Architectural Testing

ASTM E 1886 and ASTM E 1996
TEST REPORT

Rendered to:

SUPERSEAL MANUFACTURING COMPANY, INC.

SERIES/MODEL: DH56 Double Hung
PRODUCT TYPE: PVC Double Hung Window

Report No.:	**74908.02-501-44**
Test Dates:	**07/17/07**
Through:	**07/24/07**
Report Date:	**09/25/07**
Expiration Date:	**07/24/11**

1140 Lincoln Avenue

Architectural Testing

ASTM E 1886 and ASTM E 1996 TEST REPORT

Rendered to:

SUPERSEAL MANUFACTURING COMPANY, INC.
125 Helen Street, P.O. Box 795
South Plainfield, New Jersey 07080

Report No.:	74908.02-501-44
Test Dates:	07/17/07
Through:	07/24/07
Report Date:	09/25/07
Expiration Date:	07/24/11

Project Summary: Architectural Testing, Inc. was contracted by Veka, Inc. to perform testing on three Series/Model DH56WW, PVC double hung windows. The samples tested met the performance requirements set forth in the referenced test procedures for a ±2400 Pa (±50 psf) Design Pressure with missile impacts corresponding to Missile Level D and Wind Zone 3. Test specimen description and results are reported herein. This report is reissued in the name of Superseal Manufacturing Company, Inc. through written authorization of Veka, Inc. The samples were provided by the client.

Test Procedures: The test specimens were evaluated in accordance with the following:

ASTM E 1886-02, *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 1996-02, *Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Wind Borne Debris in Hurricanes.*

Test Specimen Description:

Series/Model: DH56 Double Hung

Product Type: PVC Double Hung Window

Overall Size: 1372 mm (54") wide by 1930 mm (76") high

Top Sash Size: 1284 mm (50-9/16") wide by 935 mm (36-13/16") high

Bottom Sash Size: 1310 mm (51-9/16") wide by 960 mm (37-13/16") high

Test Specimen Description: (Continued)

Finish: All vinyl was white.

Glazing Details: The sash were glazed from the exterior with 19 mm (3/4") thick, insulating glass fabricated from a sheet of 3 mm (1/8") thick, annealed glass in board and a sheet of 8 mm (5/16") thick, laminated glass out board and an aluminum spacer system. The laminated glass was constructed from two sheets of 3 mm (1/8") thick, annealed glass and a 2.3 mm (0.090") thick, Solutia interlayer. The glass was set from the exterior onto a bed of Purfect Glaze hot melt liquid back bedding.

Frame Construction: The PVC frame was constructed using mitered and welded corner construction.

Sash Construction: The PVC sash were assembled utilizing mitered and welded corner construction.

Hardware:

Description	Quantity	Location
Metal cam lock with metal keepers	2	Lock rail, 216 mm (8-1/2") from each end, mating keepers on the exterior rail
Constant force balance system with locking tilt shoes	4	Two per jamb
Plastic spring loaded tilt latch	2	Top corners of top sash
Metal spring loaded tilt latch engaging a molded plastic stop fixed to the jamb with two #8 screws	2	Top corners of bottom sash
Metal sash tilt pin	4	Bottom corners of each sash

Weatherstripping:

Description	Quantity	Location
5 mm (0.187") backed by 7 mm (0.260") high pile with center fin	1 Row	Head

Test Specimen Description: (Continued)

Drainage:

Description	Quantity	Location
32 mm (1-1/4") wide by 5 mm (3/16") deep weephole	2	One at each end of the sill at the interior jamb track draining into the hollow below
9.5 mm (3/8") wide by leg height weep notch	2	One at each end of the sill screen leg

Reinforcement: The bottom rail and bottom sash stiles contained a custom shaped formed steel reinforcement measuring 31.0 mm (1.222") by 25.8 mm (1.014") by 1.6 mm (0.063"), reference Drawing No. RF310. The lock rail, keeper rail, top rail, and top sash stiles contained a custom shaped formed steel reinforcement measuring 25.4 mm (1.000") by 13.2 mm (0.520") by 1.6 mm (0.063"), reference Drawing No. RF300. The lock rail also contained a custom shaped formed steel reinforcement measuring 30.0 mm (1.180") by 10.0 mm (0.394") by 1.6 mm (0.063"), reference Drawing No. RFFD22SOM.

Installation: The units were installed into a wood buck consisting of Spruce-Pine-Fir construction lumber, and secured through the frame with 18 #10 x 32 mm (1-1/4") Philips pan head screws, three each at the head and sill, and six at each jamb, evenly spaced and beginning from 127 mm (5") in each corner. The exterior perimeter was sealed with a silicone sealant. A nominal 6 mm (1/4") gap was maintained on the interior between the test specimen and wood buck.

Test Results: The following results have been recorded:

ASTM E 1886, *Large Missile Impact*

Conditioning Temperature: 31°C (88°F)
Missile Weight: 4173 g (9.2 lbs)
Missile Length: 2.4 m (7' 8-3/4")
Muzzle Distance from Test Specimen: 5181 m (17.0 ft.)

Test Unit #1

Impact #1: Missile Velocity: 15.4 m/s (50.5 fps); orientation within ±5° of vertical

Impact Area: Exterior bottom sash, center of glass
Observations: Broke outer annealed lite, and fractured inner laminated lite
Results: Pass

Test Unit #2

Impact #1: Missile Velocity: 15.5 m/s (50.9 fps); orientation within ±5° of vertical

Impact Area: Exterior bottom sash, upper left corner
Observations: Broke outer annealed lite, and fractured inner laminated lite
Results: Pass

Test Unit #3

Impact #1: Missile Velocity: 15.2 m/s (49.9 fps); orientation within ±5° of vertical

Impact Area: Exterior bottom sash, lower right corner
Observations: Broke outer annealed lite, and fractured inner laminated lite
Results: Pass

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

Test Results: (Continued)

ASTM E 1886, *Air Pressure Cycling*

Test Unit #1

Design Pressure: ±2400 Pa (±50 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)		
			#1	#2	#3
720 to 2400 (15 to 50)	3500	1.48	10.9 (0.43)	15.5 (0.61)	7.6 (0.30)
1200 to 1920 (25 to 40)	300	2.40	11.4 (0.45)	16.0 (0.63)	7.9 (0.31)
0 to 1440 (0 to 30)	600	1.61	14.0 (0.55)	21.6 (0.85)	10.4 (0.41)
480 to 1200 (10 to 25)	100	1.28	15.7 (0.62)	25.9 (1.02)	12.2 (0.48)
			Permanent Set		
			5.8 (0.23)	5.3 (0.21)	4.1 (0.16)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)		
			#1	#2	#3
720 to 2400 (15 to 50)	50	1.70	16.8 (0.66)	31.0 (1.22)	18.0 (0.71)
1200 to 1920 (25 to 40)	1050	1.40	14.0 (0.55)	25.1 (0.99)	14.7 (0.58)
0 to 1440 (0 to 30)	50	3.25	11.9 (0.47)	20.3 (0.80)	12.2 (0.48)
480 to 1200 (10 to 25)	3350	1.23	11.4 (0.45)	19.6 (0.77)	11.7 (0.46)
			Permanent Set		
			5.6 (0.22)	6.1 (0.24)	5.1 (0.20)

***Observations**: No additional deformation or tearing.*

Result: Pass

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

Test Results: (Continued)

ASTM E 1886, *Air Pressure Cycling*

Test Unit #2

Design Pressure: ±2400 Pa (±50 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)		
			#1	#2	#3
720 to 2400 (15 to 50)	3500	1.40	7.1 (0.28)	15.0 (0.59)	6.1 (0.24)
1200 to 1920 (25 to 40)	300	3.77	7.1 (0.28)	15.0 (0.59)	6.6 (0.26)
0 to 1440 (0 to 30)	600	1.98	9.4 (0.37)	20.6 (0.81)	8.9 (0.35)
480 to 1200 (10 to 25)	100	2.91	11.4 (0.45)	26.2 (1.03)	11.7 (0.46)
			Permanent Set		
			3.0 (0.12)	3.6 (0.14)	2.5 (0.10)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)		
			#1	#2	#3
720 to 2400 (15 to 50)	50	1.00	15.2 (0.60)	26.7 (1.05)	11.7 (0.46)
1200 to 1920 (25 to 40)	1050	1.39	13.0 (0.51)	23.1 (0.91)	10.4 (0.41)
0 to 1440 (0 to 30)	50	3.10	13.0 (0.51)	23.1 (0.91)	10.4 (0.41)
480 to 1200 (10 to 25)	3350	1.37	7.4 (0.29)	14.0 (0.55)	6.9 (0.27)
			Permanent Set		
			1.0 (0.04)	1.3 (0.05)	0.8 (0.03)

Observations: *No additional deformation or tearing.*

Result: Pass

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

ASTM E 1886, *Air Pressure Cycling*

Test Unit #3

Design Pressure: ±2400 Pa (±50 psf)

POSITIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)		
			#1	#2	#3
720 to 2400 (15 to 50)	3500	1.36	4.3 (0.17)	13.2 (0.52)	6.6 (0.26)
1200 to 1920 (25 to 40)	300	2.19	5.1 (0.20)	14.5 (0.57)	6.6 (0.26)
0 to 1440 (0 to 30)	600	1.25	6.6 (0.26)	18.3 (0.72)	7.6 (0.30)
480 to 1200 (10 to 25)	100	2.37	7.9 (0.31)	21.8 (0.86)	8.4 (0.33)
			Permanent Set		
			1.0 (0.04)	1.8 (0.07)	2.0 (0.08)

NEGATIVE PRESSURE

Pressure Range Pa (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator mm (inch)		
			#1	#2	#3
720 to 2400 (15 to 50)	50	3.42	10.9 (0.43)	24.9 (0.98)	11.4 (0.45)
1200 to 1920 (25 to 40)	1050	1.34	9.4 (0.37)	20.8 (0.82)	102 (0.40)
0 to 1440 (0 to 30)	50	3.91	7.1 (0.28)	15.5 (0.61)	7.6 (0.30)
480 to 1200 (10 to 25)	3350	1.81	6.9 (0.27)	13.5 (0.53)	6.4 (0.25)
			Permanent Set		
			1.8 (0.07)	2.3 (0.09)	1.3 (0.05)

***Observations**: No additional deformation or tearing.*

Result: Pass

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

General Note: Upon completion of testing, the specimens met the requirements of Section 7 of ASTM E 1996.

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

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.

Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing, Inc. and are representative of the test specimen reported herein.

List of Official Observers:

Name	Company
Mike Zillian	Veka, Inc.
Mike Clay	Architectural Testing, Inc.
Joe Allison	Architectural Testing, Inc.
Corey Eisenhuth	Architectural Testing, Inc.

This report is reissued in the name of Superseal Manufacturing Company, Inc. through written authorization of Veka, Inc. to whom the original report was rendered. The original Veka, Inc. Report is 74908.01-501-47.

Detailed drawings, data sheets, representative samples of test specimens, 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 tested 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 specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Lynn George

Digitally Signed by: Lynn George

Lynn George
Director-Regional Operations

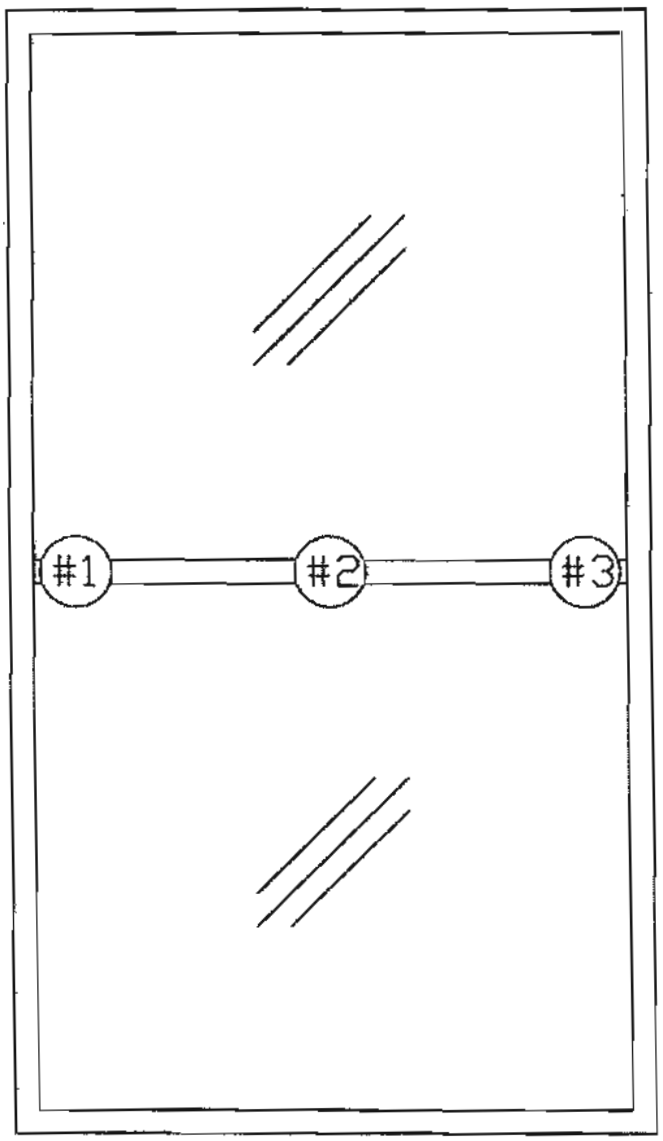
Digitally Signed by: Michael L. Mackereth

Michael L. Mackereth
Director-Operations

LG:sld

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Sketches (2)

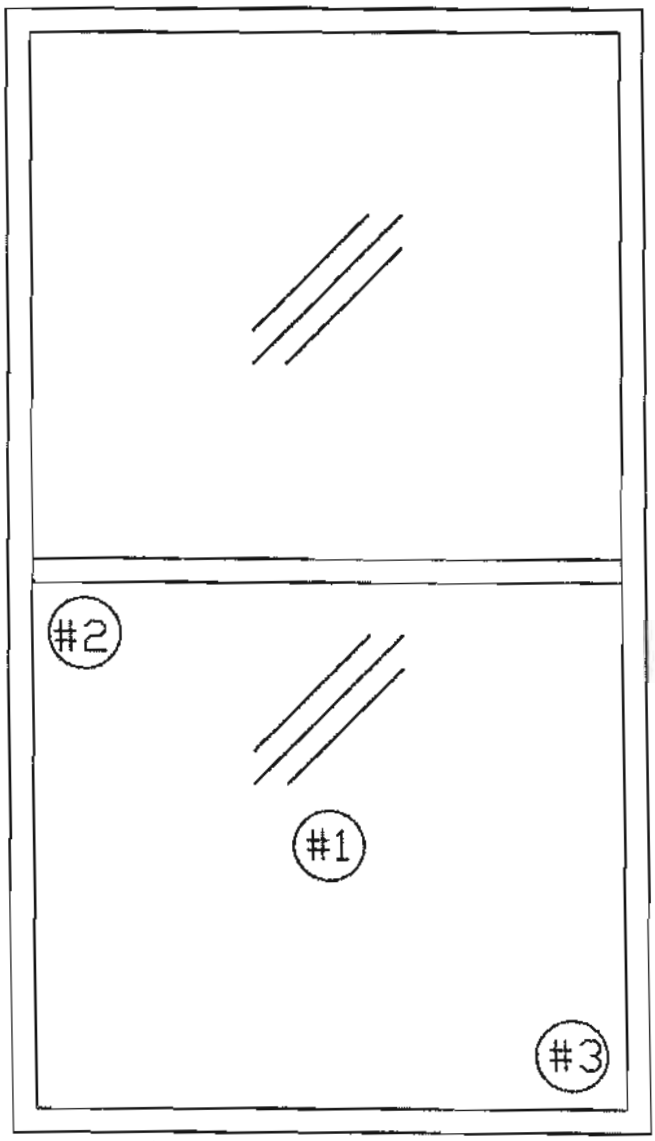
REV	DATE	DESCRIPTION



INDICATOR LOCATIONS

T NAME: DH Window ASTM E 1886/1996 Veka Inc.	Architectural Testing	DRAWING Sketch 2 (Indicators)	DWG. DATE 8/2

REV	DATE	DESCRIPTION



IMPACT LOCATIONS

T NAME: DH Window ASTM E 1886/1996 Veka Inc.	Architectural Testing	DRAWING Sketch 1 (Impact)	DWG. DATE 8/2

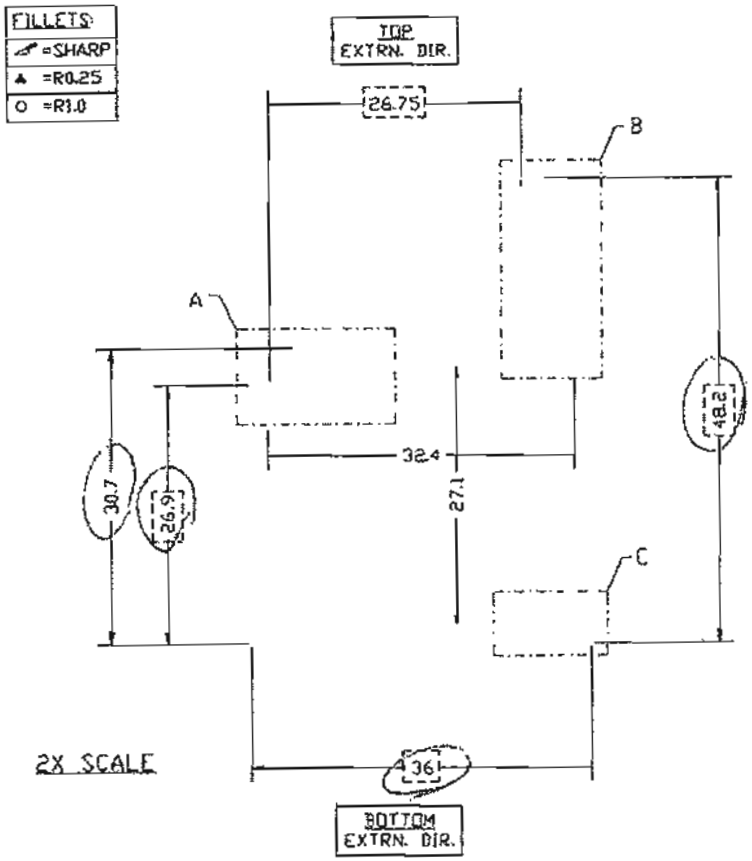
Architectural Testing

Test sample complies with these details.
Deviations are noted.

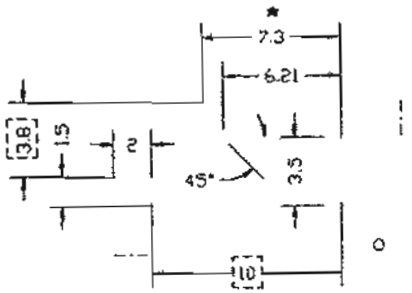
Report# 1-908.01-501-44

Date 2/15/07 Tech JC

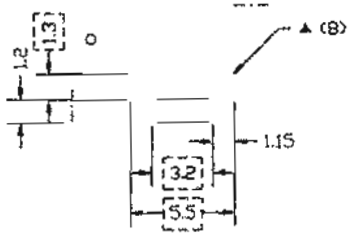
FILLETS:
⌐ =SHARP
▲ =R0.25
○ =R1.0



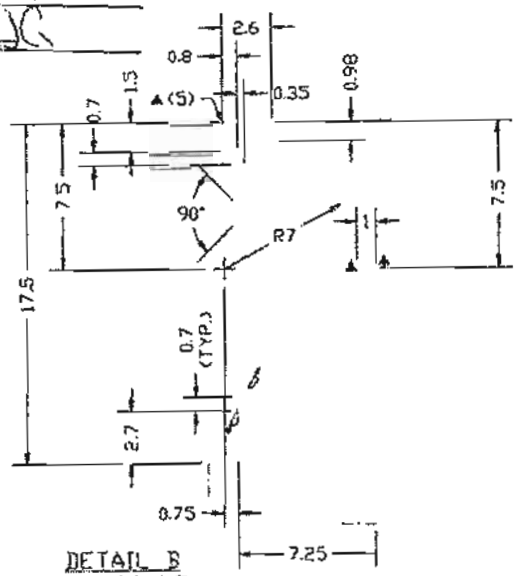
2X SCALE



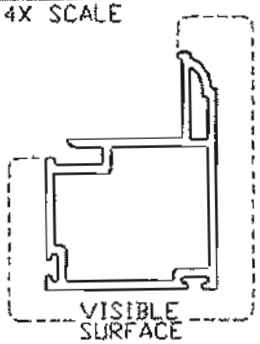
DETAIL A
4X SCALE



DETAIL C
4X SCALE



DETAIL B
4X SCALE



FULL SCALE

★ = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

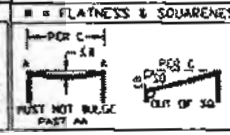
MATERIAL: RIGID PVC

DIMENSIONS ARE IN MILLIMETERS.

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

[ ] =CRITICAL DIMENSION

■ = FLATNESS & SQUARENESS CRITICAL



B	PER C
≤.20mm	130mm
≤.16mm	105mm
≤.07mm	45mm

REVISIONS	DATE

EXTRUDER SIZE: CH-55 EXTRUDER SPEED: 3.0 m/min

WEIGHT: 0.311 lb/ft AREA: 318.34mm²

UNSPECIFIED WALL THICKNESS OUTER 1.8mm INNER 1.4mm

UNSPECIFIED RADII 0.5mm UNSPECIFIED TOLERANCE ±0.2mm

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JMN	DATE: 30 APR 01	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D:
TITLE COMMON SASH		DWG. # SE3345

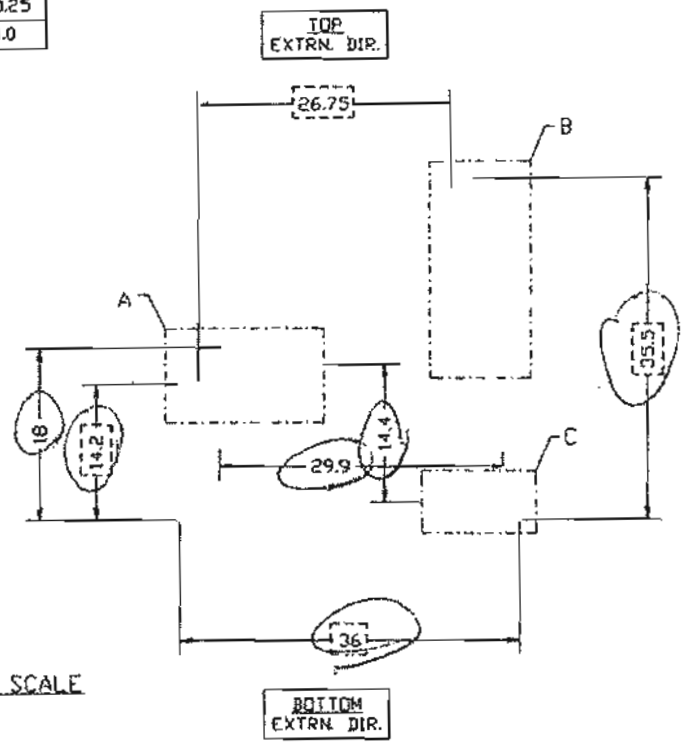
Architectural Testing

Test sample complies with these details.
Deviations are noted.

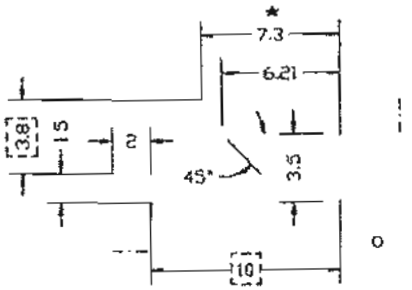
Report# 7498.01-561-44

Date 6/15/07 Tech JG

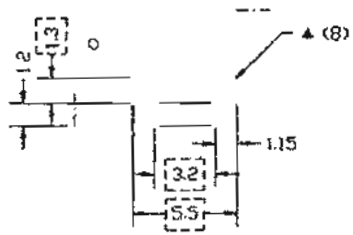
FILLETS:
=SHARP
▲ =R0.25
○ =R1.0



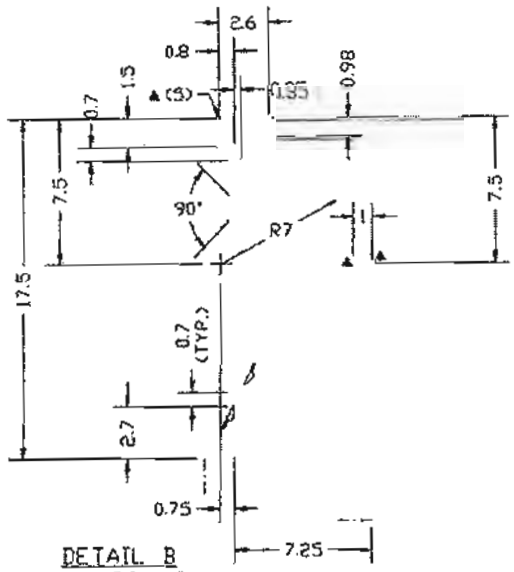
2X SCALE



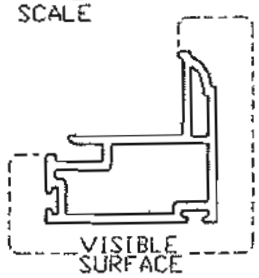
DETAIL A
4X SCALE



DETAIL C
4X SCALE



DETAIL B
4X SCALE



FULL SCALE

★ ▲ DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

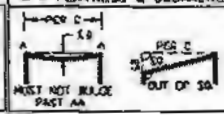
MATERIAL: RIGID PVC

DIMENSIONS ARE IN MILLIMETERS.

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

[ ] =CRITICAL DIMENSION

★ = FLATNESS & SQUARENESS CRITICAL



B PER E	PER C
≤20mm.	130mm.
≤16mm.	105mm.
≤07mm.	45mm.

REVISIONS	DATE

EXTRUDER SIZE: CM-55	EXTRUDER SPEED: 3.0 m/min	
WEIGHT: 0.267 lb/ft	AREA: 272.60mm²	
UNSPECIFIED WALL THICKNESS OUTER: 1.8mm	INNER 1.4mm	
UNSPECIFIED RADII 0.5mm	UNSPECIFIED TOLERANCE ±0.2mm	

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JMN	DATE: 27 APR 01	SCALE: AS NOTED
CHK'D:	DATE:	APP'D:
TITLE COMMON SASH		DWG. # SE3335

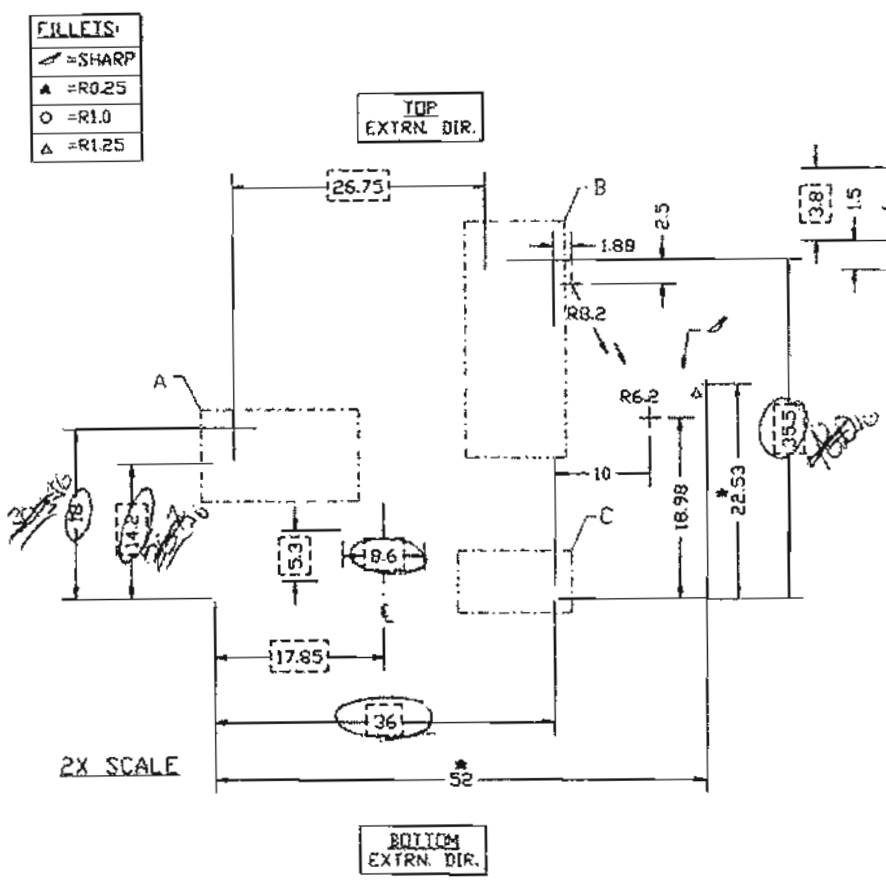
Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 14908.01-501-44

Date 8/15/07 Tech JC

FILLETS:
⌐ =SHARP
▲ =R0.25
O =R1.0
△ =R1.25



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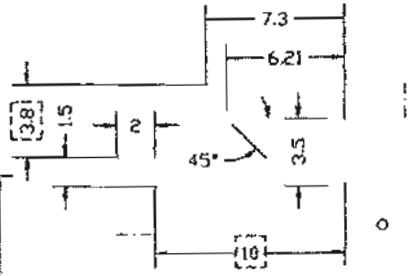
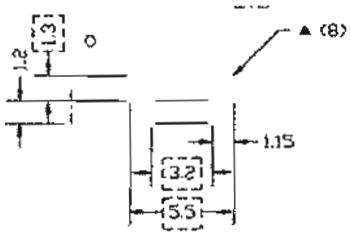
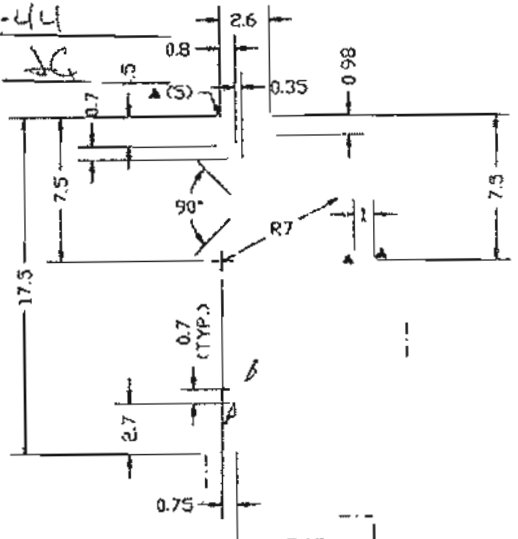


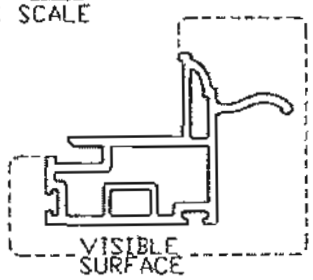
DETAIL A
4X SCALE



DETAIL C
4X SCALE



DETAIL B
4X SCALE



FULL SCALE

* = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

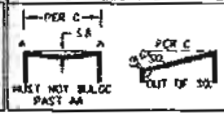
MATERIAL: RIGID PVC

DIMENSIONS ARE IN MILLIMETERS.

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

[ ] =CRITICAL DIMENSION

* = FLATNESS & SQUARENESS CRITICAL



R.	PER C.
≤ 0.254	PER 10mm
≤ 20mm	130mm
≤ 16mm	105mm
≤ 07mm	45mm

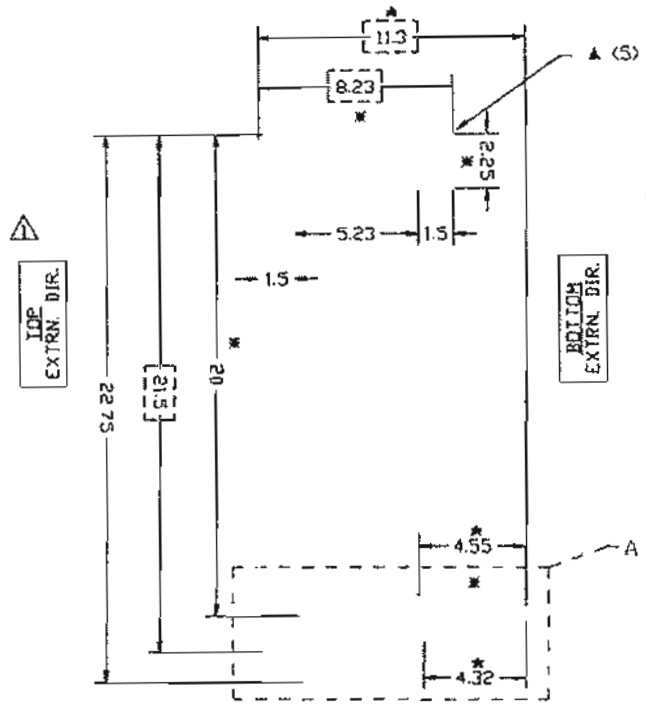
REVISIONS	DATE

EXTRUDER SIZE: CM-55	EXTRUDER SPEED: 3.0 m/min	
WEIGHT: 0.328 lb/ft	AREA: 335.25mm²	
UNSPECIFIED WALL THICKNESS OUTER 1.8mm	INNER 1.4mm	
UNSPECIFIED RADII 0.5mm	UNSPECIFIED TOLERANCE ±0.2mm	

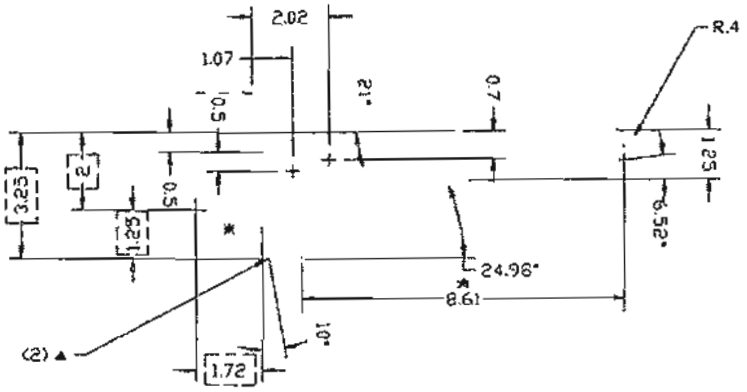
VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JMN	DATE: 30 APR 01	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D:
TITLE HANDLE RAIL		DWG. # SE3337

FILLETS
▲ =R0.25



5X SCALE



DETAIL A
8X SCALE

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report 74908.01-501-44

Date 8/15/01 Tech JG

FULL SCALE

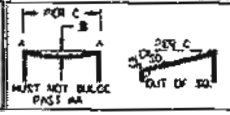
* = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

MATERIAL: RIGID PVC

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

=CRITICAL DIMENSION

= FLATNESS & SQUARENESS CRITICAL



B.	PER C.
≤.20mm	.130mm
≤.16mm	.105mm
≤.07mm	.45mm

2.	REVISE EXTRUDER SIZE & SPEED, EXT. DIRECTION	26 FEB 96
	REVISIONS	DATE

EXTRUDER SIZE: KMD-40 EXTRUDER SPEED: 6.0 m/min ⚠

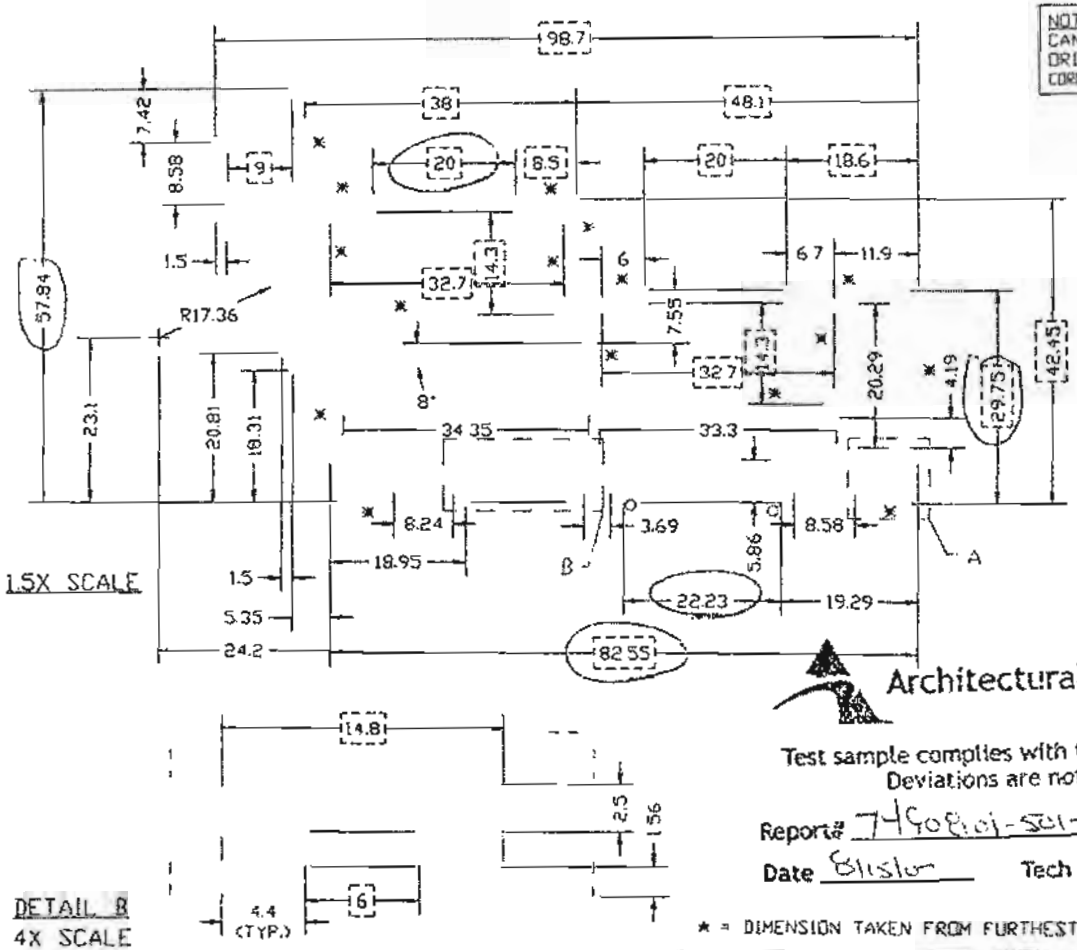
WEIGHT: 0.056 lb/ft AREA: 57.44mm²

UNSPECIFIED WALL THICKNESS INNER 1.5mm

UNSPECIFIED RADII 0.5mm UNSPECIFIED TOLERANCE ±0.2mm

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: GLT	DATE: 30 MAY 95	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D:
TITLE GLAZING BEAD 3\4" GLASS		DWG. # BV58



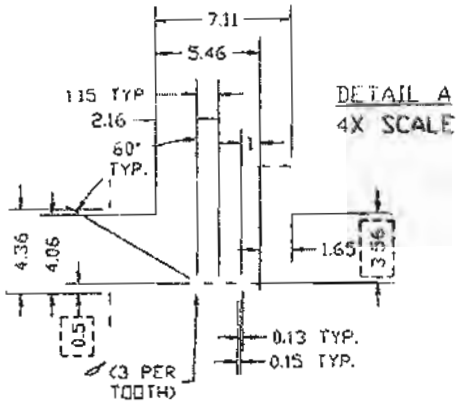
1.5X SCALE

DETAIL B
4X SCALE

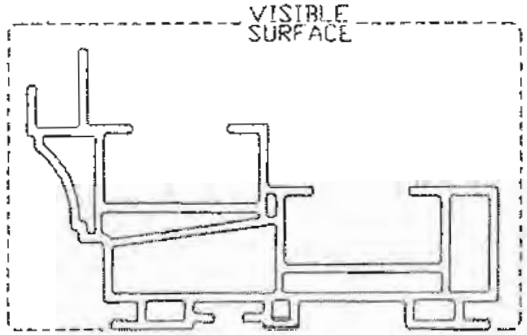
NOTE: ALL DIMENSIONS CAN BE ASSUMED AS ORIGINATING FROM SHARP CORNERS, UNLESS NOTED OTHERWISE.

=CRITICAL DIMENSION

FILLETS:
=SHARP
O =R1.0



DETAIL A
4X SCALE



FULL SCALE

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 74608.01-501-14

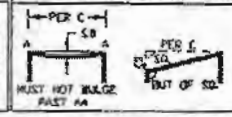
Date 8/15/14 Tech JC

★ = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

MATERIAL: RIGID PVC

DIMENSIONS ARE IN MILLIMETERS.

★ = FLATNESS & SQUARENESS CRITICAL



℄	PER ℄
≤.20mm	130mm
≤.16mm	185mm
≤.07mm	45mm

REVISIONS	DATE

WEIGHT: 0.834 lb/ft AREA: 852.53mm²

UNSPECIFIED WALL THICKNESS OUTER 1.8mm INNER 1.3mm

UNSPECIFIED RADII 0.5mm UNSPECIFIED TOLERANCE ±0.2mm

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

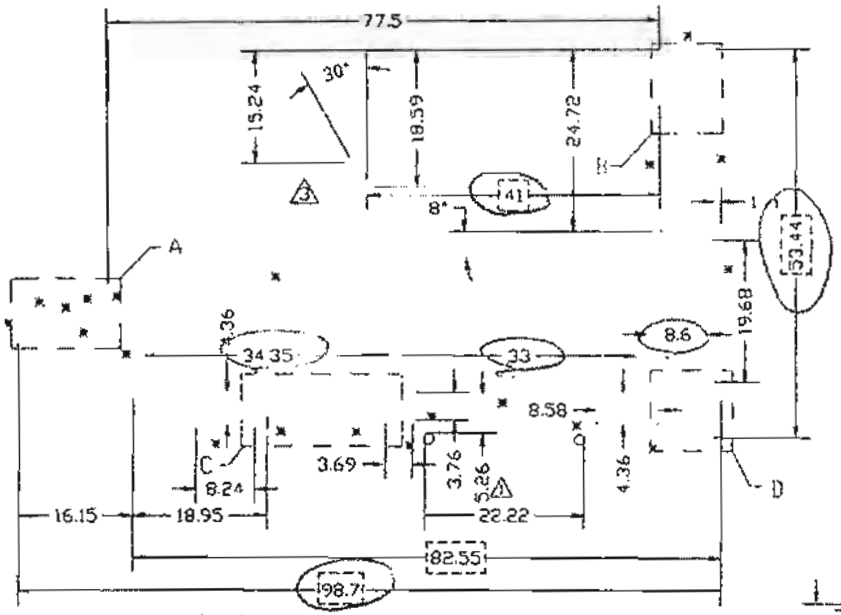
DRAWN: JMN	DATE: 4 OCT 04	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D.
TITLE DOUBLE HUNG FRAME		DWG. # DH5601

Architectural Testing

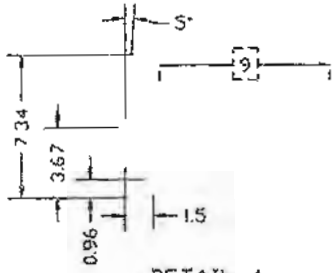
Test sample complies with these details.
Deviations are noted.

Report# 74608.01-501-44

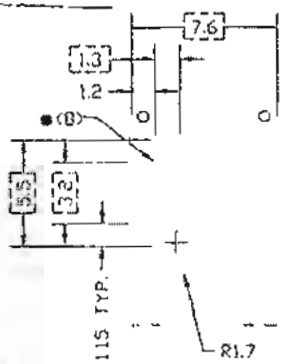
Date 8/15/07 Tech JG



1.5X SCALE

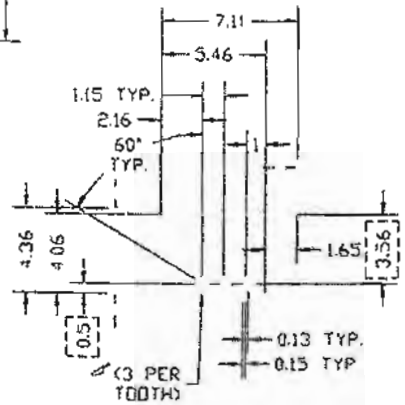


DETAIL A
4X SCALE

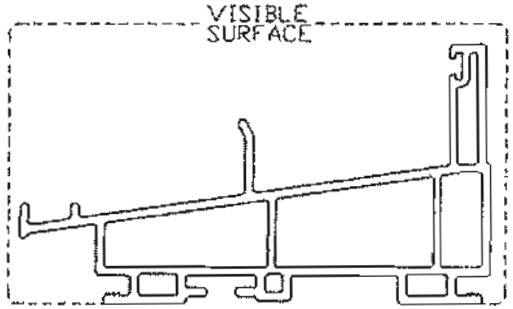


DETAIL B
4X SCALE

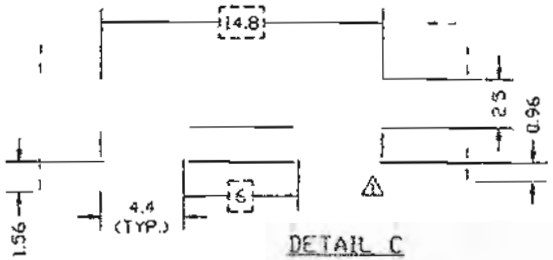
FILLETS:
=SHARP
=R0.2
=R1.0



DETAIL D
4X SCALE



FULL SCALE



DETAIL C
4X SCALE

DIMENSIONS ARE IN MILLIMETERS.

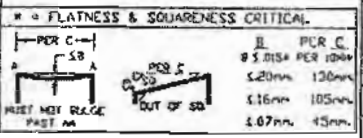
★ = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

MATERIAL: RIGID PVC

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

=CRITICAL DIMENSION

* = FLATNESS & SQUARENESS CRITICAL.



B	PER C
≤.20mm	130mm
≤.16mm	105mm
≤.07mm	45mm

3	ADD SASH RETAINING LEG	30 OCT 06 JMN
2	UPDATE AREA/WEIGHT	26 OCT 04 CG
1	REVISE NUB FROM 1.56 TO 0.96	26 OCT 04 CG
	REVISIONS	DATE

WEIGHT: 0.680 lb/ft △ AREA: 694.56mm² △

UNSPECIFIED WALL THICKNESS OUTER 1.8mm INNER 1.5mm

UNSPECIFIED RADII 0.5mm UNSPECIFIED TOLERANCE ±0.2mm

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: CG	DATE: 04 OCT 04	SCALE: AS NOTED
CHK'D:	DATE:	APP'VD:
TITLE: DOUBLE HUNG SILL		DWG.: DH5603

Architectural Testing

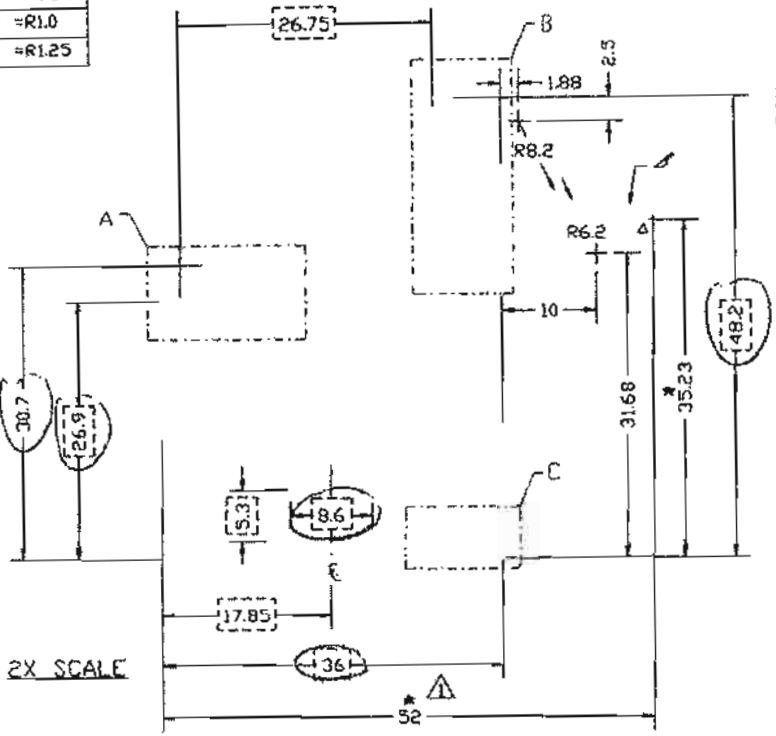
Test sample complies with these details.
Deviations are noted.

Report# 74168.01-501-44

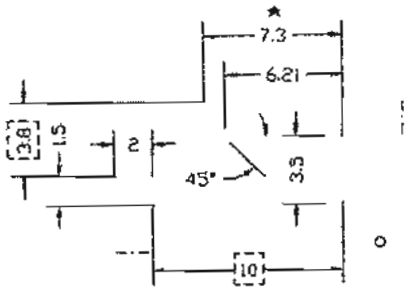
Date 5/15/01 Tech JG

FILLETS:
=SHARP
▲ =R0.25
○ =R1.0
△ =R1.25

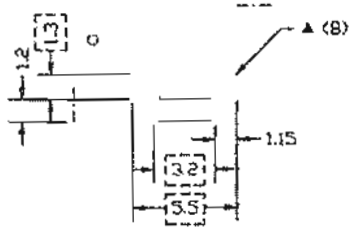
TOP EXTRN. DIR.



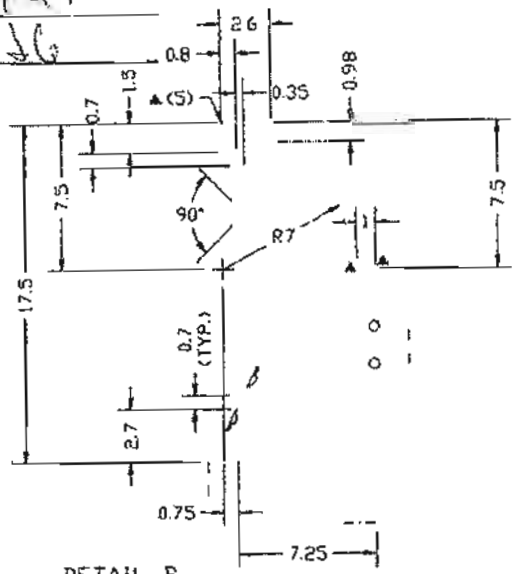
BOTTOM EXTRN. DIR.



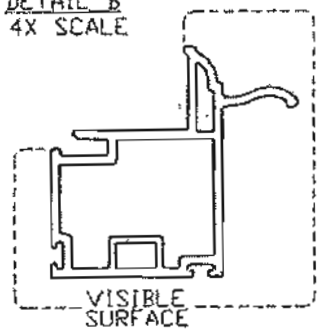
DETAIL A
4X SCALE



DETAIL C
4X SCALE
TYPICAL



DETAIL B
4X SCALE



* = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

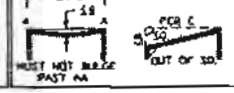
MATERIAL: RIGID PVC

DIMENSIONS ARE IN MILLIMETERS.

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

CRITICAL DIMENSION

= FLATNESS & SQUARENESS CRITICAL



#	PER 1	PER 5
± .0154	PER 10mm	
±.20mm	130mm	
±.16mm	105mm	
±.07mm	45mm	

1.	REVISE DIM. 52.5 TO 52, REV. AREA	22 MAY 01
	REVISIONS	DATE

EXTRUDER SIZE: CM-55 EXTRUDER SPEED: 2.5 m/min

WEIGHT: 0.373 lb/ft AREA: 381.09mm² ⚠

UNSPECIFIED WALL THICKNESS OUTER: 1.8mm INNER 1.4mm

UNSPECIFIED RADII 0.5mm UNSPECIFIED TOLERANCE ±0.2mm

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JMN	DATE: 30 APR 01	SCALE: AS NOTED
CHK'D:	DATE:	APP'VD:
TITLE HANDLE RAIL		DWG. # SE3347

Architectural Testing

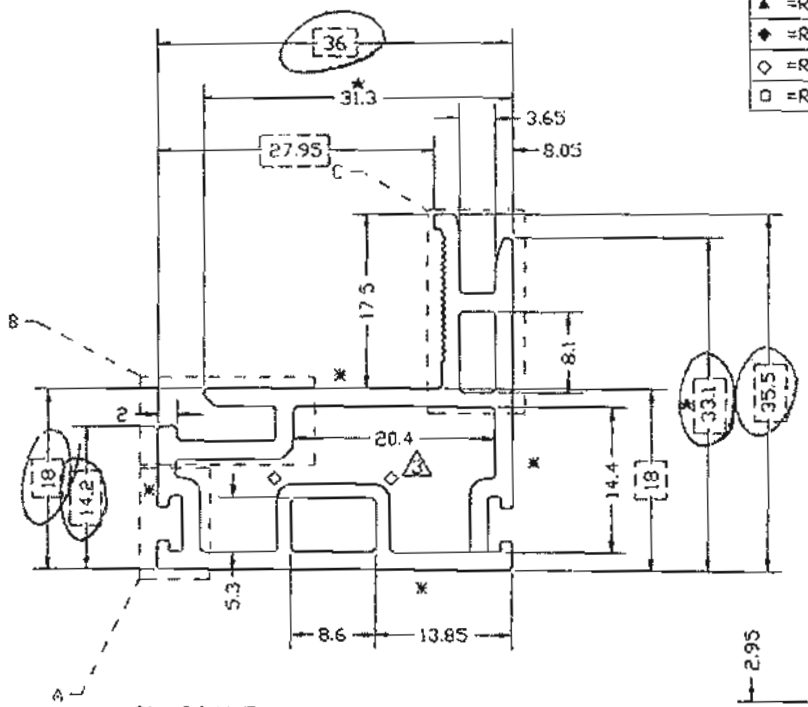
Test sample complies with these details.
Deviations are noted.

Report# 7408.01-501-14

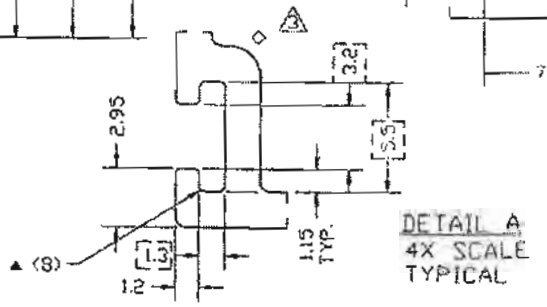
Date 8/15/07 Tech JG

★ = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

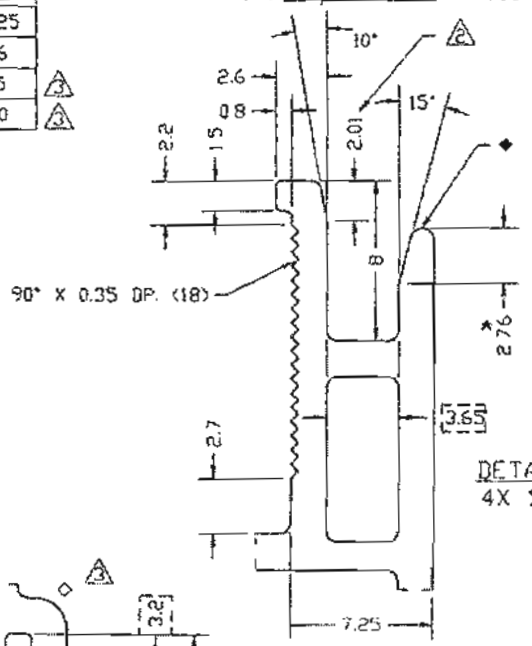
FILLETS:
▲ =R0.25
◆ =R0.6
◇ =R1.5
□ =R2.0



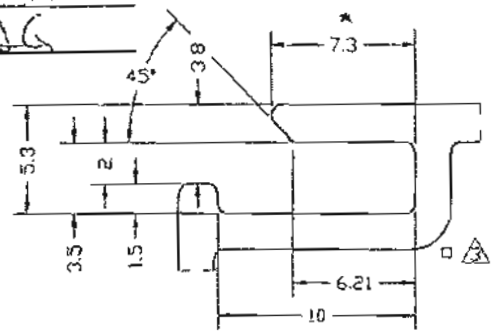
2X SCALE



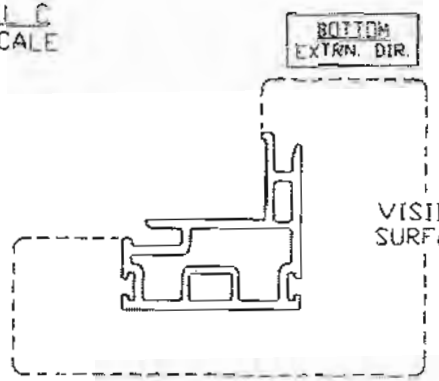
DETAIL A
4X SCALE
TYPICAL



DETAIL C
4X SCALE



DETAIL B
4X SCALE



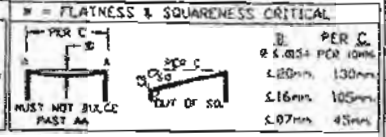
FULL SCALE

MATERIAL: RIGID PVC

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

[ ] =CRITICAL DIMENSION

★ = FLATNESS & SQUARENESS CRITICAL



B.	PER C.
@ 5.854 PER 100mm	
≤.80mm	.130mm
≤.16mm	.105mm
≤.07mm	.45mm

4.	REVISE AREA/ WEIGHT	28 JAN 00
3.	REVISE RADIUS R1 TO R1.5 & R2	25 JAN 00
2.	RENAME DWG. SE3024 TO SE3034	31 AUG 95
1.	RENAME DWG. TEMP16 TO SE3024	29 AUG 95
	REVISIONS	DATE

EXTRUDER SIZE: CM55 EXTRUDER SPEED: 5.0 m/min

WEIGHT: 0.295 lb/Ft AREA: 301.71mm² (4)

UNSPECIFIED WALL THICKNESS OUTER 1.8mm INNER 1.4mm

UNSPECIFIED RADII 0.5mm UNSPECIFIED TOLERANCE ±0.2mm

DIMENSIONS ARE IN MILLIMETERS.

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

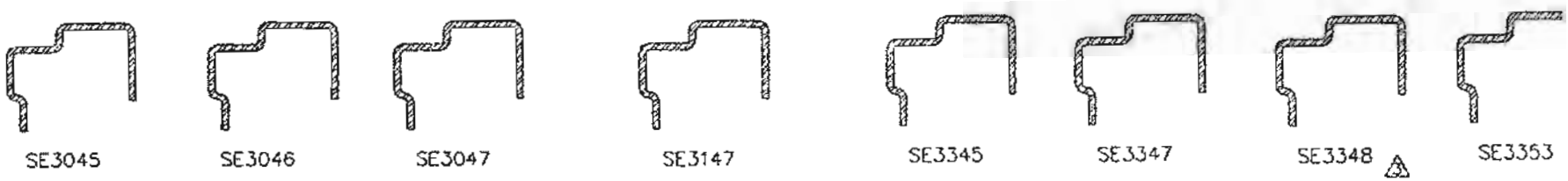
DRAWN: JMN	DATE: 4 MAY 95	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D:
TITLE: DOUBLE HUNG KEEPER RAIL		DWG. # SE3034 (4)

Architectural Testing

Test sample complies with these details.
Deviations are noted.

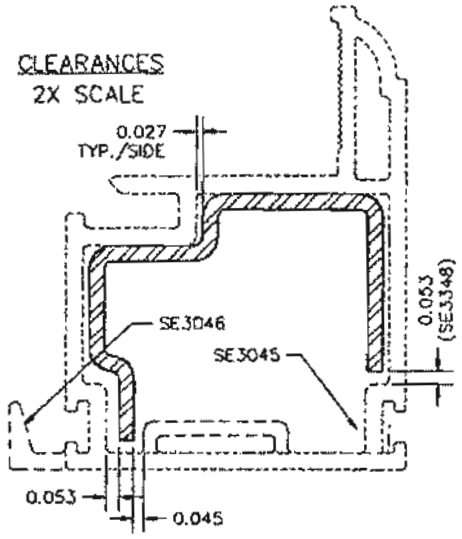
Report# 74908.01-501-44

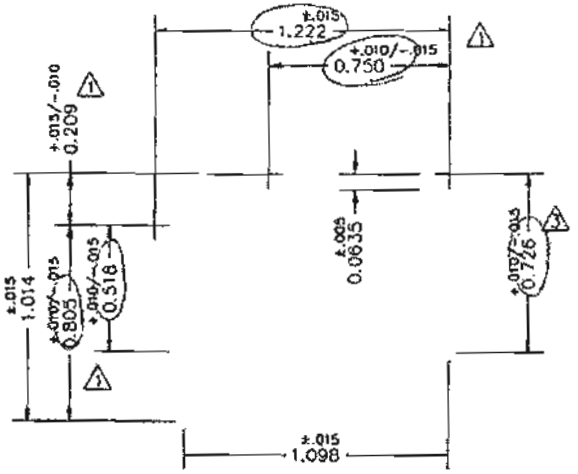
Date 8/15/07 Tech JG



FULL SCALE

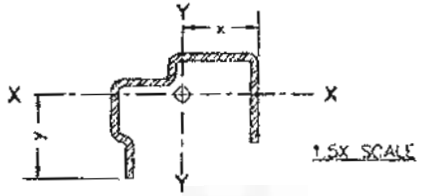
CLEARANCES
2X SCALE





PART NO.
RF 3101 SO M
2X SCALE

NOTE: FILLETS INSIDE OF BEND ARE APPROX. R0.031.



1.5X SCALE

PROFILE PROPERTIES: △4
MATERIAL: 16 GA. HOT-DIPPED GALVANIZED G90 STL.
AREA: 0.1776 IN.^{2}
WEIGHT: 0.604 lb./ft.

MOMENTS OF INERTIA:
Ixx: 0.0136 IN.^{4}
Iyy: 0.0370 IN.^{4}

Sxx: 0.0201 IN.^{3}
Syy: 0.0586 IN.^{3}

EXTREME FIBER DISTANCE:
x: 0.632 IN.
y: 0.676 IN.

NOTE: DIMENSIONS ARE IN INCHES

4.	REVISE PROFILE PROPERTIES	18 MAY 01 JMN
3.	REVISE DIM. 0.915 TO 0.726, ADD SE3348	18 MAY 01 JMN
2.	DWG. NAME: SE3SRF-2 TO RF3101SOM	28 FEB 01(JJS)
1.	TOLERANCES REV. TO VENDOR'S	16 FEB 96(JJS)
	REVISIONS	DATE

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

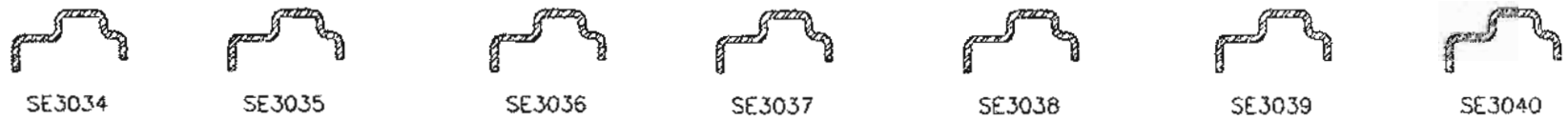
DRAWN: JJS	DATE: 30 JAN 96	SCALE: AS NO
CHK'D:	DATE:	APPV'D:
TITLE: SERIES DH30MM-DH32MM STEEL REINFORCING FOR DEEP SASHES		DWG. # RF310

Architectural Testing

Test sample complies with these details.
Deviations are noted.

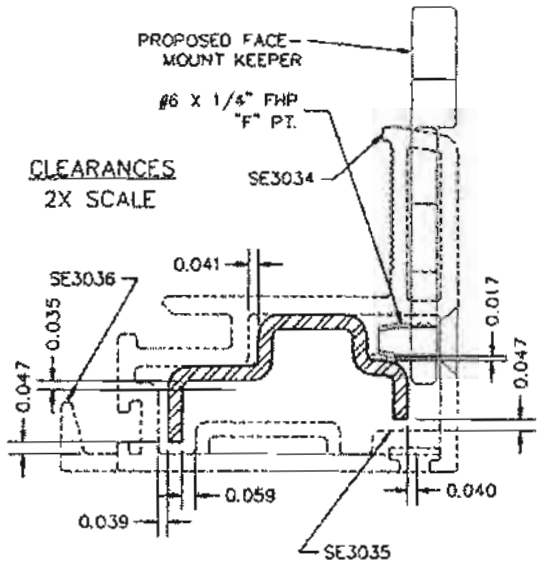
Report# 74508.01-501-44

Date 8/15/07 Tech JG



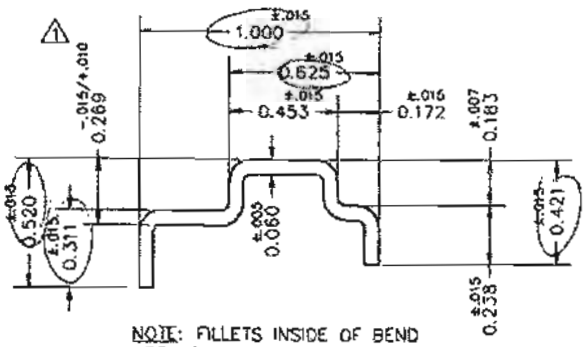
SE3034 SE3035 SE3036 SE3037 SE3038 SE3039 SE3040

FULL SCALE



CLEARANCES
2X SCALE

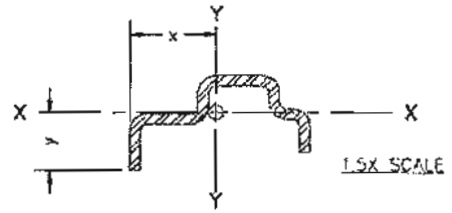
NOTE: A 46" X 60" UNEQUAL-GLASS DOUBLE HUNG SHOULD ACHEIVE R40 STRUCTURAL LOAD WITH THIS REINFORCING.



NOTE: FILLETS INSIDE OF BEND ARE APPROX. R0.031.

PART NO.
RF 3001 SO M
2X SCALE

NEW DWG.
DATE: 7 APR 06
PLEASE DESTROY OLD COPIES



1.5X SCALE

PROFILE PROPERTIES
MATERIAL: 16 GA. HOT-DIPPED GALVANIZED G90 STL.
AREA: 0.100 IN.²
MOMENTS OF INERTIA:
Ixx: 0.00170 IN.⁴
Iyy: 0.0107 IN.⁴
EXTREME FIBER DISTANCE:
x: 0.506 IN.
y: 0.318 IN.

NOTE: DIMENSIONS ARE IN INCHES

	REVISIONS	DATE
2	.DWG #=PART# (WAS SE3of-1)	7 APR 06 (JJS)
1	TOLERANCES REV. TO VENDOR'S	8 FEB 96(JJS)

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JJS	DATE: 4 DEC. 95	SCALE: AS NO
CHK'D:	DATE:	APPV'D:
TITLE SERIES DH30MM-DH32WW; DS30WW: STEEL REINFORCING FOR SASHES		DWG. # RF300

BILL OF MATERIALS

DOUBLE HUNG SLOPED SILL
(DH56WW IMPACT)

NOTE: THIS BILL OF MATERIALS REFLECTS THE SYSTEM AS TESTED. DEVIATION FROM THE BILL OF MATERIALS IS NOT RECOMMENDED BY VEKA INC. AND MAY REDUCE THE PERFORMANCE OF THE FINISHED PRODUCT.

PVC PROFILES:	PART #	# PER UNIT	SOURCE
FRAME	DH5601	4	VEKA
HEAD INSERT	DH3005	1	VEKA
KEEPER RAIL (EQUAL)	SE3034	1	VEKA
SASH STILE (EQUAL)	SE3335	2	VEKA
(EQUAL)	SE3345	2	VEKA
LOCK RAIL (EQUAL)	SE3356	1	VEKA
HANDLE RAIL (EQUAL)	SE3337	1	VEKA
HANDLE RAIL (EQUAL)	SE3347	1	VEKA
GLAZING BEAD (1" GLASS)	BV56	8	VEKA
GLAZING BEAD (7/8" GLASS)	BV57	8	VEKA
GLAZING BEAD (3/4" GLASS)	BV58/BV62	8	VEKA
SASH STOP	UV08	2 OR 4	VEKA

REINFORCING PROFILES:	Refer to test reports In technical manual for reinforcing guidelines.		
SASH (SE3034, SE3335, 37, & 56)	RF 3001 SO M	5	VEKA
SASH (SE3345 & 47)	RF3101 SO M	3	VEKA
SASH (SE3356)	RF FD22 S0M	1	VEKA

HARDWARE:	PART #	# PER UNIT	SOURCE
SWEEP LATCH	9200/420**	1-2	TRUTH
KEEPER (TOP MOUNTED)	30063**	1-2	TRUTH
TOP MOUNT TILT LATCH	28151 LH	1	VISION
	28151 RH	1	VISION
TILT LATCH JAMB INSERT	28152	2	VISION
BALANCE	CBS36	A/R	JOHN EVANS
SPRING CARRIER	79516	A/R	ASHLAND
PIVOT BAR	S-PB302-EAO	4	FOUR JAKS
	PSSVK2	4	UNIQUE
	12310-999	4	ASHLAND

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 14608.01-501-04

Date 8/15/14 Tech JG

BILL OF MATERIALS

DOUBLE HUNG SLOPED SILL
(DH56WW IMPACT)

NOTE: THIS BILL OF MATERIALS REFLECTS THE SYSTEM AS TESTED. DEVIATION FROM THE BILL OF MATERIALS IS NOT RECOMMENDED BY VEKA INC. AND MAY REDUCE THE PERFORMANCE OF THE FINISHED PRODUCT.

HARDWARE: Continued		PART #	#PER UNIT	SOURCE
VENTILATION		74525**	2	ASHLAND
		79601**	2	ASHLAND
JAMB ADJUSTER (INSERT)		1024 PLASTIC INSERT	2	BARTLETT
JAMB ADJUSTER (ASSEMBLY)		10 MS 05 ASM	2	MERCHANTS
END CAP (SE3337/SE3347)		11569	2 OR 4	ASHLAND
		115-2086	2 OR 4	RO-MAI
WEATHERSTRIPPING:				
SASH & HEAD INSERT				
WEATHERPILE	.270-.187	FS7826-187 (WHITE)	A/R	SCHLEGEL
	.270-.187	3027**	A/R	ULTRAFAB
	.270-.187	37028758WHWF	A/R	AMESBURY
GLAZING:				
GLAZING SHIMS (FRAME/SASH)		1/16"x3/4"x3/4"	A/R	TREMCO
HOT MELT		34-937A	A/R	PURFECT✓
LIQUID BACK BEDDING			A/R	GLAZE
3/4" LAMINATED GLASS		SAFEFLEX	A/R	SOLUTIA
SILICONE SEALANT		NOVAFLEX**	A/R	NOVAGUARD

SCREWS: NOTE ALL SCREWS ARE ZINC PLATED OR STAINLESS STEEL SHEET METAL TYPE, UNLESS OTHERWISE NOTED.

SWEEP LATCH	#8 X 1" FHP**	4	MERCHANTS
KEEPER (TOP MOUNTED)	#6 X 1" FHP**	4	MERCHANTS
TILT LATCH	#8 X 1" FHP**	4	MERCHANTS
JAMB INSERT	#8 X 5/8" FHP**	4	MERCHANTS
BALANCE (TOP SASH)	#8 X 1" FHP	8	MERCHANTS
BALANCE (BOTTOM SASH)	#8 X 1" FHP	8	MERCHANTS
PIVOT BAR	#6 X 3/8" THP	8	MERCHANTS
INSTALLATION	#10 X 1 1/2" PHP	A/R	MERCHANTS
JAMB ADJUSTER	10-24 X 5/8 JAMB ADJ. SCREW	A/R	BARTLET

** = COLOR A/R = AS REQUIRED

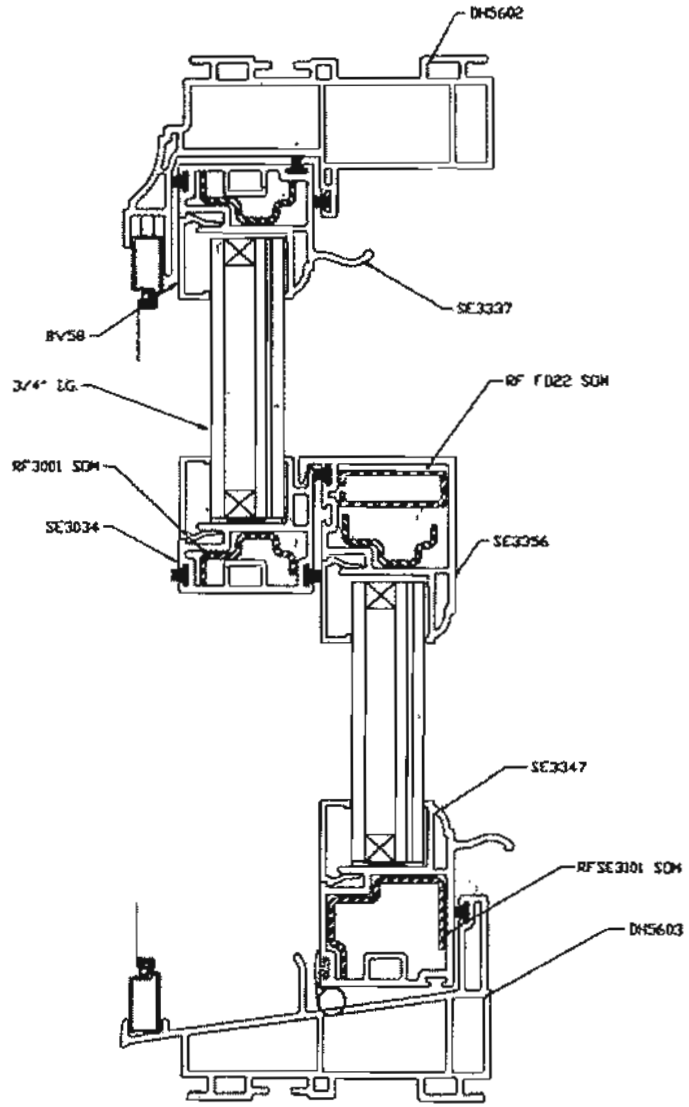
06/27/01
REV. 4/5/07

Architectural Testing

Test sample complies with these details. Deviations are noted.

Report# 74608.01.52[illegible]-44

Date 8/1/07 Init JG



NOTE: DIMENSIONS ARE IN INCHES

REVISIONS	DATE

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: BJF	DATE: 4 DEC 06	SCALE: FULL
CHK'D:	DATE:	APPV'D:
TITLE: DOUBLE HUNG (DH56WW) -USING SE33 SERIES SASH VERTICAL LAYOUT		DWG. # DH56WWIMPACT-V2

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 74908.01-501-44

Date 8/15/07 Tech JG

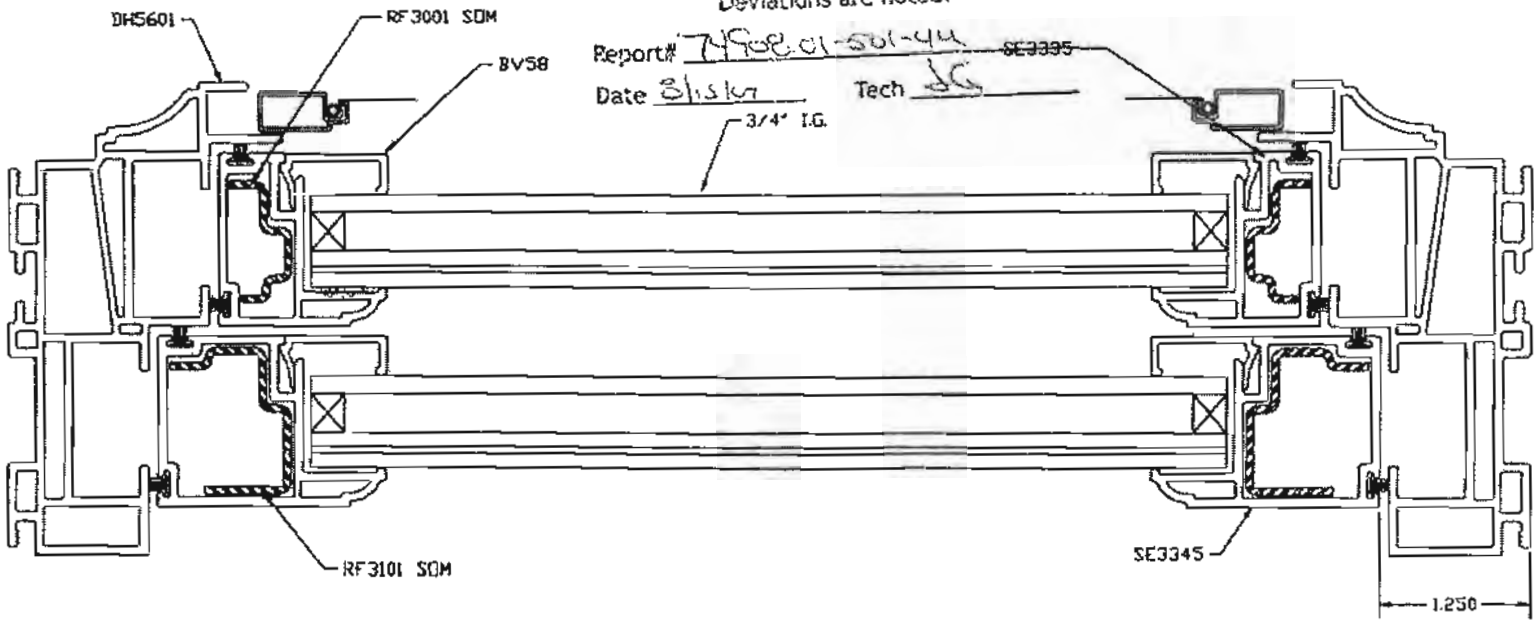
NOTE:
FOR OTHER PROFILE, GLAZING BEAD, & GLASS OPTIONS, PLEASE SEE THE LINEAL PROFILE CHARTS FOR THIS SYSTEM.

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 7498.01-501-44 SE3335

Date 8/15/07 Tech JG



NOTE: DIMENSIONS ARE IN INCHES

	REVISIONS	DATE

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

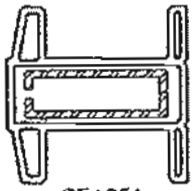
DRAWN: BJF	DATE: 4 DEC 06	SCALE: FULL
CHK'D:	DATE:	APPV'D:
TITLE DOUBLE HUNG (DH56WW) -USING SE33 SERIES SASH HORIZONTAL LAYOUT		DWG. # DH56WWIMPACT-H2

Architectural Testing

Test sample complies with these details.
Deviations are noted.

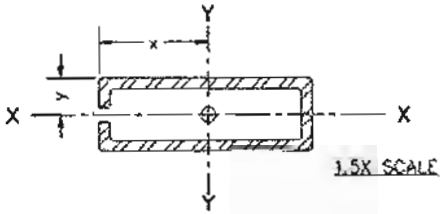
Report# 74508.01-501-44

Date 8/15/07 Tech SG

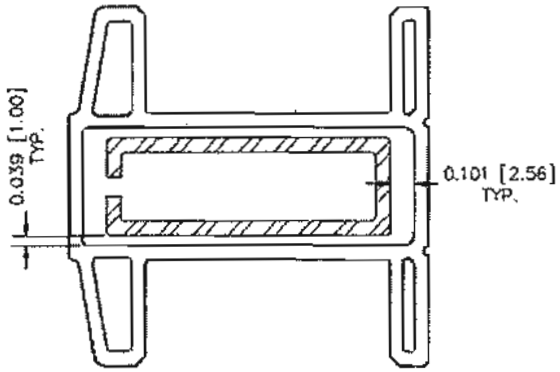


SE4051

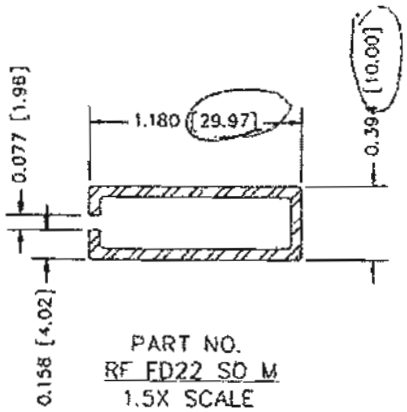
FULL SCALE



1.5X SCALE



CLEARANCES
2X SCALE



PART NO.
RF FD22 SD M
1.5X SCALE

NOTE: FILLETS INSIDE OF BEND ARE APPROX R0.031.

PROFILE PROPERTIES

MATERIAL: 16 GA. GALVANIZED ROLLED G90 STL., HOT DIPPED
AREA: 0.1674 IN.^{2} [1.080 CM.^{2}]
WEIGHT: 0.552 LB/FT.
MOMENTS OF INERTIA:
Ixx: 0.0041 IN.^{4} [0.172 CM.^{4}]
Iyy: 0.0249 IN.^{4} [1.037 CM.^{4}]
EXTREME FIBER DISTANCE:
x: 0.605 IN. [1.537 CM.]
y: 0.197 IN. [0.500 CM.]
SECTION MODULII:
Sxx: 0.0208 IN.^{3} [0.345 CM.^{3}]
Syy: 0.0412 IN.^{3} [0.675 CM.^{3}]

NOTE: DIMENSIONS ARE IN INCHES

	REVISIONS	DATE

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JMN	DATE: 5 FEB 02	SCALE: AS NOTED
CHK'D:	DATE:	APPV'D:
TITLE REINFORCING		DWG. # RFFD22SDM

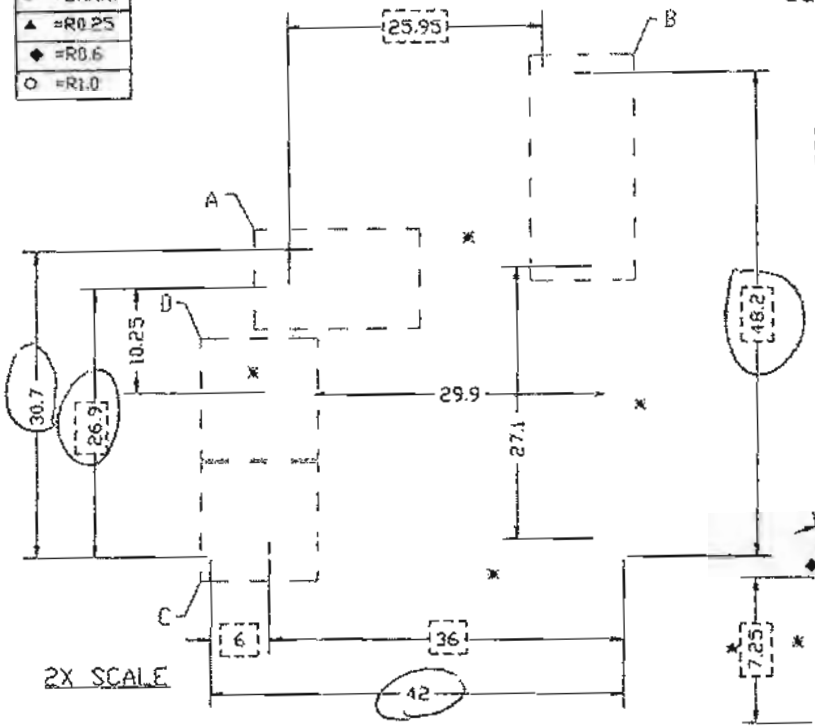
Architectural Testing

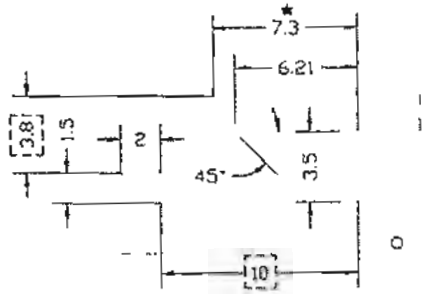
Test sample complies with these details.
Deviations are noted.

Report# 74508.01-501-44

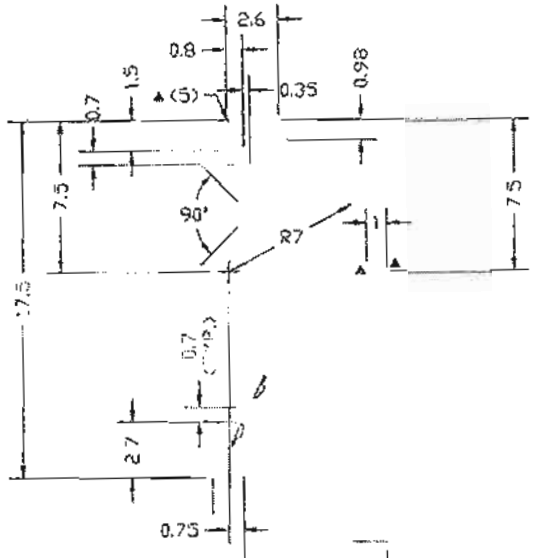
Date 8/15/07 Tech JS

FILLETS
=SHARP
▲ =R0.25
◆ =R0.6
O =R1.0

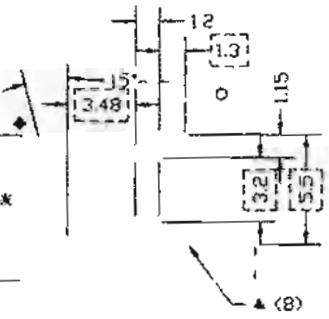




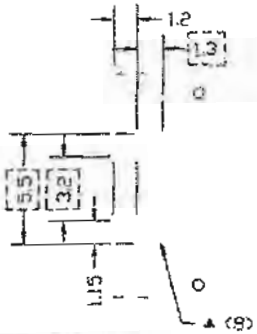
DETAIL A
4X SCALE



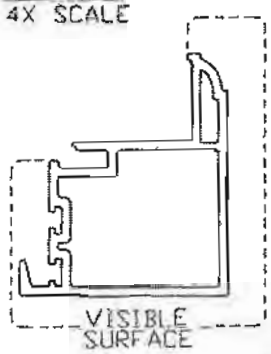
DETAIL B
4X SCALE



DETAIL C
4X SCALE



DETAIL D
4X SCALE



DIMENSIONS ARE IN MILLIMETERS.

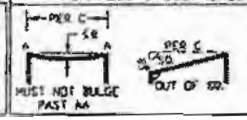
★ = DIMENSION TAKEN FROM FURTHEST POINT ON RADIUS

MATERIAL: RIGID PVC

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

[ ] =CRITICAL DIMENSION

= FLATNESS & SQUARENESS CRITICAL



R	PER C
≤.20mm	130mm
≤.16mm	105mm
≤.07mm	45mm

REVISIONS	DATE

WEIGHT: 0.336 lb/ft AREA: 343.21mm²

UNSPECIFIED WALL THICKNESS OUTER 1.8mm INNER 1.4mm

UNSPECIFIED RADII 0.5mm UNSPECIFIED TOLERANCE ±0.2mm

VEKA INC.
100 VEKA DRIVE
FOMBELL, PA 16123

DRAWN: JMN	DATE: 21 NOV 06	SCALE: AS NOTED
CHK'D:	DATE:	APP'D:
TITLE LOCK RAIL		DWG. # SE3356