

TEST REPORT

Report No.: B1496.01-501-47

Rendered to:

VEKA INC.
Fombell, Pennsylvania

PRODUCT TYPE: PVC Horizontal Sliding Window, Type XO
SERIES/MODEL: SS93WW

SPECIFICATION: AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results
Primary Product Designator	Class CW-PG50 1803 x 1575 (71 x 62) - HS
Design Pressure	±2400 Pa (±50.13 psf)
Air Infiltration	0.3 L/s/m ² (0.06 cfm/ft ²)
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)

Test Completion Date: 06/30/2011

Reference must be made to Report No. B1496.01-501-47, dated 07/14/11 for complete test specimen description and detailed test results.

1.0 Report Issued To: Veka Inc.
100 Veka Drive
Fombell, Pennsylvania 16123-025

2.0 Test Laboratory: Architectural Testing, Inc.
1140 Lincoln Avenue
Springdale, Pennsylvania 15144
724-275-7100

3.0 Project Summary:

3.1 Product Type: PVC Horizontal Sliding Window, Type XO

3.2 Series/Model: SS93WW

Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The specimen tested successfully met the performance requirements for a **Class CW-PG50 1803 x 1575 (71 x 62) - HS** rating.

3.3 Test Date: 06/30/2011

3.4 Test Location: Veka Inc. test facility in Fombell, Pennsylvania. Calibration of test equipment was performed by Architectural Testing in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

3.5 Test Sample Source: The test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.6 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) 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.

3.7 List of Official Observers:

<u>Name</u>	<u>Company</u>
Doug Merry	Veka Inc.
Cornell Charles	Veka Inc.
Joseph Allison	Architectural Testing, Inc.

4.0 Test Specification(s):

AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 2.8 m ² (30.6 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1803	71	1575	62
Sash	914	36	1499	59
Screen	857	33-3/4	1515	59-5/8

The following descriptions apply to all specimens.

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, jambs, fixed stile	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded
Fixed stile	Coped and butt	Fastened with four #8 x 2" truss head screws, two at each end

5.3 Sash Construction:

Sash Member	Material	Description
All rails and stiles	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.270" high center fin pile	3 Rows	Bottom rail, jamb stile
0.187" backed by 0.270" high center fin pile	2 Rows	Fixed meeting stile
0.187" backed by 0.270" high center fin pile	1 Row	Frame perimeter, lock stile, top rail

5.5 Glazing:

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1" IG	Rectangular shaped steel, single sealed	1/8" annealed	1/8" annealed	The sash and fixed lite were exterior glazed. The glass was set against a silicone sealant and secured with rigid vinyl glazing beads.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Sash	1	813 x 1397	32 x 55	5/8"
Frame	1	813 x 1473	32 x 58	5/8"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with cover	1-5/16" wide by 5/16" high	2	Exterior sill face, one 4" in from each end.
Weepslot with open cell foam baffle	1" wide by 1/4" high	2	Interior sill track, one at each end.
Weepslot	1" wide by 1/4" high	2	Sill intermediate wall, one at each end

5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Metal cam lock and keeper	2	Lock stile, one 8" in from each end with corresponding metal keeper on the fixed meeting stile.
Dual metal rollers with plastic housing	2	Bottom rail, one at each end

5.8 Reinforcement:

Drawing Number	Location	Material
RF SH9304 SOM	Fixed stile	Roll-formed steel
RF SE9346 SOM	Lock stile	Roll-formed steel
RF SE9345 AOM	Jamb stile	Extruded aluminum

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Roll-formed aluminum	Square-cut and secured with snap-in plastic corner keys	Fiber	Flexible vinyl spline

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8" shim space. The exterior perimeter of the window was sealed with a silicone sealant. The sill was set onto a silicone sealant.

Location	Anchor Description	Anchor Location
Head, sill	#10 x 3" truss head screws	5 each at the head and sill, evenly spaced and starting 5" from each end.
Jambs	#10 x 3" truss head screws	4 per jamb, one 6" and 18" in from each end.

7.0 Test Results: The temperature during testing was 20°C (68°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 89 N (20 lbf) Maintain motion: 89 N (20 lbf) Latches: N/A Locks: 27 N (6 lbf)	Report Only 115 N (25 lbf) max. 100 N (22.5 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.3 L/s/m ² (0.06 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Deglazing, per ASTM E 987 Operating direction, 320 N (72 lbf)	Pass	Meets as stated	
Remaining direction, 230 N (52 lbf)	Pass	Meets as stated	

7.0 Test Results: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 360 Pa (7.52 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at the fixed meeting stile +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	8.5 mm (0.34") 8.3 mm (0.33")	8.6 mm (0.34") max. 8.6 mm (0.34") max.	4,5,6
Uniform Load Structural, per ASTM E 330 taken at the fixed meeting stile +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	0.5 mm (0.02") 1.0 mm (0.04")	4.6 mm (0.18") max. 4.6 mm (0.18") max.	5,6

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: With and without insect screen.

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.

Note 5: Loads were held for 10 seconds.

Note 6: 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 expire 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.

Joseph E. Allison
Senior Technician

Lynn George
Director – Regional Operations

JEA:sld

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (10)



Test Report No.: B1496.01-501-47
Report Date: 07/14/11
Test Record Retention End Date: 06/30/15

Appendix A

Alteration Addendum

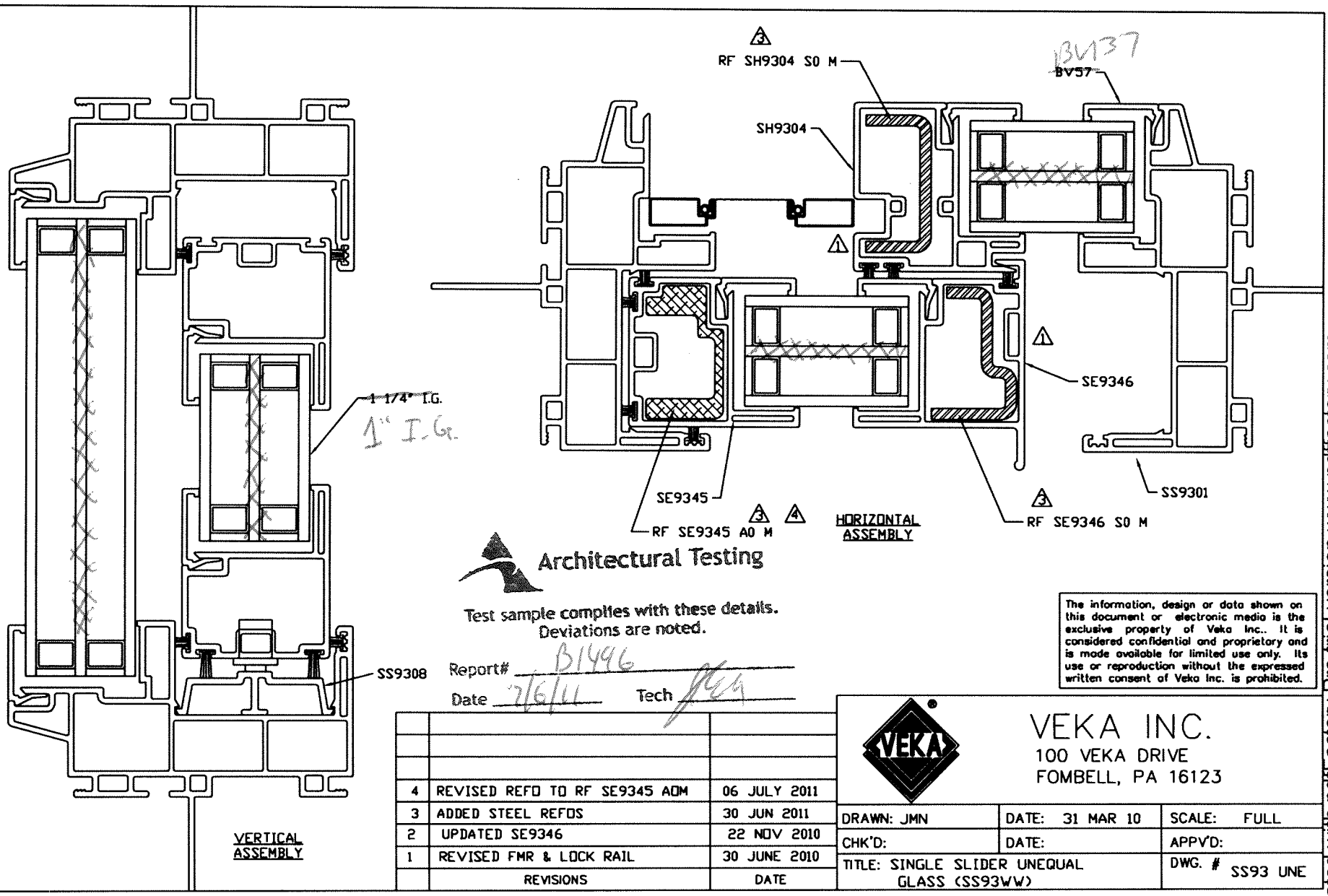
Note: No alterations were required.



Test Report No.: B1496.01-501-47
Report Date: 07/14/11
Test Record Retention End Date: 06/30/15

Appendix B

Drawings



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# B1496
Date 7/6/11 Tech JEM

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REVISIONS	DATE
4	REVISED REFD TO RF SE9345 ADM 06 JULY 2011
3	ADDED STEEL REFDs 30 JUN 2011
2	UPDATED SE9346 22 NOV 2010
1	REVISED FMR & LOCK RAIL 30 JUNE 2010



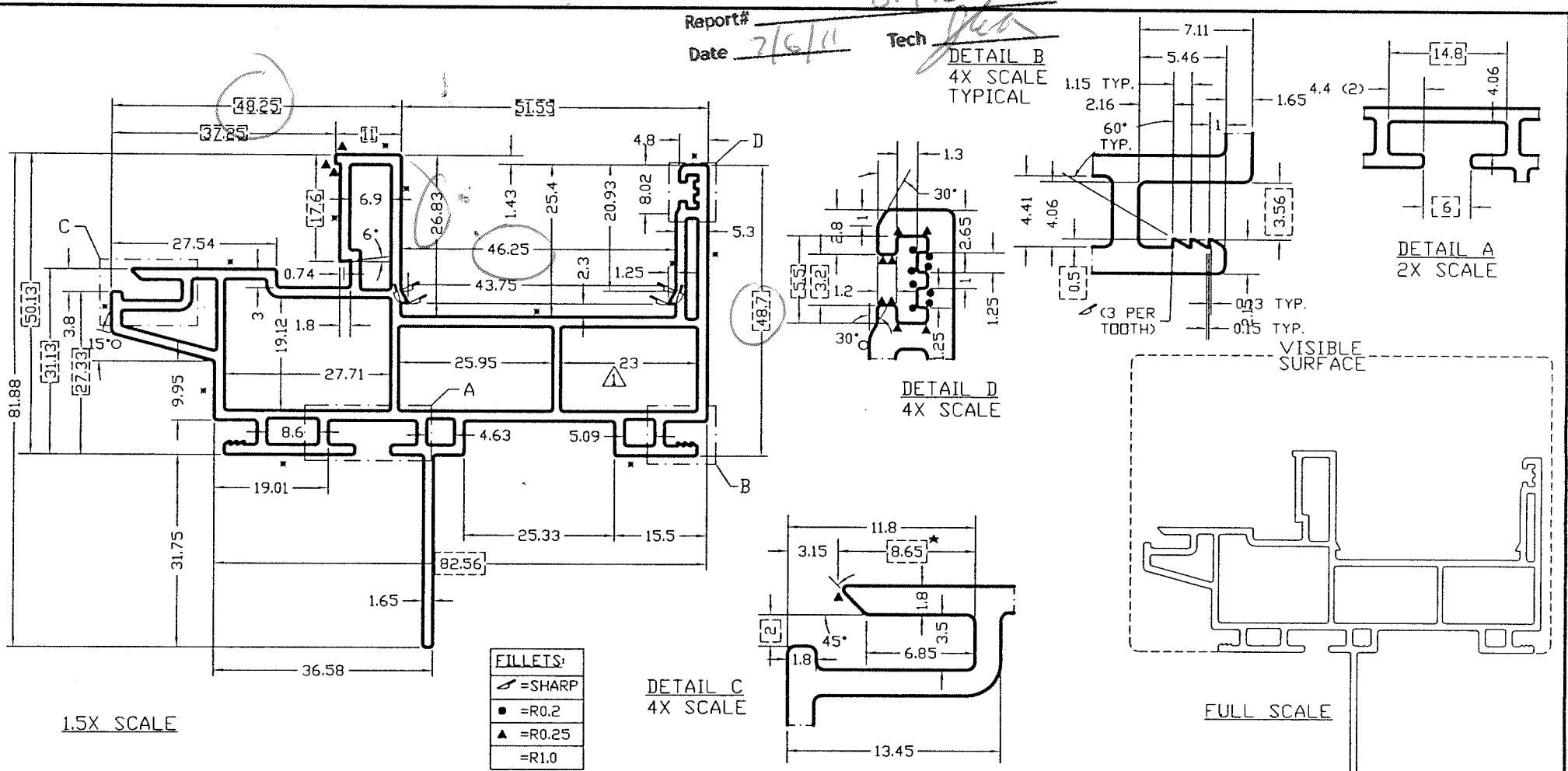
VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JMN	DATE: 31 MAR 10	SCALE: FULL
CHK'D:	DATE:	APPVD:
TITLE: SINGLE SLIDER UNEQUAL GLASS (SS93WW)		DWG. # SS93 UNE

Test sample complies with these details.
Deviations are noted.

B1496

Report# _____
Date 7/6/11 Tech Jeb



DIMENSIONS ARE IN MILLIMETERS.

★ = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

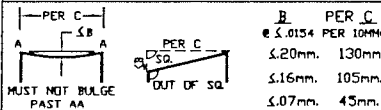
MATERIAL: RIGID PVC

NOTE: ALL DIMENSIONS CAN BE ASSUMED AS ORIGINATING FROM SHARP CORNERS, UNLESS NOTED OTHERWISE.

[] = CRITICAL DIMENSION

* = FLATNESS & SQUARENESS CRITICAL

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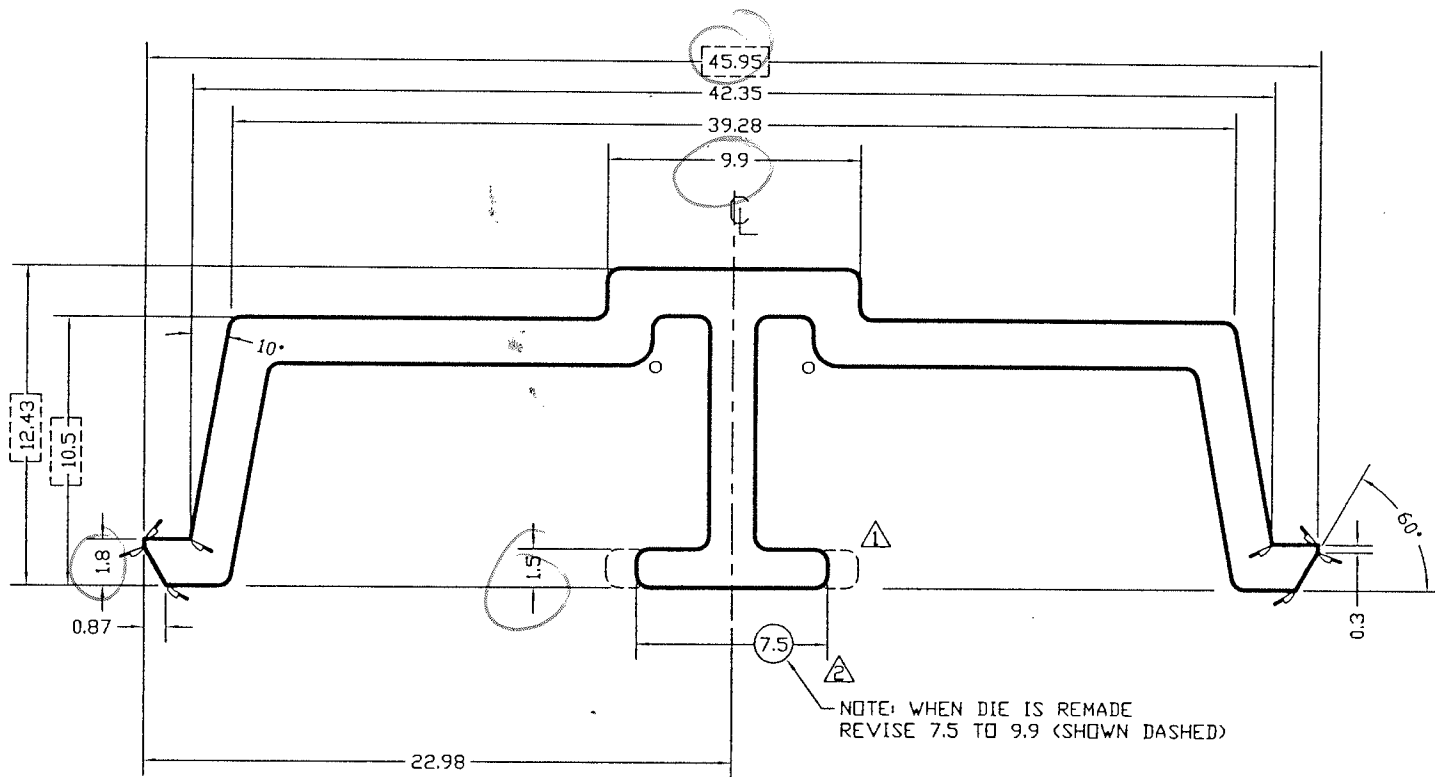


1	26.1 TO 23, 22.85 TO 25.95	24 SEPT 2010 (TJF)
REVISIONS		DATE
WEIGHT: 0.788 lb/ft		AREA: 805.582mm ²
UNSPECIFIED WALL THICKNESS OUTER 1.65mm		INNER 1.3mm
UNSPECIFIED RADIUS 0.5mm	UNSPECIFIED TOLERANCE ±0.2mm	



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DRAWN: SMB	DATE: 7 JULY 2010	SCALE: AS NOTED
CHK'D:	DATE:	APP'V'D:
TITLE SINGLE SLIDER FRAME		DWG. # SS9301

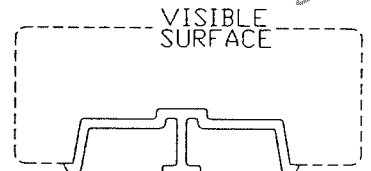


FILLETS:
○ = R1.0
▽ = SHARP

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# B1446
Date 7/6/10 lect [Signature]



5X SCALE

NOTE: PART IS SYMMETRICAL ABOUT ϕ

NOTE: WHEN DIE IS REMADE
REVISE 7.5 TO 9.9 (SHOWN DASHED)

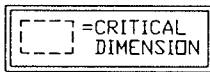
FULL SCALE

DIMENSIONS ARE IN MILLIMETERS.

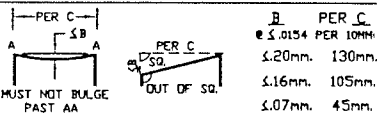
* = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

MATERIAL: RIGID PVC

NOTE: ALL DIMENSIONS CAN BE ASSUMED AS ORIGINATING FROM SHARP CORNERS, UNLESS NOTED OTHERWISE.



* = FLATNESS & SQUARENESS CRITICAL



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REVISIONS	DATE
2 9.9 TO 7.5, ADJUST AREA & WEIGHT PER REV	27 SEPT 2010 T.J.F.
1 4.2 TO 9.9, ADJUST AREA & WEIGHT PER REV	19 AUG 2010 T.J.F.

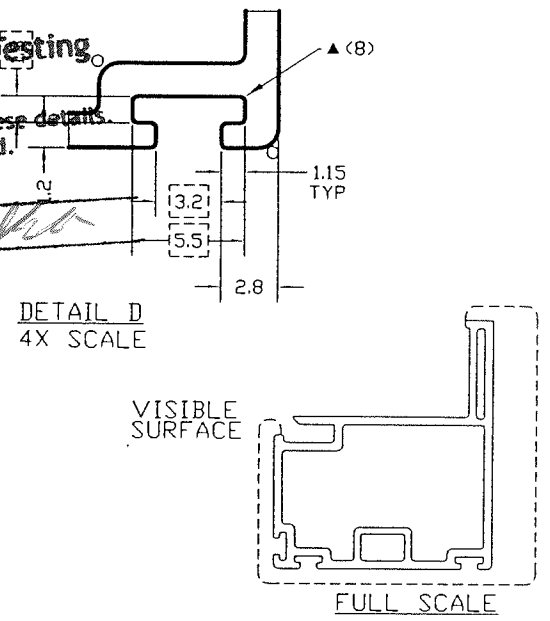
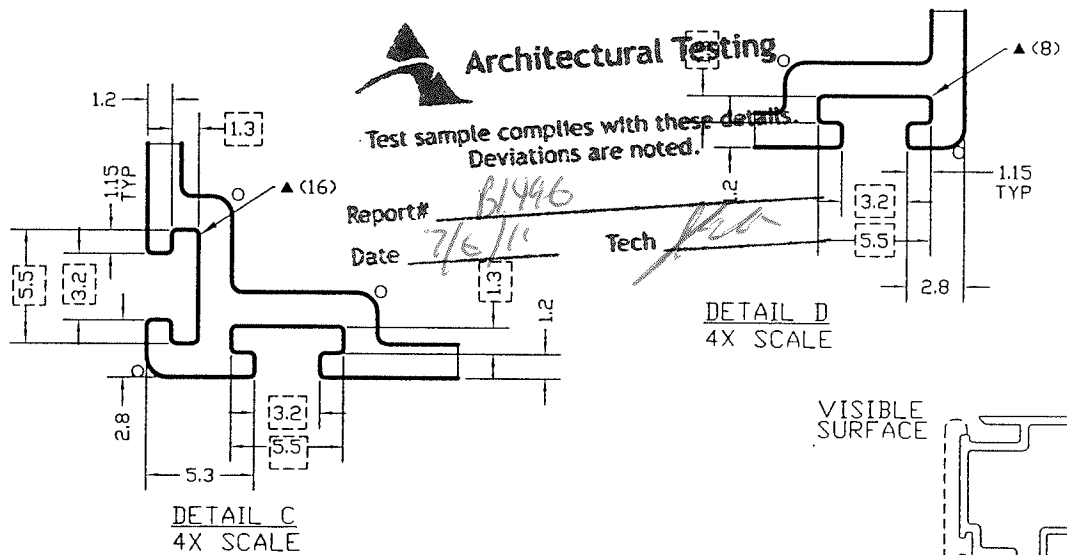
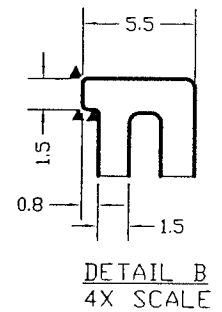
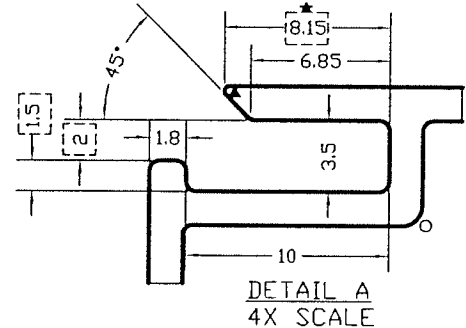
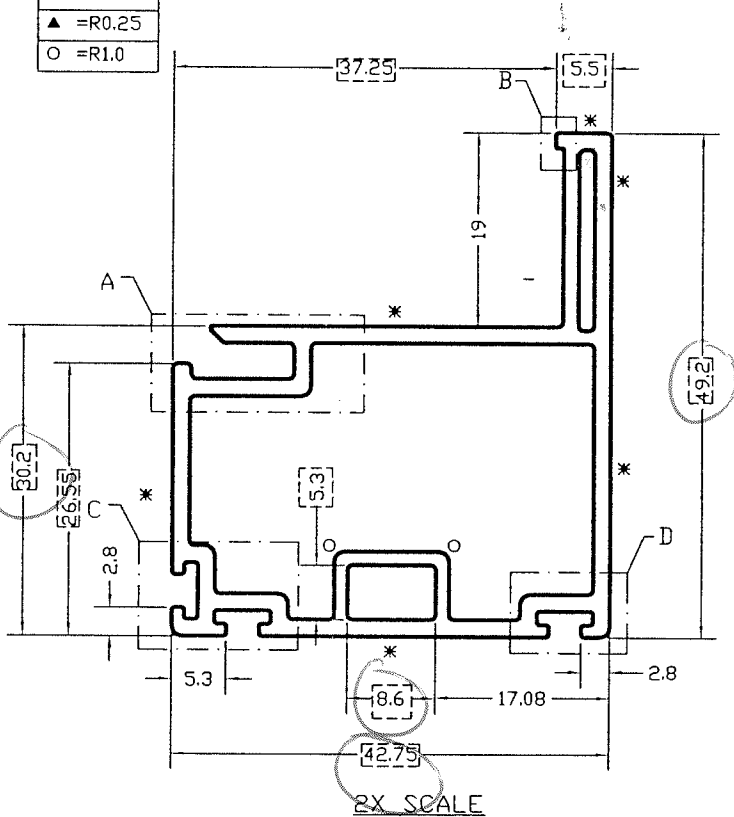


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WEIGHT: 0.139 lb/ft	AREA: 141.929 mm ²
UNSPECIFIED WALL THICKNESS 1.8mm	
UNSPECIFIED RADII 0.5mm	UNSPECIFIED TOLERANCE ±0.2mm

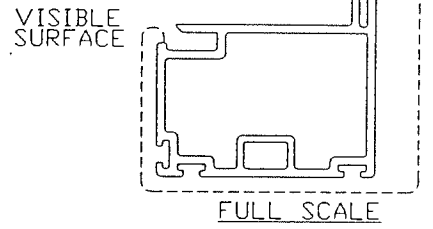
DRAWN: SMB	DATE: 16 JULY 10	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D:
TITLE ROLLER TRACK		DWG. # SS9308

FILLETS:
 ▲ =R0.25
 ○ =R1.0



Architectural Testing
 Test sample complies with these details.
 Deviations are noted.

Report# B1446
 Date 7/6/11
 Tech [Signature]

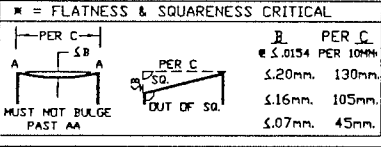


DIMENSIONS ARE IN MILLIMETERS.

* = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

MATERIAL: RIGID PVC

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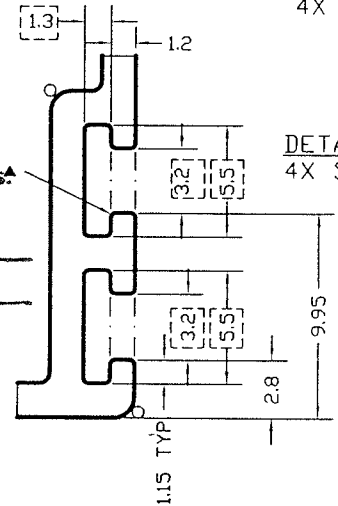
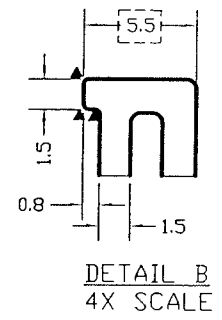
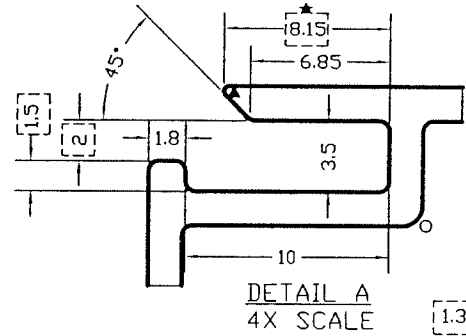
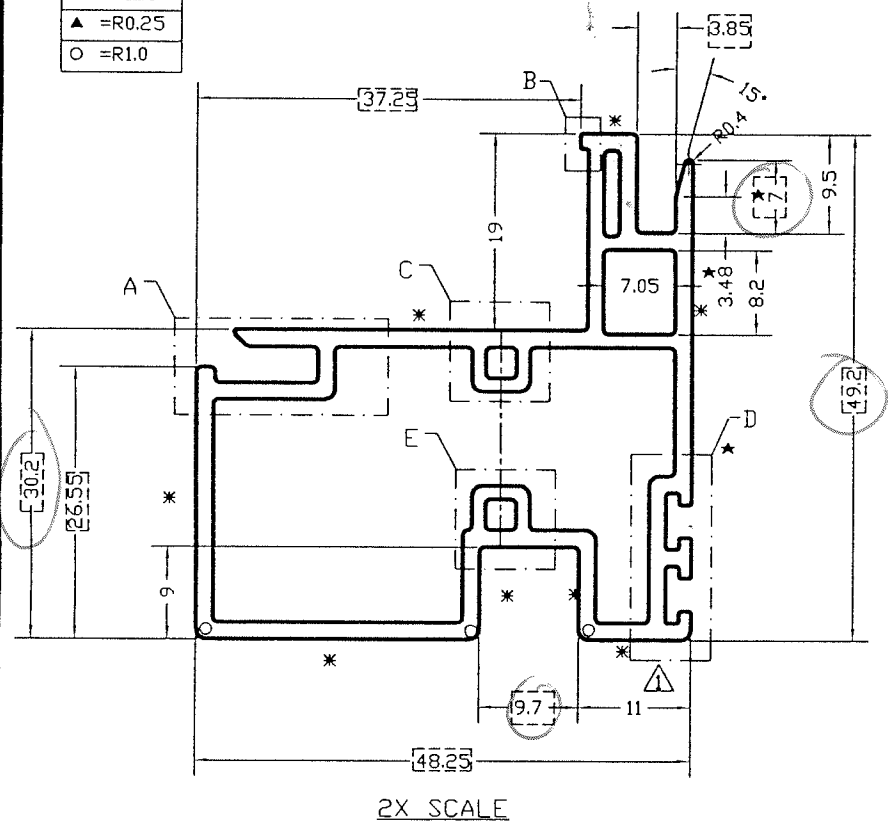
REVISIONS	DATE
WEIGHT: 0.349 lb/ft	AREA: 356.481mm ²
UNSPECIFIED WALL THICKNESS OUTER 1.65mm	INNER 1.3mm
UNSPECIFIED RADIUS 0.5mm	UNSPECIFIED TOLERANCE ±0.2mm



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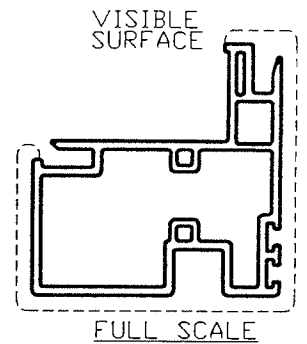
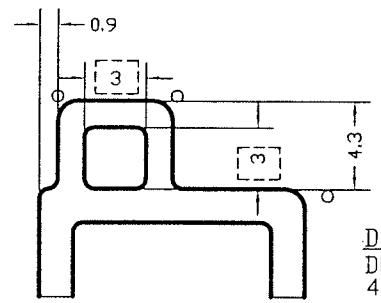
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CHK'D:	DATE:	APP'VD:
TITLE COMMON SASH		DWG. # SE9345

FILLETS:
 ▲ = R0.25
 ○ = R1.0



Architectural Testing
 Test sample complies with these details.
 Deviations are noted.

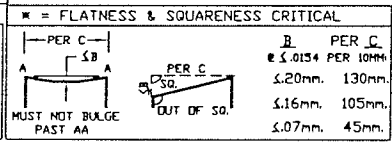
Report# B1496
 Date 7/6/11 Tech JGH



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[---] = CRITICAL DIMENSION



* = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

MATERIAL: RIGID PVC

1	WAS 10.1; NOW 11	DATE
	REVISIONS	DATE
	WEIGHT: 0.409 lb/ft	AREA: 418.346 mm ²
	UNSPECIFIED WALL THICKNESS OUTER 1.65mm	INNER 1.3mm
	UNSPECIFIED RADIUS 0.5mm	UNSPECIFIED TOLERANCE ±0.2mm



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DRAWN: BJF	DATE: 24 JUN 10	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D:
TITLE FIXED MEETING RAIL		DWG. # SH9304

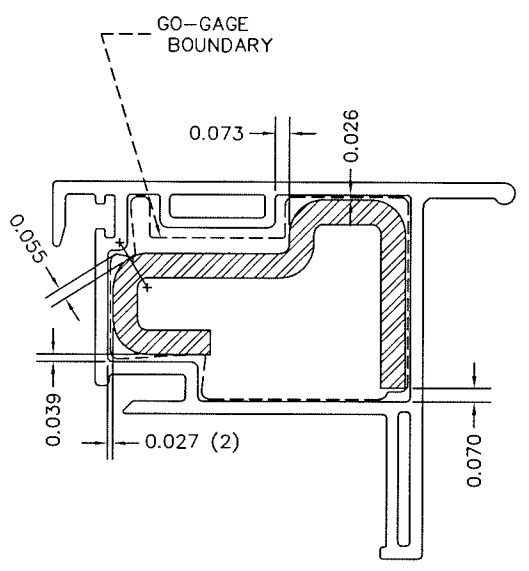
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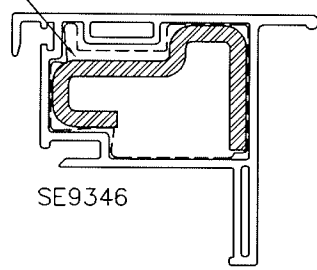
Test sample complies with these details.
Deviations are noted.

Report# B1496
Date 7/6/11 Tech JJA



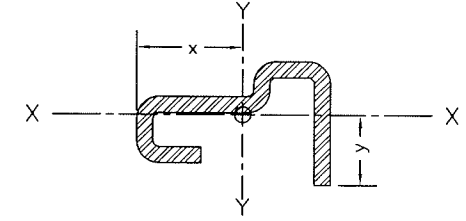
CLEARANCES
1.5X SCALE

RF SE9346 S0 M

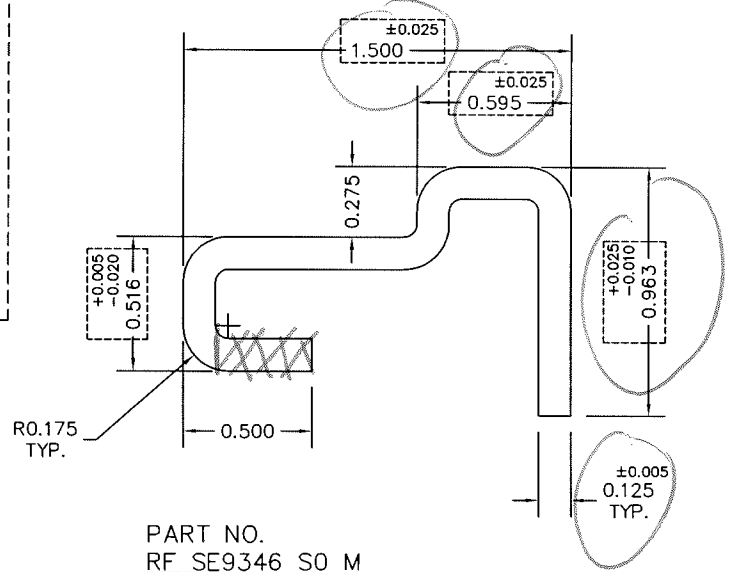


SE9346

FULL SCALE



FULL SCALE



PART NO.
RF SE9346 S0 M
2X SCALE

PROFILE PROPERTIES	
MATERIAL:	0.125 Galv. Steel
AREA:	0.3921 IN. ²
WEIGHT:	1.333 #/Ft.
MOMENTS OF INERTIA:	
I _{xx} :	0.0234 IN. ⁴
I _{yy} :	0.107 IN. ⁴
EXTREME FIBER DISTANCE:	
x:	0.819 IN.
y:	0.547 IN.
SECTION MODULI:	
S _{xx} :	0.0427 IN. ³
S _{yy} :	0.131 IN. ³

Q.A. NOTE:
[Dashed Box] = CRITICAL DIMENSION

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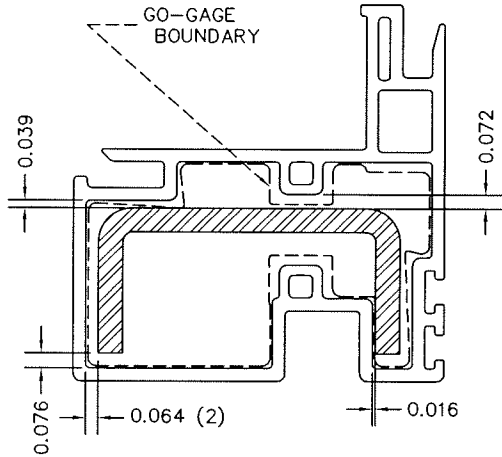
NOTE: DIMENSIONS ARE IN INCHES



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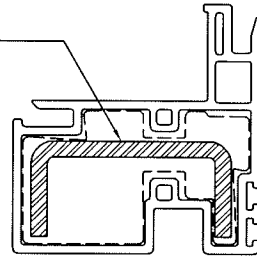
REVISIONS	DATE

DRAWN: JJS	DATE: 8 MAR 11	SCALE: AS NOTED
CHK'D: TJF	DATE: 9 MAR 11	APP'D: WGR
TITLE SERIES 93: GALV. STEEL REINFORCING FOR SMALL LOCK RAIL		DWG. # RF SE9346 S0 M



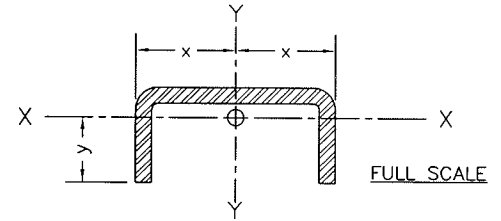
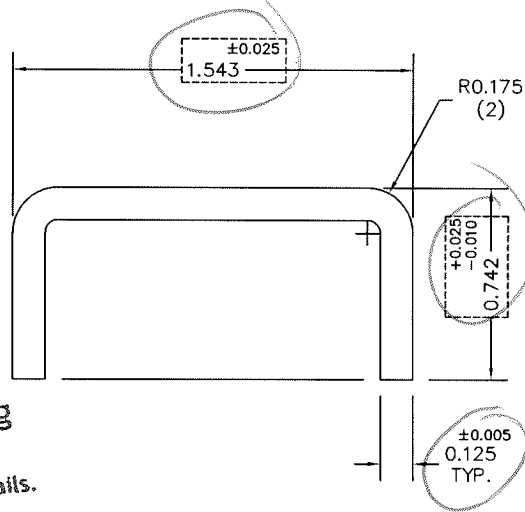
CLEARANCES
1.5X SCALE

RF SH9304 SO M



SH9304

FULL SCALE



PROFILE PROPERTIES

MATERIAL: 0.125 Galv. Steel
 AREA: 0.3350 IN.²
 WEIGHT: 1.139 #/Ft.
 MOMENTS OF INERTIA:
 I_{xx}: 0.0165 IN.⁴
 I_{yy}: 0.109 IN.⁴
 EXTREME FIBER DISTANCE:
 x: 0.7715 IN.
 y: 0.508 IN.
 SECTION MODULII:
 S_{xx}: 0.0324 IN.³
 S_{yy}: 0.142 IN.³

Architectural Testing
 Test sample complies with these details.
 Deviations are noted.

Q.A. NOTE:
 [Dashed Box] = CRITICAL DIMENSION

Report# B1496 PART NO. RF SH9304 SO M
 Date 2/6/11 Tech Jen 2X SCALE

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REVISIONS	DATE

NOTE: DIMENSIONS ARE IN INCHES

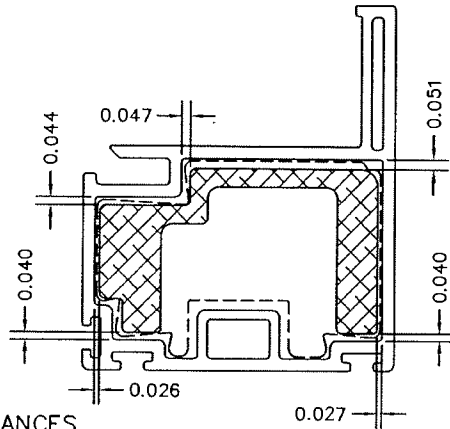


VEKA INC.
 100 VEKA DRIVE
 FOMBELL, PA 16123

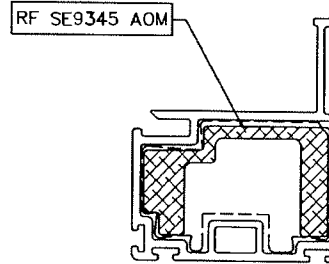
DRAWN: JJS	DATE: 7 MAR 11	SCALE: AS NOTED
CHK'D: TJF	DATE: 9 MAR 11	APP'V'D: WGR
TITLE SERIES 93: GALV. STEEL REINFORCING FOR FIXED MTG. RAIL		DWG. # RF SH9304 SO M

Test sample complies with these details.
Deviations are noted.

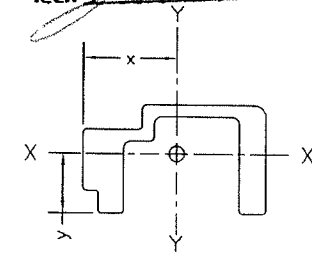
Report# B1996
Date 7/6/11 Tech [Signature]



CLEARANCES
1.5X SCALE

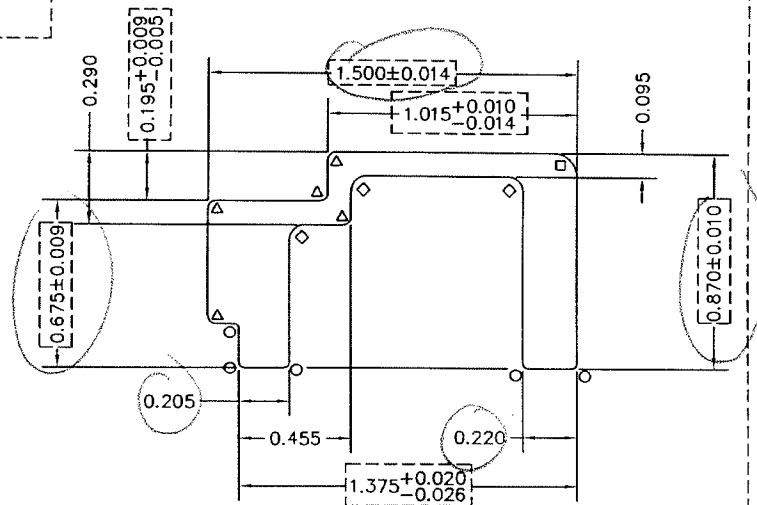


SE9345
FULL SCALE



FULL SCALE

FILLETS:	
○	= R0.020
□	= R0.015
△	= R0.030
◇	= R0.060



RF SE9345 AO M
2X SCALE

PROFILE PROPERTIES	
MATERIAL:	6063-T5
AREA:	0.4999 IN. ²
WEIGHT:	0.600 #/Ft.
MOMENTS OF INERTIA:	
I _{xx} :	0.0317 IN. ⁴
I _{yy} :	0.1536 IN. ⁴
EXTREME FIBER DISTANCE:	
x:	0.765 IN.
y:	0.480 IN.
SECTION MODULI:	
S _{xx} :	0.0661 IN. ³
S _{yy} :	0.2008 IN. ³

NOTE: DIMENSIONS ARE IN INCHES

STANDARD COMMERCIAL TOLERANCES FOR
EXTRUDED ROD BAR & SHAPES APPLY
UNLESS SPECIFICALLY SHOWN OTHERWISE

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Q.A. NOTE:
[] = CRITICAL
[] = DIMENSION

REVISIONS	DATE



VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: BJF	DATE: 12 OCT 10	SCALE: AS NO
CHK'D: JMN	DATE: 21 OCT 10	APP'VD: JJS
TITLE SE9345 REINFORCING LC CLASS		DWG. # RF SE9345