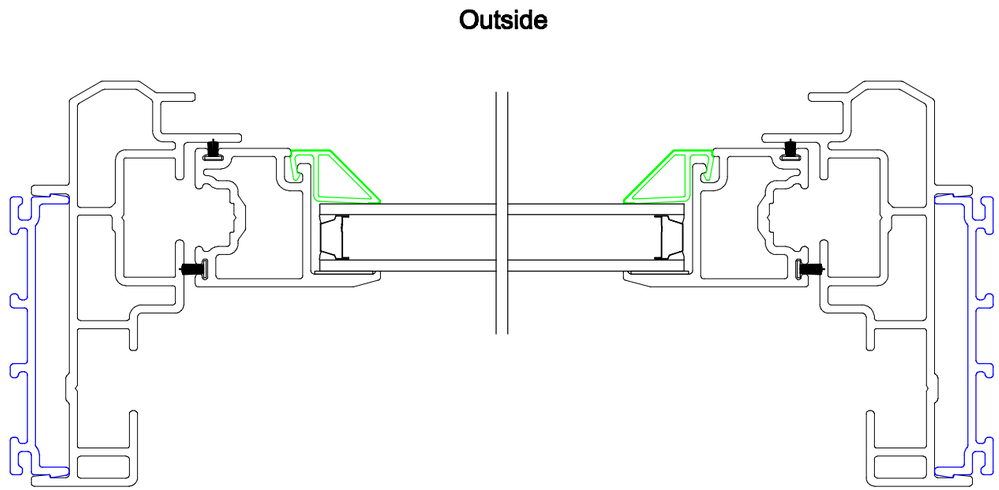
ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Duneman

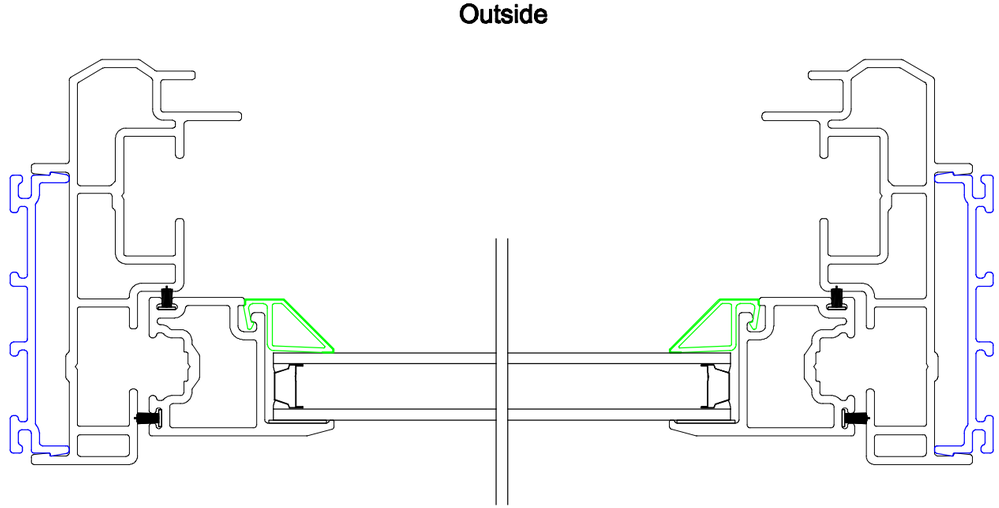
PMI Fiberglass Double Hung Window 08.01.2011



PMI Fiberglass Double Slide Hung End View. Cardinal Glass



PMI Fiberglass Double Hung Top View (outer sash)



PMI Fiberglass Double Hung End View (inner sash)

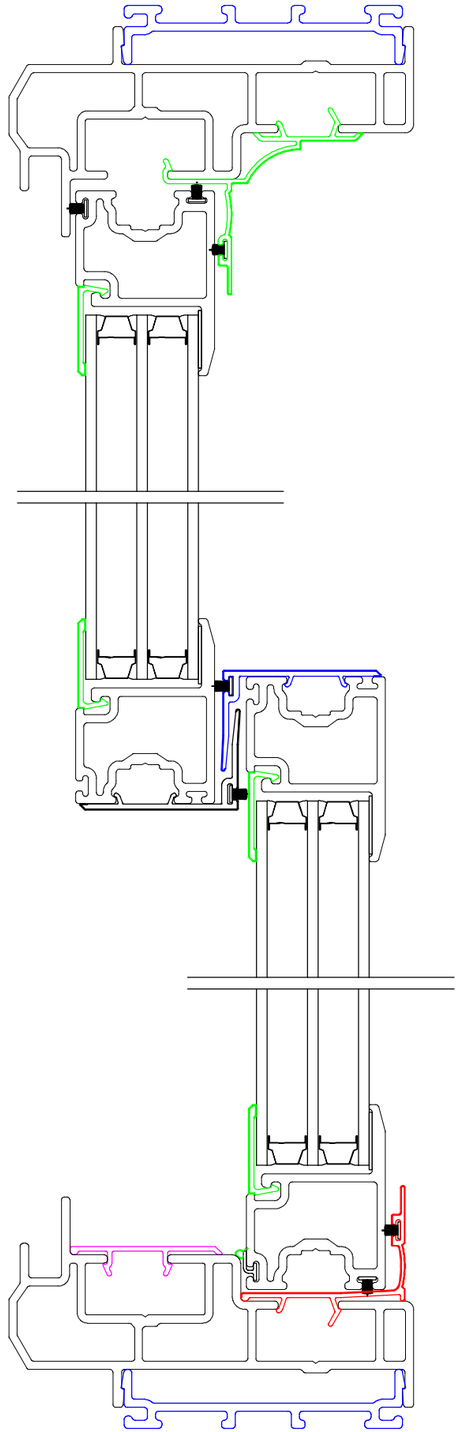
TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY:

PMI Fiberglass Double Hung Window 08.01.2011

Outside



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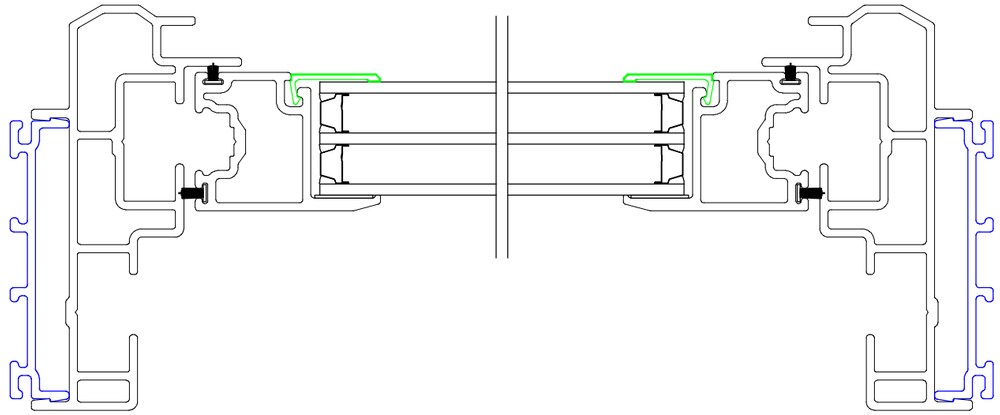
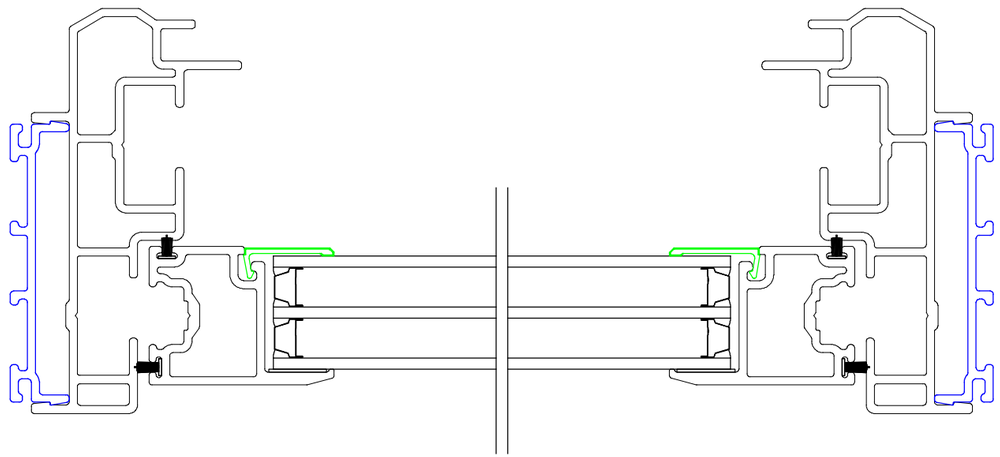


PMI Fiberglass Double Hung Top View (outer sash)

Outside



PMI Fiberglass Double Hung End View (inner sash)

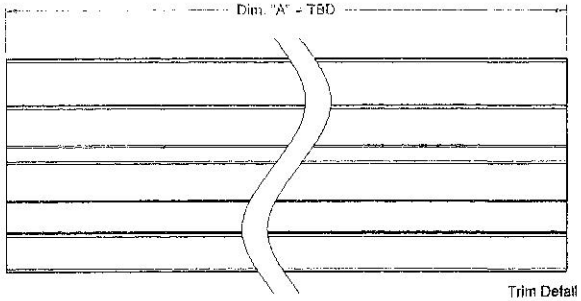
PMI Fiberglass Double Slide Hung End View. Cardinal Glass
3-pane, 366 on 2 and 5 surfaces, 90% argon, 2 panes of 3.0 and 1 pane of 3.1 glass

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY:

Foam-Filled Options



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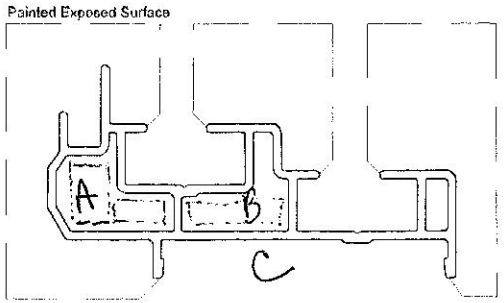
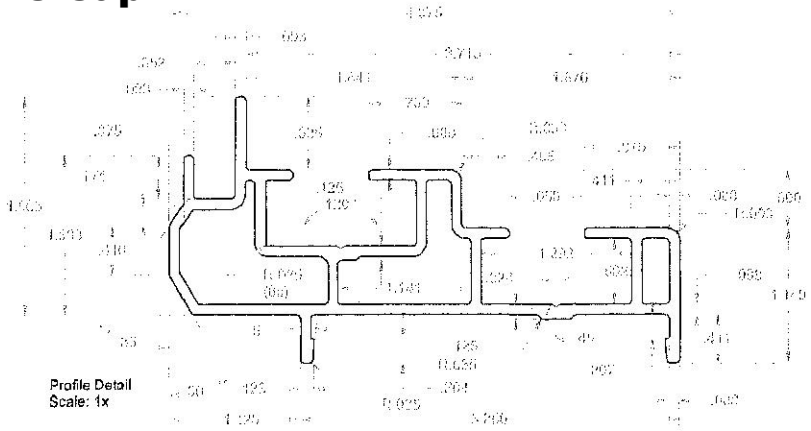


A Outer Frame

B Inner Frame

C Cap



Profile Detail
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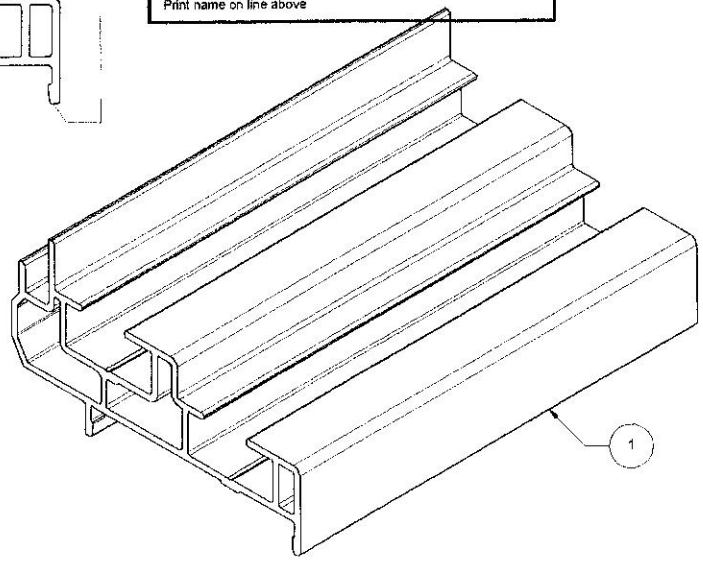


REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Final draft	11.17.2010	

Customer Approval

Sign name on line above Date

Print name on line above

Item #	Part Name	Cost Center	Revision	Comment
1	DH Frame Profile	Area: 1.363, Outer Perimeter: 19.420 ", Inner Perimeter: 10.010 "		

Architectural Testing

Report #: B2517-201-45

Date: 05/11/2012

Verified by:

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN: PMI Engineering DATE: 11.17.2010

CHECKED

QA

MFG

APPROVED

ECOSTAR

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

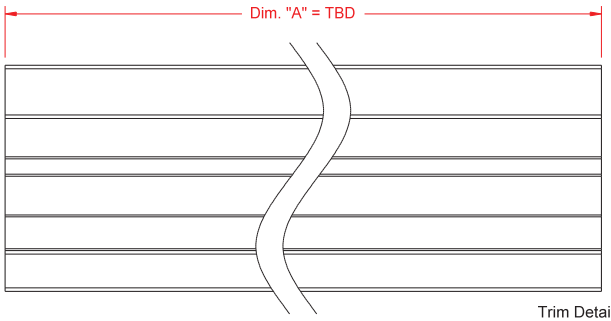
SIZE	DWG NO.	DWG Name.	REV
B	PMI-001.01	Double Hung Frame Profile	.01

SCALE: As Noted

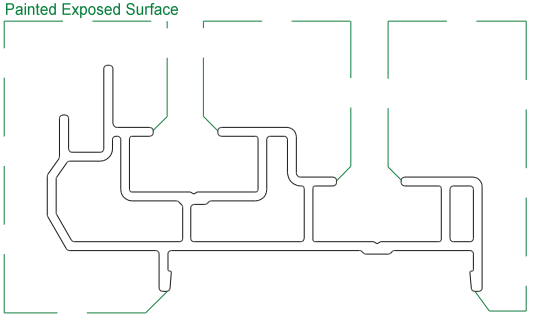
Directory: NBO\PMI\Eng\Double Hung

SHEET 1 of 1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Final draft	11.17.2010	



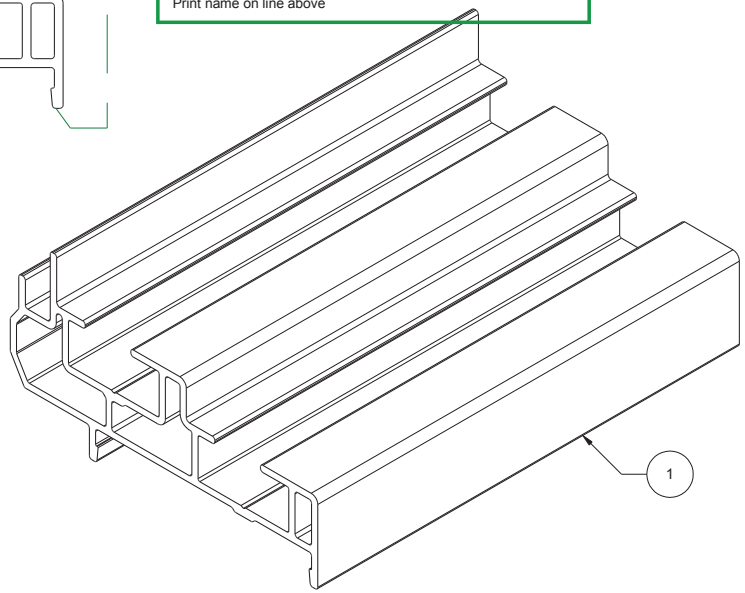
Trim Detail
Scale: None

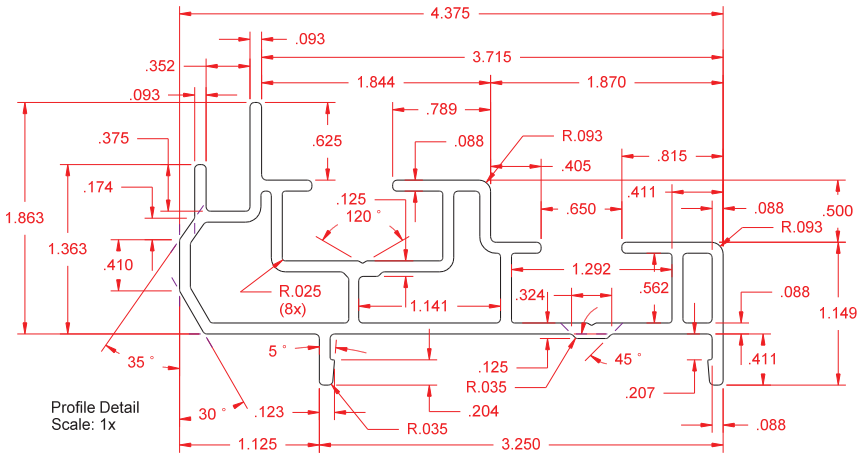


Customer Approval

Sign name on line above Date

Print name on line above





Profile Detail
Scale: 1x

Fiberglass

Item #	Part Name	Cost Center	Revision	Comment
1	DH Frame Profile	Area: 1.363, Outer Perimeter: 19.420 ", Inner Perimeter: 10.010 "		

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 11.17.2010
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-001.01	Double Hung Frame Profile	.01

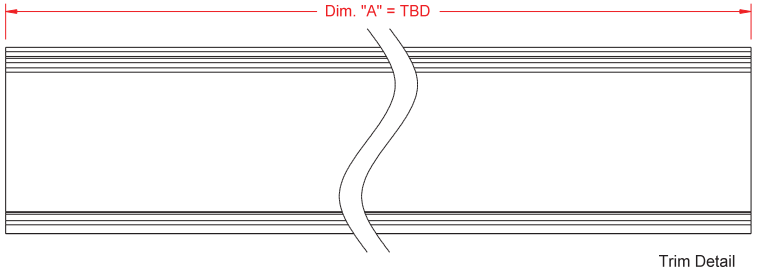
SCALE:	Directory	SHEET
As Noted	NBO\PMI\Eng\Double Hung	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

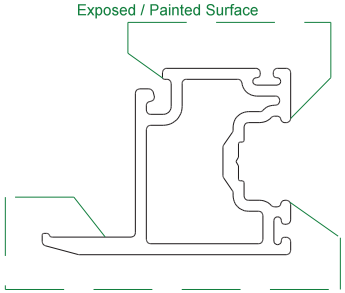
ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Dinsman

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Final draft	11.17.2010	



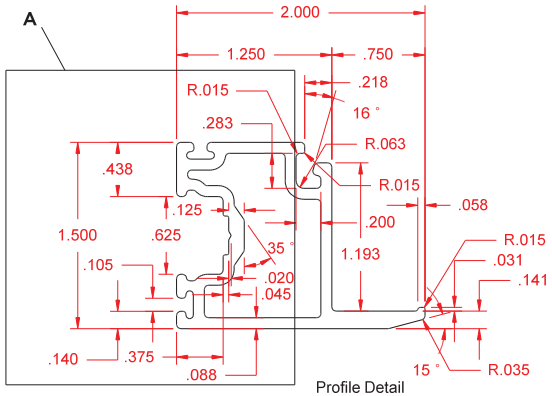
Trim Detail
Sacle: 1x



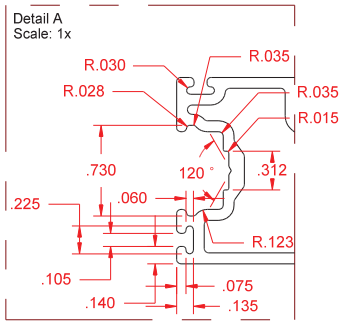
Customer Approval

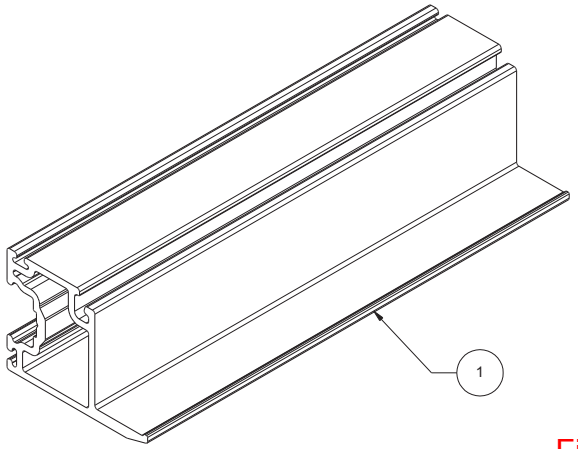
Sign name on line above Date

Print name on line above



Profile Detail
Scale: 1x





Fiberglass

Item #	Part Name	Cost Center	Revision	Comment
1	DH Sash Profile	Area: .677, Outer Perimeter: 9.112 ", Inner Perimeter: 4.947 "		

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 11.17.2010
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-002.01	Double Hung Sash Profile	.01

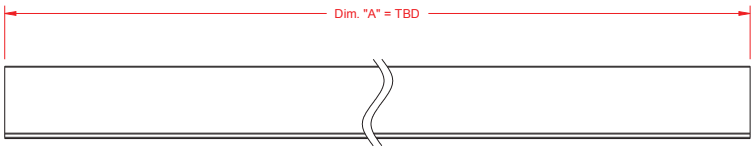
SCALE:	Directory	SHEET
As Noted	NBO\PMI\Eng\Double Hung	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

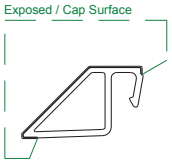
ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Lineman

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Added Cap Area	01.26.2011	Teel



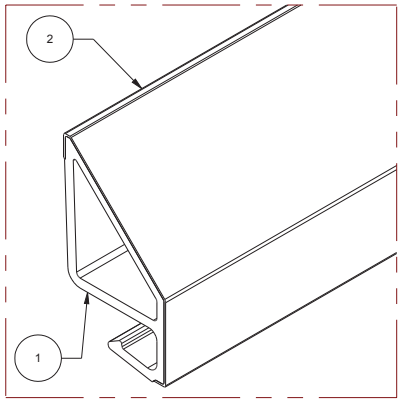
Trim Detail
Sacle: 1x

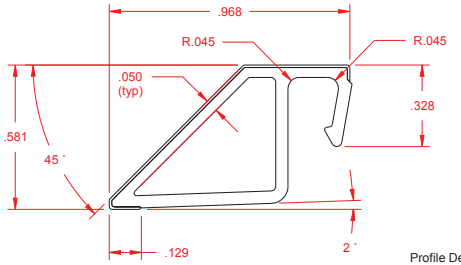


Customer Approval

Sign name on line above Date

Print name on line above





Profile Detail
Scale: 2x

ABS

Item #	PMI Part #	Part Name	Cost Center	Rev.	Comment
1	P0136	Glazing Bead .726	Area: .116", Outer Perim: 3.201", Inner Perim: 1.781"	.01	
2		Glazing Bead Cap .72(	Area: .0139 ", Perimeter: 2.791 "		.010" Nominal Cap Wall Thickness

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 01.26.2011
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-106.01	Glazing Bead .726	.01

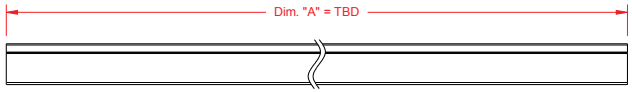
SCALE:	Directory	SHEET
As Noted	PMI\Engineering\Accessory\Sash	1 of 1

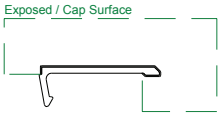
TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Linneman

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



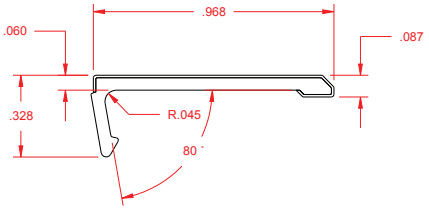


Trim Detail
Scale: 1x

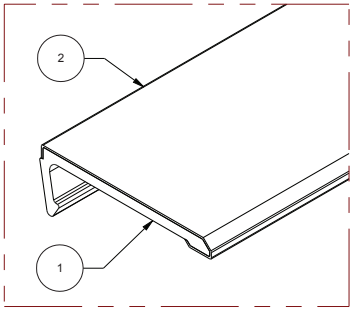
Customer Approval

Sign name on line above Date

Print name on line above



Profile Detail
Scale: 2x



ABS

Item #	PMI Part Number	Part Name	Cost Center	Revision	Comment
1	P0137	Triple Glazing Bead	Area: .0630 ", Perimeter: 2.543 "		
2		Triple Glazing Bead Cap	Area: .0122 ", Perimeter: 2.453 "		

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 01.27.2011
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

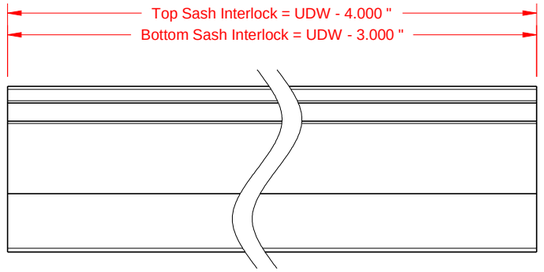
SIZE	DWG NO.	DWG Name.	REV
B	PMI-107	Triple Glazing Bead	

SCALE:	Directory	SHEET
As Noted	NBO\PMI\\Eng\Accessory\Sash	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY:



Trim Detail
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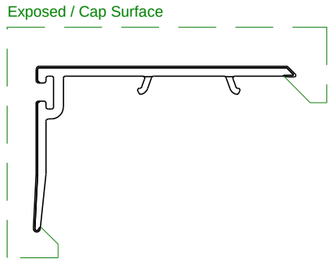
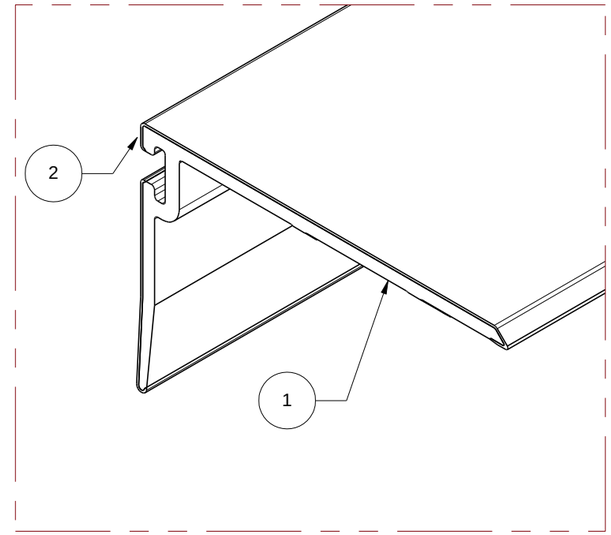


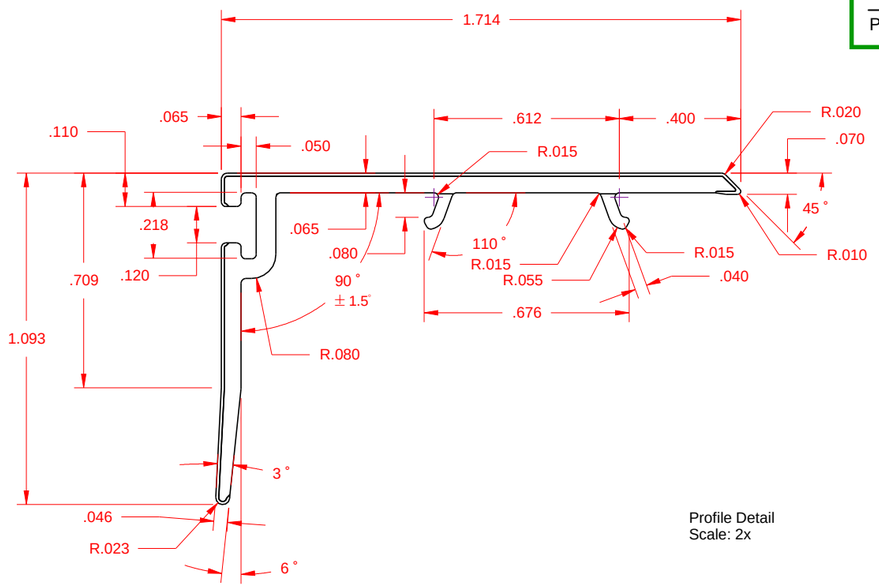
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Removed Flex, added "T" Slot	01.25.2011	PMI
	.02	Added Cap Area	01.26.2011	Teel
	.03	Changed Barbs	03.18.2011	Teel

Customer Approval

Sign name on line above Date

Print name on line above





Profile Detail
Scale: 2x

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY:

ABS

Item #	PMI Part Number	Part Name	Cost Center	Revision	Comment
1	P0135	Interlock	Area: 1.681 ", Perimeter: 6.236 "	.03	
2		Interlock Cap	Cap Area: .0282 ", Perim: 5.687 "		.010” Nominal Cap Wall Thickness

Note: Industry Standard Tolerances Unless Otherwise Specified.

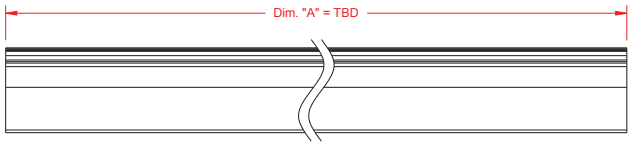
DRAWN	PMI Engineering	01.26.2010
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-105.03	Interlock	.03

SCALE:	Directory	SHEET
As Noted	NBO\PMI\Engineering\Accessory\Sash	1 of 1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

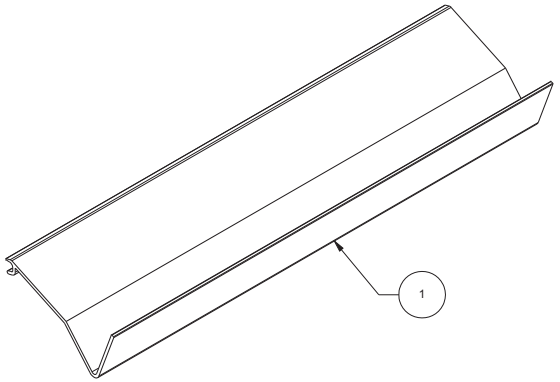


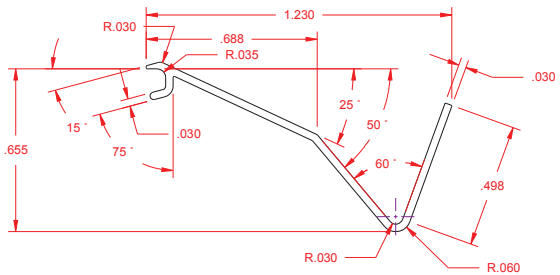
Trim Detail
Scale: 1x

Customer Approval

Sign name on line above Date

Print name on line above





Profile Detail
Scale: 2x

ABS

Item #	PMI Part Numbe	Part Name	Cost Center	Revision	Comment
1	P0140	Balance Cover	Area: .0574 ", Perim: 3.877 "		

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 01.24.2011
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

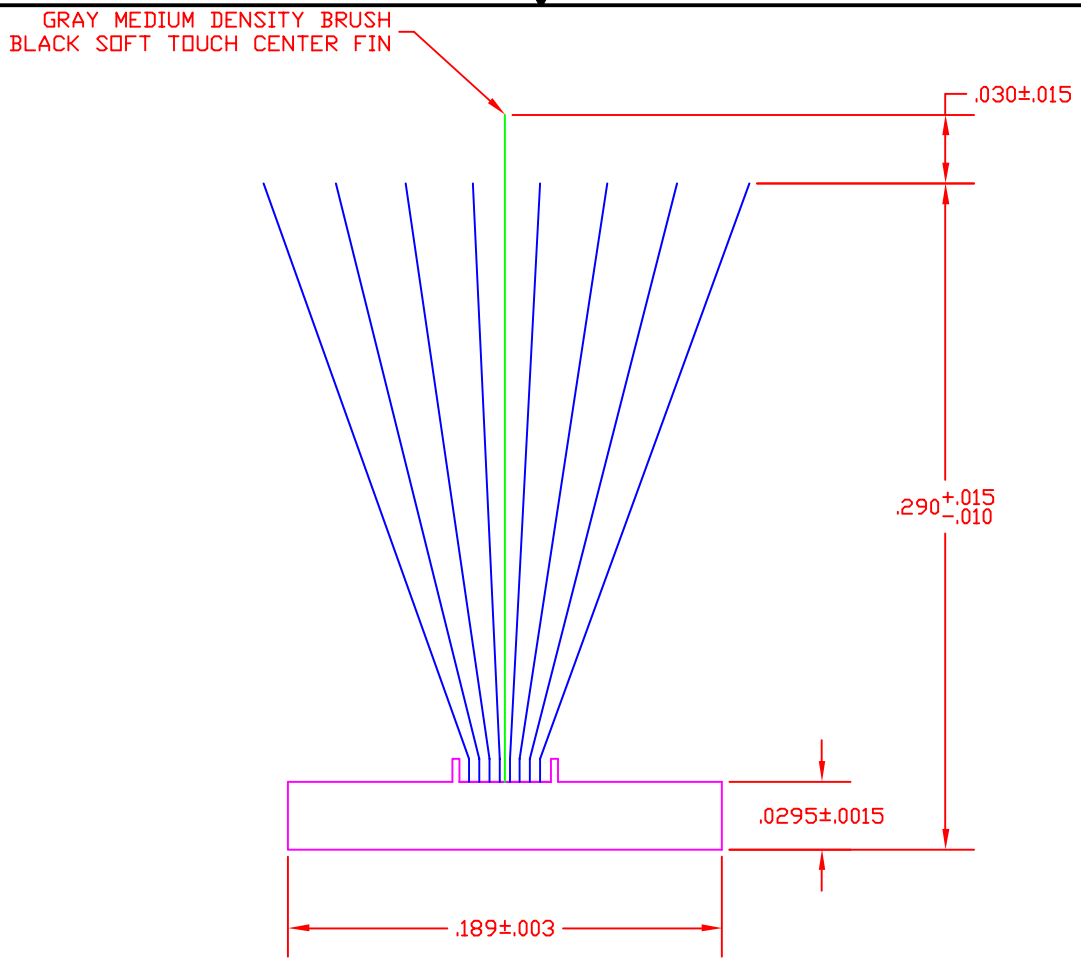
SIZE	DWG NO.	DWG Name.	REV
B	PMI - 110	Balance Cover	

SCALE:	Directory	SHEET
As Noted	\Eng\Accessory\Frame\Extruded	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Bineman



REV	DESCRIPTION	ECR #

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Dinsman

UNITS	.X	.XX	.XXX	.XXXX	ANGLES
INCHES `	.05	.01	.005	.0005	.5~

NOTES:

REMOVE ALL SHARP EDGES UNLESS OTHERWISE STATED

STD MACHINE FINISH 125

DRAWN: CAB

CHECKED:

ENGINEER:

POST PROCESS:

HEAT TREAT:

MAT'L: POLYPROPELENE

ULTRAFAB
www.ultrafab.com
1050 HOOK ROAD
FARMINGTON, NY 14425
PHN (585) 924-2186
FAX (585) 924-7680
WWW.ULTRAFAB.COM

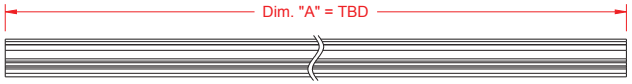
TITLE: W33291NG

SIZE	DWG NO	REV

SCALE: DO NOT SCALE DRAWING

SHEET OF

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Added Cap Area	01.27.2011	Teel



Trim Detail
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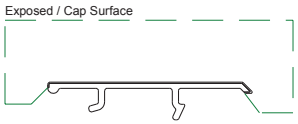
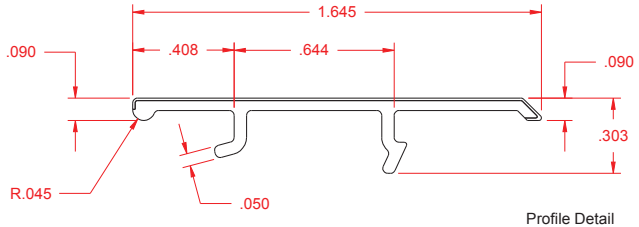
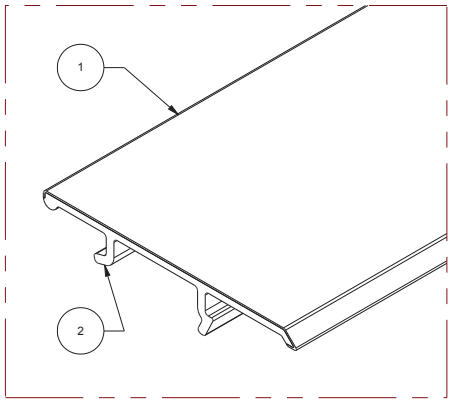




Profile Detail
Scale: 2x



ABS

Customer Approval

Sign name on line above Date

Print name on line above

Item #	PMI Part Num	Part Name	Cost Center	Revision	Comment
2	P0131	Sash Stop	Area: .0937 ", Perimeter: 4.346 "	.01	
1		Sash Stop Cap	Area: .0176 ", Perimeter: 3.531 "		.010" Nominal Cap Wall Thickness

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 01.27.2011
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-101.01	Sash Stop	.01

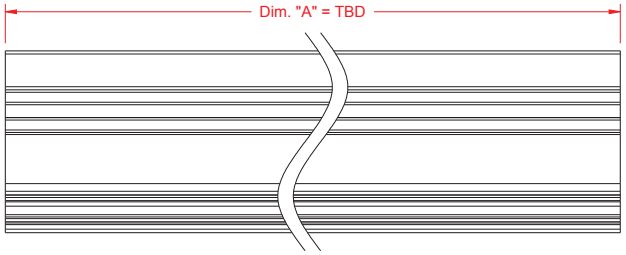
SCALE:	Directory	SHEET
As Noted	PMI\Eng\Accessory\Frame\Extruded	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

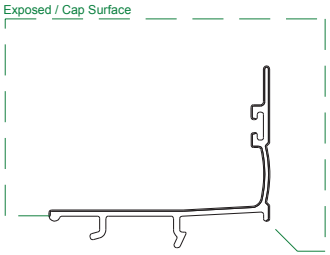
ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

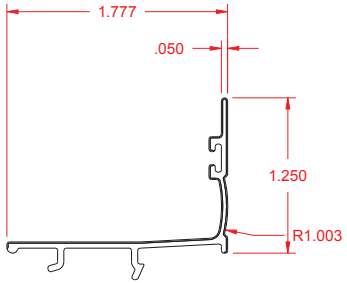
REVIEWED BY: Heather Linneman

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Added Cap Area	01.26.2011	Teel



Trim Detail
Scale: 1x



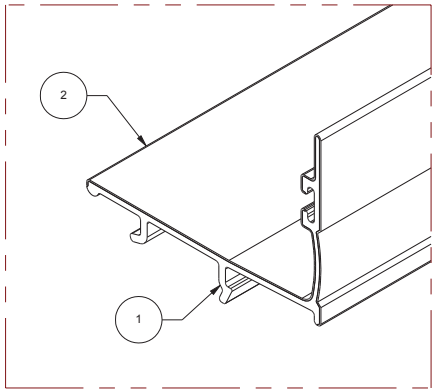


Profile Detail
Scale: 1x

Customer Approval

Sign name on line above Date

Print name on line above



ABS

Item #	PMI Part #	Part Name	Cost Center	Rev.	Comment
1	P0133	Sill Stop	Area: .154 ", Perimeter: 7.439 "	.01	
2		Sill Stop Cap	Area: .042 ", Perim: 8.497 "		.010" Nominal Cap Wall Thickness

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE .01.26.2011
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-103.01	Sill Stop	.01

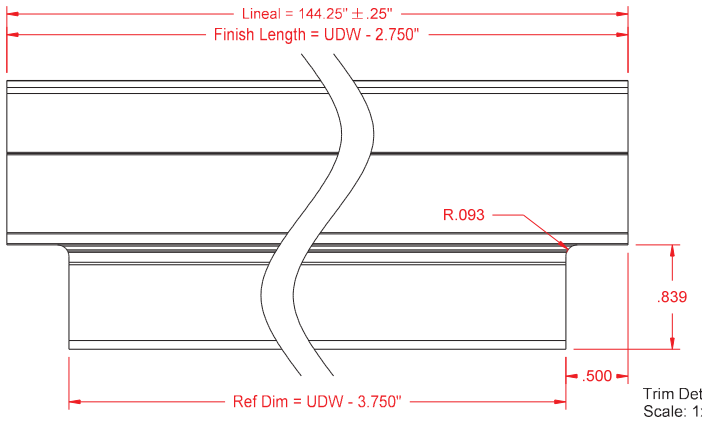
SCALE:	Directory	SHEET
As Noted	PMI\Eng\Accessory\Frame\Extruded	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

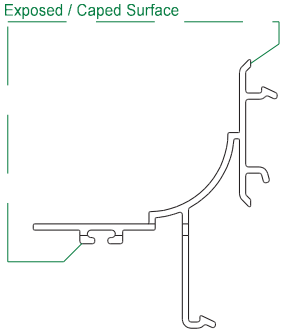
ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Linneman

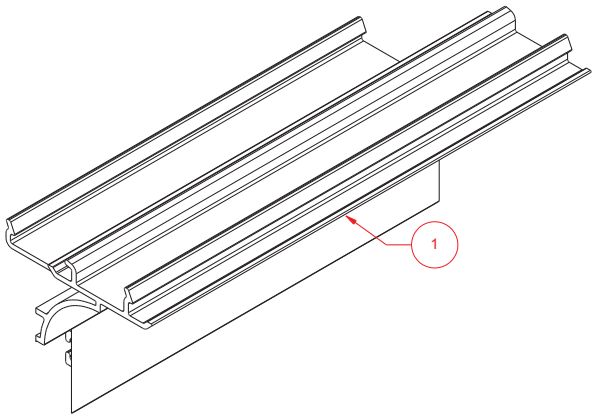
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

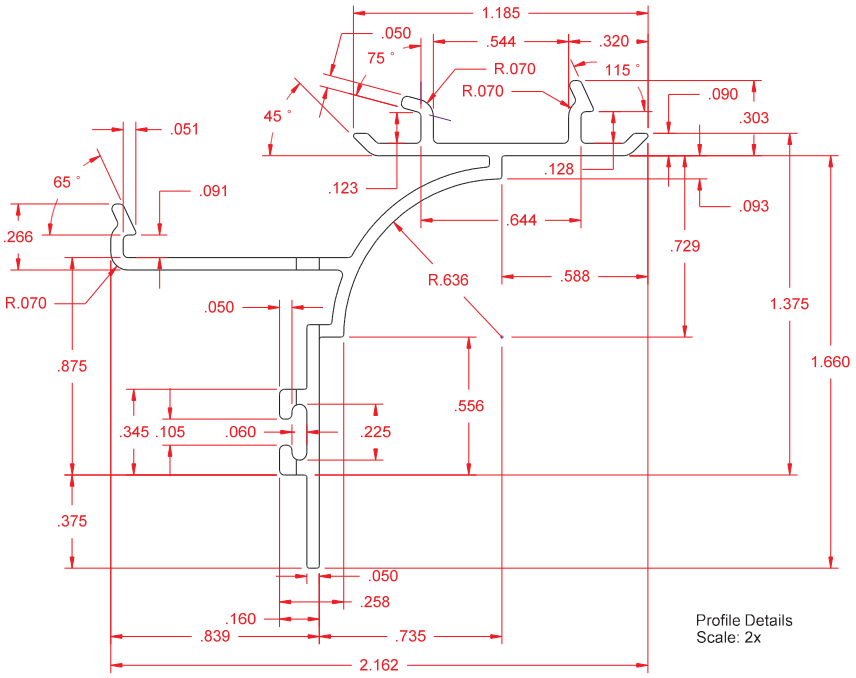


Trim Detail
Scale: 1x



CONFIDENTIAL





Profile Details
Scale: 2x

ABS

Item #	Part Name	Cost Center	Material	Revision	Comment
1	Head Stop	Area: .270, Perimeter: 10.522 '	ABS, Natural, White Cap		All Dimensions include cap

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 11.23.2010
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-102	Head Stop	

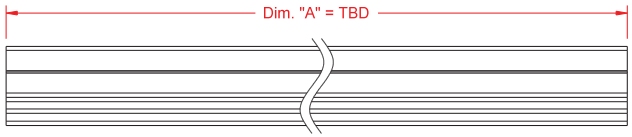
SCALE:	Directory	SHEET
As Noted	PMI\Eng\Accessory\Frame\Extruded	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Dinsman

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	.01	Final draft	11.17.2010	

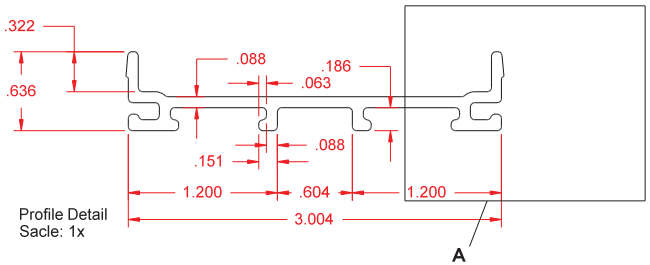


Trim Detail
Scale: 1x

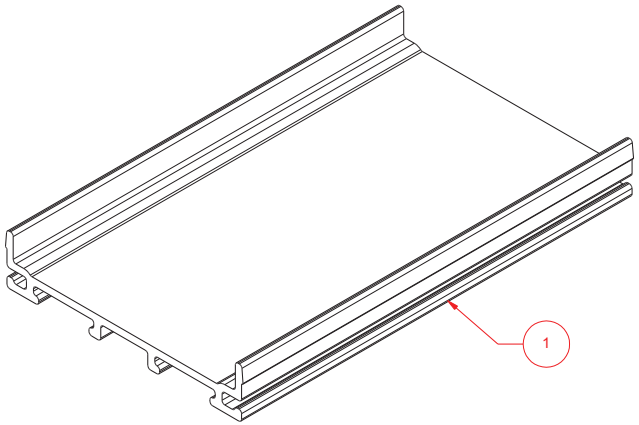
Customer Approval

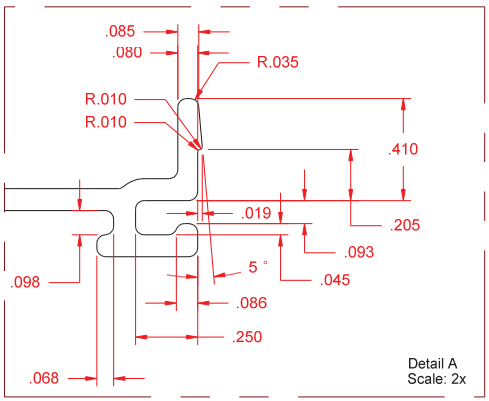
Sign name on line above Date

Print name on line above



Profile Detail
Sacle: 1x





Detail A
Scale: 2x

Item #	Part Name	Cost Center	Revision	Comment
1	Frame Cap	Area: .462, Perimeter: 10.201		

Note: Industry Standard Tolerances Unless Otherwise Specified.

DRAWN	PMI Engineering	DATE 11.17.2010
CHECKED		
QA		
MFG		
APPROVED		

Proformance Manufacturing, Inc
750 North County Line Road
Lone Rock, WI 53556
www.pmi-windows.com
608.583.7200
608.583.7060 Fax

SIZE	DWG NO.	DWG Name.	REV
B	PMI-003.01	Frame Cap	.01

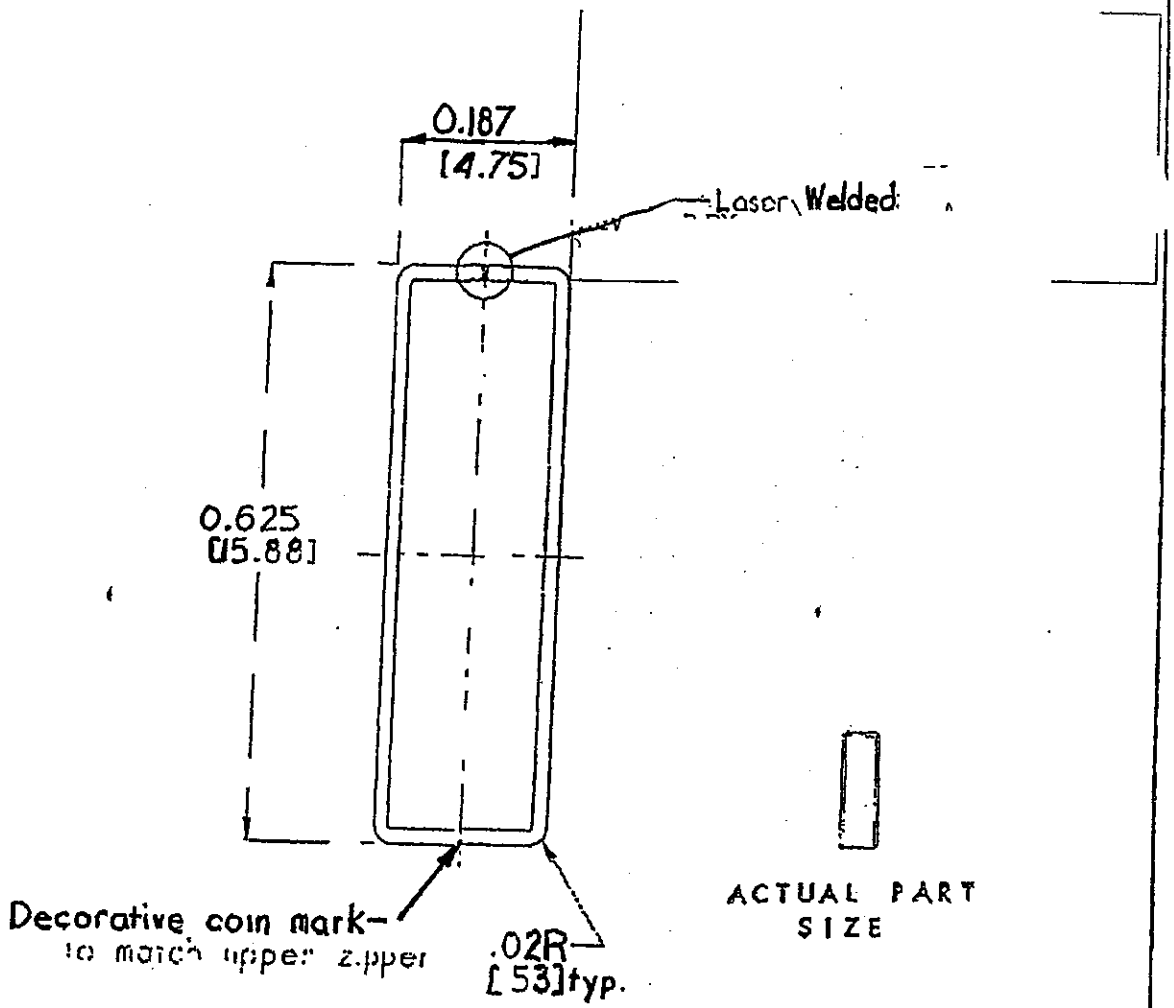
SCALE:	Directory	SHEET
As Noted	NBO\PMI\Eng\Accessory\Frame	1 of 1

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Dineman

NOTE: ALL DIMENSIONS IN [] BRACKETS ARE MM UNLESS NOTED



TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Dineman

DATE	SYM.	REVISION	AUTH.	DRN.	CK.
3/20/97		Initial Release		GRM	

ALLMETAL

TOLERANCES EXCEPT AS NOTED
DECIMAL INCHES .XX ±.01 .XXX ±.005 .XXXX ±.0002
DECIMAL MM .XX ±.13 .XX ±.06
ANGULAR ±1°

TITLE: 3/16 x 5/8 MBZ (Muntin Bar - Zippered)

MATL: .016" [.41mm] 3105-H24 Aluminum

FINISH: Grey Anod.

SCALE: 5:1

DATE: 3/20/97

DWG. NO.: 10206010101214O

DRN. BY G. Matthews

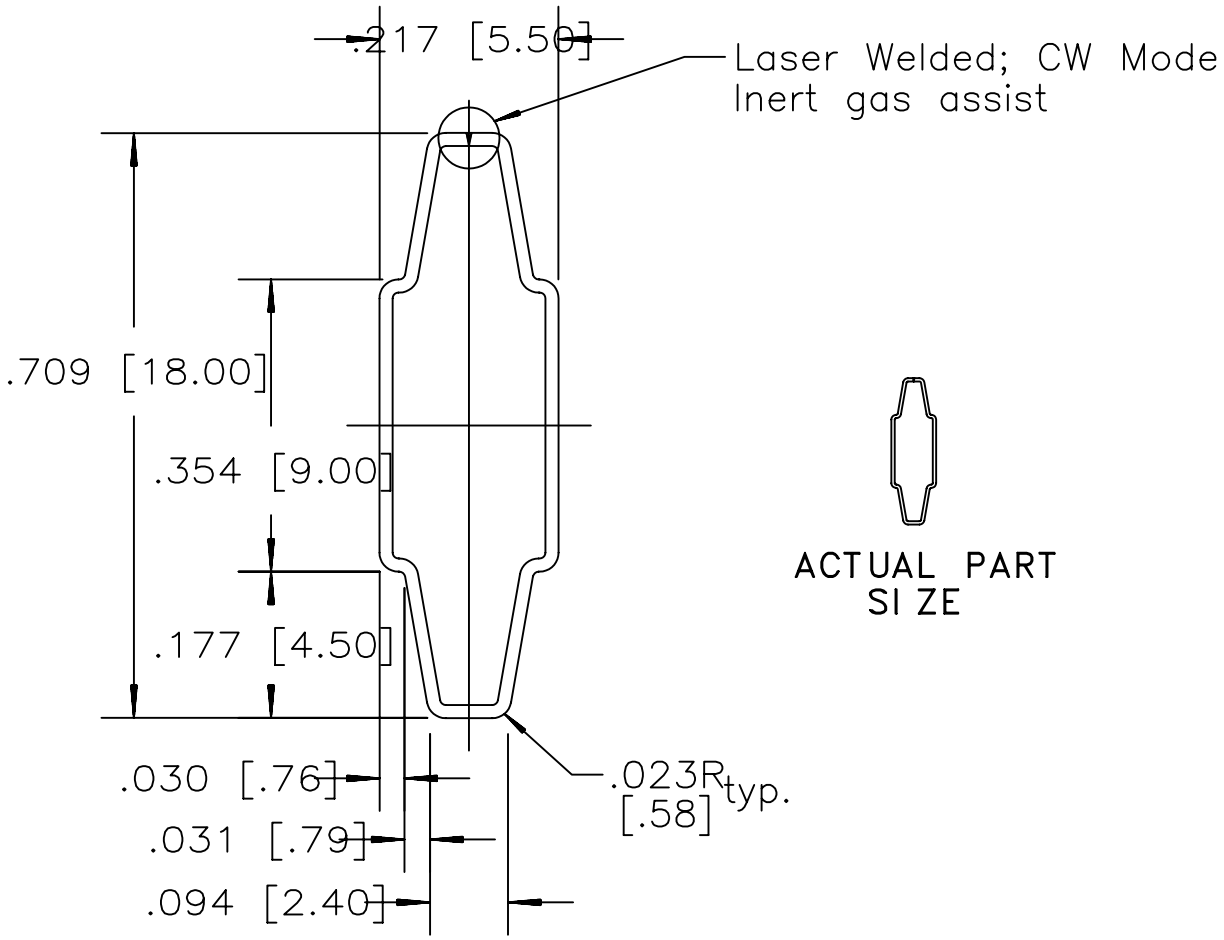
CK. BY

APPR. BY

S.O. NO.

FILENAME:316X58Z

NOTE: ALL DIMENSIONS IN [] BRACKETS ARE MM UNLESS NOTED



TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Linneman

DATE	SYM.	REVISION	AUTH.	DRN.	CK.
4/17/97		Weld note changed, Title block changed		GRM	
12/9/92		Initial Release		GRM	

ALLMETAL

TOLERANCES
EXCEPT AS NOTED

DECIMAL INCHES
.XX .XXX .XXXX
± .01 .005 .0002

DECIMAL MM
.XX .XXX
± .13 .06

ANGULAR
± 1°

TITLE: 5.5 x 18mm Contour Muntin Bar (CMB)

MATL.: .016" [.41mm]
3105 Aluminum

FINISH: FULL RANGE
(MI LL, ANOD., PAI NTED)

DRN. BY G. Matthews

CK. BY

APPR. BY

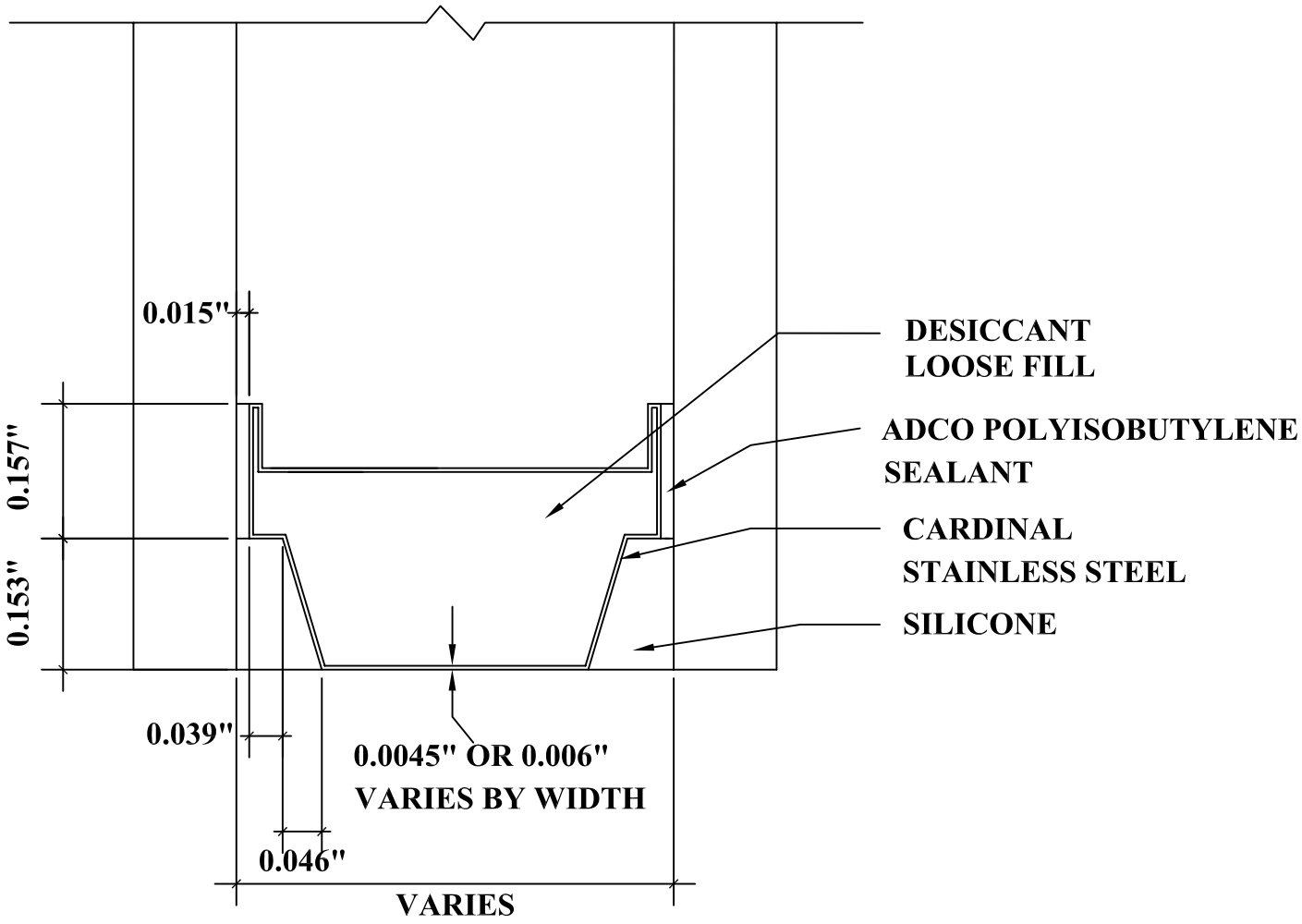
S.O. NO.

SCALE: 4:1

DATE: 4/17/97

DWG. NO.: 1020301010XX255

FILENAME:CMB5518J



DETAIL FOR THERMAL MODELING OF
CARDINAL XL EDGE SPACER (SS-D)

TEST SAMPLE COMPLIES WITH THESE DETAILS.
ANY DEVIATION IS NOTED.

ATI Report No. B2517.01 VERIFIED DATE: 9/8/11

REVIEWED BY: Heather Dinsman