

**REPORT NUMBER: 3179893TOR-212B GV-PVCCM**  
ISSUE DATE: April 11, 2010

**EVALUATION CENTER**  
Intertek  
6225 Kenway Drive  
Mississauga, Ontario L5T 2L3

**RENDERED TO**

**Artistic Skylight Domes Ltd.**  
**2 Guided Court**  
**Etobicoke, ON M9V 4K6**

**Attention: Nenzio Ferrazzo**

PRODUCT EVALUATED: 48"x48" GV-PVCCM Venting Glass Skylight  
EVALUATION PROPERTY: Physical Tests

**Report of Testing for Artistic Skylights Domes Ltd. on a GV-PVCCM 48"x48" curb-mounted venting glass skylight for compliance with the applicable requirements of the following criteria: CAN/CGSB-63.14-M89 "Plastic Skylights".**

*"This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program."*

# 1 Table of Contents

---

<b>1</b>	<b>Table of Contents</b> .....	<b>2</b>
<b>2</b>	<b>Introduction</b> .....	<b>3</b>
<b>3</b>	<b>Test Specimen</b> .....	<b>3</b>
3.1.	SPECIMEN AND ASSEMBLY DESCRIPTION .....	3
<b>4</b>	<b>Testing and Evaluation Methods</b> .....	<b>7</b>
4.1.	AIR INFILTRATION TEST (par. 7.2.3) .....	7
4.2.	WATER RESISTANCE TEST (par. 7.2.4).....	7
4.3.	UNIFORM STRUCTURAL LOAD TEST (par. 7.2.5).....	7
4.4.	SNOW LOAD (par. 7.2.6) .....	7
<b>5</b>	<b>Testing and Evaluation Results</b> .....	<b>8</b>
5.1.	Air Infiltration Test (par. 7.2.3) .....	8
5.2.	Water Resistance Test (par. 7.2.4).....	8
5.3.	Uniform Structural Load Test (par. 7.2.5).....	8
5.4.	Snow Load Test (par. 7.2.6) .....	8
<b>6</b>	<b>Conclusion</b> .....	<b>9</b>
	<b>Appendix A – Parts List / Drawings</b> .....	<b>10</b>

**Report of Testing for Artistic Skylights Domes Ltd. on a GV-PVCCM 48"x48" curb-mounted venting glass skylight for compliance with the applicable requirements of the following criteria: CAN/CGSB-63.14-M89 "Plastic Skylights".**

---

## 2 Introduction

---

Intertek has conducted performance testing for Artistic Skylight Domes Ltd. on a 48"×48" G-PVCCM curb-mounted venting glass skylight for the Intertek Certification Program. The skylight was submitted to the Intertek laboratory in Mississauga, Ontario on August 17, 2010. Testing was conducted in accordance with the standard methods of CAN/CGSB-63.14-M89 "Plastic Skylights". This evaluation began November 11, 2009 and was completed December 9, 2009.

## 3 Test Specimen

---

### 3.1. SPECIMEN AND ASSEMBLY DESCRIPTION

- Model:**
- GV-PVCCM Skylight
- Classification:**
- Class C, Type 2, formed
- Type:**
- Curb-mounted, aluminum capped, venting glass skylight having one top hinged projected out sash.
- Manufacturer:**
- Artistic Skylight Domes Ltd., 2 Guided Court, Etobicoke ON M9V 4K6
- Condition:**
- New and undamaged
- Frame Overall Size:**
- | Width         | Height        |
|---------------|---------------|
| 1346 mm (53") | 1346 mm (53") |
- Frame:**
- Extruded vinyl main frame members (Extrusion Profiles Die No. V-413) with mitred and welded corners.
  - Installation: The unit was installed onto a 2x6 wood support frame with 1/2" plywood sheathing secured to one face, simulating a flat roof surface, the frame measuring 2438 mm (96") square overall. The skylight was installed over a centrally located opening, its perimeter lined with 2x6 wood members on the interior, and 2x6 wood members on the exterior forming a curb on the surface of the "roof". The curb opening measured nominally 1226 mm (48-1/4") wide by 1226 mm (48-1/4") high.
-

- Frame (cont'd):**
- The order of installation was as follows:  
The exterior of the plywood was faced with self-adhering peel-and-stick waterproofing membrane, the membrane continuing up the sides of the curb members and across the exterior face, terminating at the edge of the curb opening. Joints in the membrane were lapped over each other, the membrane being applied using a torch.
  - Full length sections of angle-shaped brake formed 0.46 mm (0.018") thick aluminum flashing were installed along the curb, the 108 mm (4-1/4") leg of the flashing partially covering the side of the curb while the 13 mm (1/2") return partially covered the exterior face of the curb. The flashing was retained by 1-5/8" long roofing nails installed through the short leg of the flashing into the face of the curb. The corners of the flashing were folded such that, at each end of the head, the flashing terminated in a triangular shaped drip edge extending outboard of the end of the head section of curb (in a plane parallel to the side of the curb along the head). These triangular-shaped ends measured 76 mm (3") wide by 70 mm (2-3/4") deep, the rear edge corresponding to the rear edge of the flashing. To the exterior of the triangular-shaped folded ends, the flashing was wrapped around the corner of the curb and overlapped the jamb flashing and retained by a roofing nail. At the sill, the corners of the flashing were folded so that the jamb flashing terminated in a rectangular shaped drip edge extending outboard of the end of the jamb section of curb. These rectangular ends measuring 25.4 mm (1") wide by 70 mm (2-3/4") deep, the rear edge corresponding to the rear edge of the flashing. To the exterior of the rectangular-shaped folded ends, the flashing was wrapped around the corner of the curb and overlapped the sill flashing and was retained by a roofing nail.
  - The exterior face of the curb was fitted with an adhesive-backed closed cell foam tape gasket measuring 19 mm (3/4") wide by 9.5 mm (3/8") thick, its butted corners sealed with silicone. This gasket was applied to the exterior face of the curb such that it covered the joint formed between the flashing edge and the underlying membrane.
  - The skylight frame was installed onto the curb, the foam gasket sandwiched between the exterior face of the curb and the backside of the skylight frame. The skylight frame was secured to the curb using #10×1-1/2" hex head self-drilling tek screws complete with a composite metal flat washer with a rubber gasket bonded to the underside of it. Five fasteners were installed into the side of the each curb member. For test purposes, the plywood surface (roof surface) was tested for air leakage and water penetration resistance in the horizontal orientation.

**Note:** For air tightness testing only, the inside perimeter of the skylight support frame opening was sealed with red air barrier tape to the inside perimeter of the PVC skylight frame such that the 2x6 curb-to-PVC skylight frame joint was sealed as well as the joint between the 2x6 curb, the plywood sheathing, and 2x6 wood support members lining the opening. The tape was removed for water tightness testing.

---

- Sash:**
- Members: Extruded aluminum members having mitred corners supported by two metal chevron keys per corner fitted to tracks on the exterior face, the outer key fastened to the corresponding sash member with a #8×1/2" pan head self-drilling tek screw. The corners were sealed between the glazing gasket and outer corner key with silicone on the exterior, and between the weather-strip kerf (including the kerf) and the back edge of the sash along the inside of the corner. The inside perimeter of the sash was fitted with a vinyl cap having mitred corners. An angle-shaped metal clip at the top of each stile was retained by the corresponding corner key retaining screw. These clips measured 32 mm (1-1/4") wide with a 32 mm (1-1/4") long leg covering/retaining the head of the hinge pin, and a 19 mm (3/4") long leg fastened to the face of the sash over the corner key.
  - Aluminum Cap- Extruded aluminum cap members (Bon L Die No. PA-37250) having welded mitred corners
- Sash Size:**
- Width - 1346 mm (53")  
Height - 1346 mm (53")
- Locks and Hardware:**
- Hinges: The sash was operated on two 5.2 mm (13/64") thick galvanized steel knurled nails (one per stile), each measuring 130 mm (5-1/8") long overall, fitted through openings at the top of each stile and engaging an internal port running the length of the head, the nails secured in the ports with silicone applied to the knurled portion. The openings at the end of each stile measured 6.8 mm (17/64") in diameter and were located 7.9 mm (5/16") on centre down from the top end of each stile. The head on each nail measured 11 mm (7/16") in diameter, the shank of the nail being knurled for 68 mm (2-11/16"), the knurling starting 51 mm (2") below the head.
  - Operator: The sash was operated by a chain type roto gear hardware module (Truth Hardware Part No. 42.65) fastened to the sill using two #10×2" pan head "allthread" screws and to the adjacent wood 2x6 curb member with using two #8×2" flat head screws. The operator was located such that its chain was equi-distant from each jamb. The operator was sealed to the sill about the punched opening for the chain with silicone. The chain engaged a sash bracket (Truth Hardware Part# 40470) via a detachable sash pin (Truth Hardware Part# 20642). The sash bracket was fastened to the sash sill rail using two #8×1/2" pan head self-drilling tek screws.
- Drainage:**
- None (original slots along sill sealed with silicone).
- Weather-stripping:**
- The exterior face of the frame was single weather-stripped with a co-extruded rubber draft seal.
  - The interior face of the sash was single weather-stripped with kerf-inserted flexible vinyl bulb gasket (Vinyl Profiles Part No. V-75) having butted corners, the corners sealed with silicone.
-

- Glazing:**
- Factory sealed glazing unit having an exterior sheet of nominally thick 4 mm tempered glass, an interior sheet of laminated 3mm/3mm and a metal spacer with a 9.5 air gap.. Overall IG thickness was 17.5 mm.
- Glazing Method:**
- Laid in glazed on the interior on a bed of silicone applied to and underlying kerf-inserted rubber glazing gasket (Vinyl Profiles Part No. V-76), and retained with the extruded aluminum capping on the exterior. Double-sided adhesive backed closed cell foam tape measuring 6.4 mm wide by 3.2 mm thick (1/4"x1/8") was sandwiched between the exterior face of the sealed unit and the back side of the aluminum capping. The aluminum cap was fastened to the skylight frame using #8x3/4" self-drilling tek screws, five per frame member installed through the side of the capping. Neoprene shims, secured by a dab of caulking, were fitted between the edge of the sealed unit and the down-turned leg of the capping, three per edge located at mid-width and approximately 38 mm (1-1/2") on centre from the adjacent corner. The shims measured 38 mm long by 25.4 mm wide by 4.8 mm thick (1-1/2"x1"x3/16").
- Drawings:**
- Plan and Cross-Section Drawing:  
Artistic Skylight Domes drawing GV-PVCCM, undated
  - Component Drawings:  
Vinyl Profiles Ltd. Drawing No. V-413, titled "Curb Mount Frame", dated March 24, 2009  
Spectra Aluminum Products Die No. SS-1631, titled "Sash Frame", dated Jan/13/2000  
Vinyl Profiles Ltd. Drawing V-130, titled "Artistic Skylight Domes-Sash Thermal Cover", undated  
BonL Canada Inc. Die No. PA-37250, untitled, dated Nov/01/1995

Drawings are enclosed with this report in Appendix A.

---

## 4 Testing and Evaluation Methods

---

### 4.1. AIR INFILTRATION TEST (par. 7.2.3)

The Air Infiltration test was performed in accordance with ASTM E283-04, "*Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*" and evaluated with the requirements outlined in par. 6.6.1.

The air infiltration test was performed using a test pressure of 75 Pa (1.57 psf). The maximum air infiltration was calculated and compared to the allowable air infiltration.

### 4.2. WATER RESISTANCE TEST (par. 7.2.4)

The Water Resistance test was conducted and evaluated in accordance with ASTM E331-00, "*Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*" and evaluated with the requirements outlined in par. 6.6.2. The Water Resistance test was performed using no air pressure differential across the specimen.

The Water Resistance test was performed with the skylight installed into a make-shift roof opening as installed by the client, the installation details contained herein. For the water penetration test, the roof was placed horizontal at the specified pressure differential and a water spray rate of at least 204 L/m<sup>2</sup> per hour (5.0 U.S. gal/ft<sup>2</sup> per hour). The test duration was 15 minutes.

### 4.3. UNIFORM STRUCTURAL LOAD TEST (par. 7.2.5)

The Uniform Structural Load test was conducted in accordance with ASTM E330-02, "*Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference*," Procedure A and evaluated with the requirements outlined in par. 6.6.3.

A load equal to one-half the anticipated allowable load was applied and held for less than one minute. The deflection readings were then zeroed. Deflection measurements were taken at the mid-span and ends of a stile. An anticipated allowable load of 2000 Pa (41.8 psf) was then applied and held for not less than 10 seconds. The load was then released. Permanent deflection readings were taken after a recovery period of not less than one minute nor more than five minutes at zero load. The Uniform Structural Load test was performed in both the positive and negative directions. The skylight was evaluated for failure or permanent deformation of any part of the skylight that would cause any operational malfunction.

### 4.4. SNOW LOAD (par. 7.2.6)

Since the IG unit of the skylight contains a sealed air space, the Uniform Structural Load test (par. 7.2.5) at 2000 Pa (41.8 psf) positive pressure fulfills the requirements of the snow load test.

---

## 5 Testing and Evaluation Results

### 5.1. Air Infiltration Test (par. 7.2.3)

GV-PVCCM 48x48	
Net Infiltration:	0.67 m <sup>3</sup> /h (0.4 cfm)
Skylight Crack Length	4.880 m (16.00 ft)
Infiltration rate:	0.14 m <sup>3</sup> /h/m (0.025 cfm/ft)
Maximum allowable air infiltration rate:	2.79 m <sup>3</sup> /h/m (0.5 cfm/ft)

The GV-PVCCM skylight **MET** the performance levels specified in CAN/CGSB-63.14-M89 for Air Infiltration.

### 5.2. Water Resistance Test (par. 7.2.4)

GV-PVCCM 48x48	
Pressure Differential	0 Pa (0 psf)
Skylight Inclination Angle	0° (horizontal)
Results:	No water leakage observed and no water retained within the frame member.

The GV-PVCCM skylight **MET** the performance levels specified in CAN/CGSB-63.14-M89 for Water Resistance.

### 5.3. Uniform Structural Load Test (par. 7.2.5)

Permanent Deflection Test at Structural Pressure		
Full-Load Structural Test Pressure	<b>Positive Load</b>	<b>Negative Load</b>
	+2160 Pa (+45 psf)*	-2160 Pa (-45 psf)*
Note	* As testing was carried out concurrently to more than one standard, uniform load testing was carried out at slightly higher pressures that the required test pressure of $\pm 2000$ Pa ( $\pm 41.8$ psf).	
Post-test Details	After the test loads were released, the skylight was inspected and there was found to be no failure or permanent deformation of any part of the skylight that would cause any operational malfunction.	

The GV-PVCCM skylight **MET** the performance levels specified in CAN/CGSB-63.14-M89 for Uniform Structural Load.

### 5.4. Snow Load Test (par. 7.2.6)

The requirements of the snow load test were fulfilled using the procedure outlined in par. 7.2.5 of CAN/CGSB-63.14-M89.

The 48"x48" GV-PVCCM Venting Skylight **MET** the snow load requirement specified in CAN/CGSB-63.14-M89.



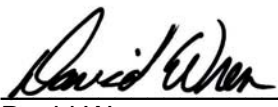
## 6 Conclusion

---

The Artistic Skylight Domes Ltd. 48×48 GV-PVCCM venting skylight described and tested herein met the air infiltration, water penetration, uniform structural load and snow load performance requirements of CAN/CGSB-63.14-M89, "Plastic Skylights".

### INTERTEK

Tested by Mustafa Swalah and Ryan Huynh

Reported by:   
David Wren  
Physical Testing Services

Reviewed by:   
Claudio Sacilotto  
Physical Testing Services

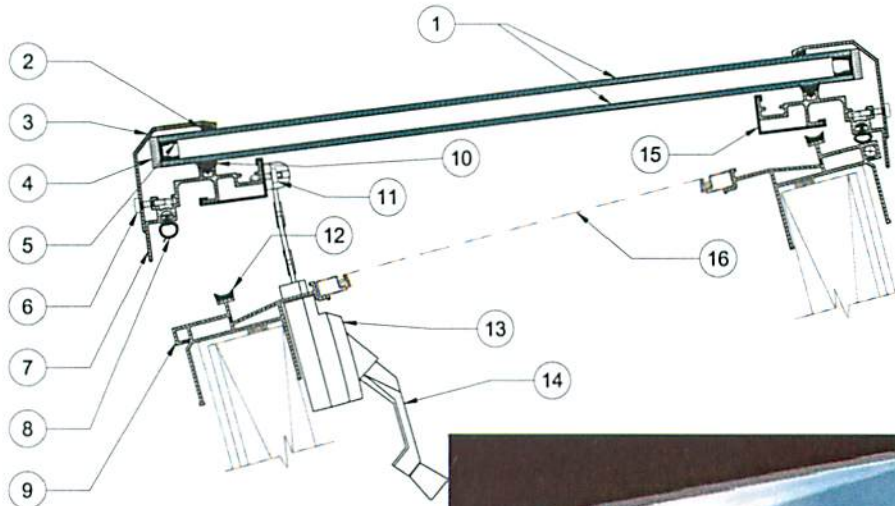
---

## **Appendix A – Parts List / Drawings**

---

(Parts List / Drawings – 5 pages)

---



MODEL GV-PVCCM (CURBMOUNT VENTING - GLASS GLAZING)

	DETAIL
UNIT 1: LOW-e ON THIRD SURFACE	1 - CLEAR TEMPERED 2 - CLEAR TEMPERED
UNIT 2: LOW-e ON THIRD SURFACE	1 - BRONZE TEMPERED 2 - CLEAR TEMPERED
UNIT 3: LOW-e ON THIRD SURFACE with ARGON GAS FILL	1 - CLEAR TEMPERED 2 - CLEAR TEMPERED
UNIT 4: LOW-e ON THIRD SURFACE with ARGON GAS FILL	1 - BRONZE TEMPERED 2 - CLEAR TEMPERED
UNIT 5: LOW-e ON SECOND SURFACE	1 - CLEAR TEMPERED 2 - CLEAR LAMINATED (0.030)
UNIT 6: LOW-e ON SECOND SURFACE	1 - BRONZE TEMPERED 2 - CLEAR LAMINATED (0.030)
UNIT 7: LOW-e ON SECOND SURFACE with ARGON GAS FILL	1 - CLEAR TEMPERED 2 - CLEAR LAMINATED (0.030)
UNIT 8: LOW-e ON SECOND SURFACE with ARGON GAS FILL	1 - BRONZE TEMPERED 2 - CLEAR LAMINATED (0.030)



**PARTS LIST**

MODEL GV-PVCCM (CURBMOUNT VENTING - GLASS GLAZING)

PARTICULAR	MANUFACTURER
1. GLASS GLAZING	GUARDIAN INDUSTRIES CORP., U.S.A.
2. 3/8" x 3/8" DOUBLE FACE VINYL FOAM GLAZING TAPE	GASKA TAPE INC.
3. EXTRUDED ALUMINUM RETAINING FRAME-MEDIUM (6063-T5 ALLOY)	BON-L, DIE # PA-37250
4. NEOPRENE SETTING BLOCK (3/4"x1"x1 1/2") BACK ADHERED	COMBI-FAB PRODUCTS
5. ALUMINUM SPACER WITH POLYSULFIDE SEALANT	TRIPLE SEAL LTD.
6. #8 - 18 X 3/4" ASSEMBLY SCREW	ROBERTSON, CANADA
7. EXTRUDED ALUMINUM SASH FRAME (6063-T5 ALLOY)	SPECTRA, DIE # SS-1631
8. BULB GASKET (FLEXIBLE PVC-UV STABLE)	VINYL PROFILES LTD., # V-75
9. EXTRUDED RIGID THERMAL PVC CURB MOUNT FRAME	VINYL PROFILES LTD., DIE # V-413
10. SANTOPRENE CUP GASKET (UV STABLE)	VINYL PROFILES LTD., # V-76
11. #8 - 18 X 3/4" ASSEMBLY SCREW	ROBERTSON, CANADA
12. CO-EXTRUDED RUBBER DRAFT SEAL	EXTRUSION PROFILES INC.
13. CHAIN DRIVE OPERATING MECHANISM	TRUTH HARDWARE, U.S.A.
14. TELESCOPING POLE-HOOK / HANDLE	TRUTH HARDWARE, U.S.A.
15. EXTRUDED RIGID PVC SASH THERMAL FRAME COVER (UV STABLE)	VINYL PROFILES LTD., # V-130
16. INSECT SCREEN	PHIFER WIRE PRODUCTS, INC., USA

SKYLIGHT MODEL:

GV-PVCCM

**Artistic**  
SKYLIGHT DOMES LTD

2 Guided Court  
Etobicoke, Ontario, Canada M9V 4K6  
E-mail: artistic@istar.ca  
Web: www.artisticskylight.com



**Vinyl Profiles Ltd.**  
 CUSTOM EXTRUSION  
 166 NOMINA DR. VILVICHAN CNV LAK 427  
 TEL: 1-800-665-0036  
 FAX: 1-800-665-0037  
 E-Mail: info@vinylprofiles.com

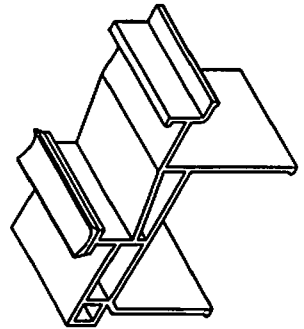
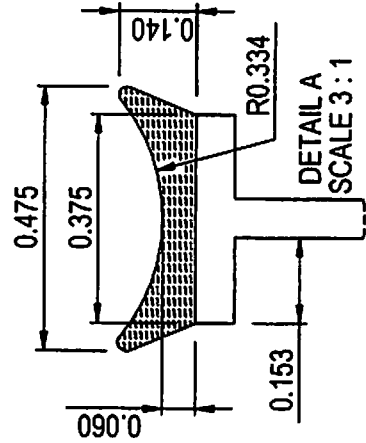
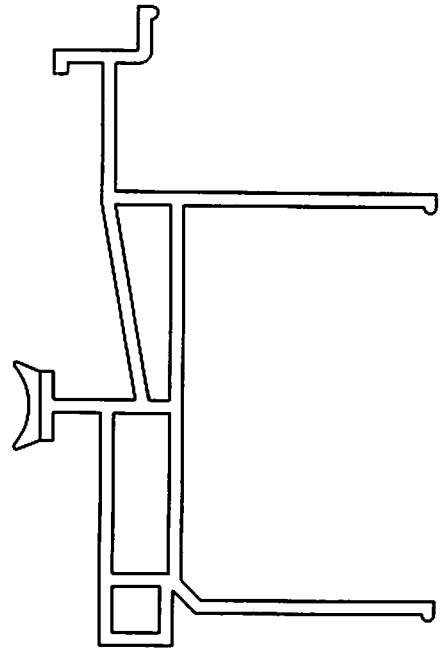
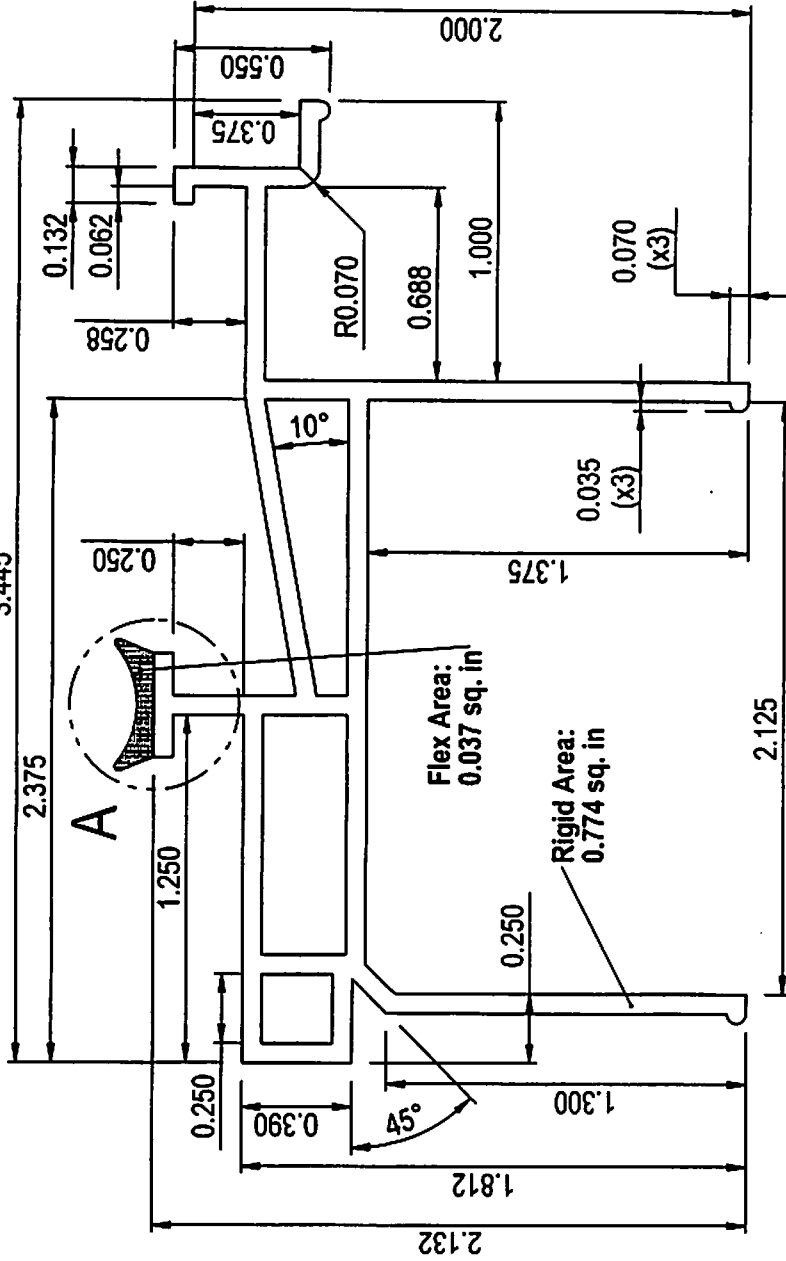
**Customer:** Artistic  
**Part Name:** Curb Mount Frame  
**Drawing #:** V-413  
**Material:** Dual PVC

**Part#:** 328C  
**Color:** WHT 143 / Flex-65

**Date:** March 24, 2009  
**Scale:** 1.5:1  
**Drawn By:** S. Q  
**Approved By:**

**Die #:** V-413  
**Rack #:** ---  
**Area:** 0.811 sq. in  
**Unit:** Inch

Wall Thickness: 0.070"  
 Typ. Radii: 0.015"



SCALE: 1:1



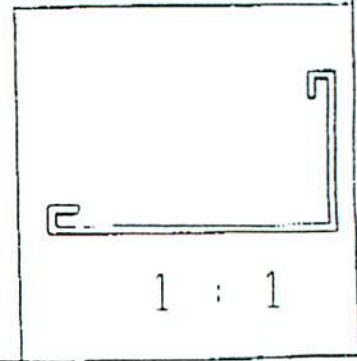
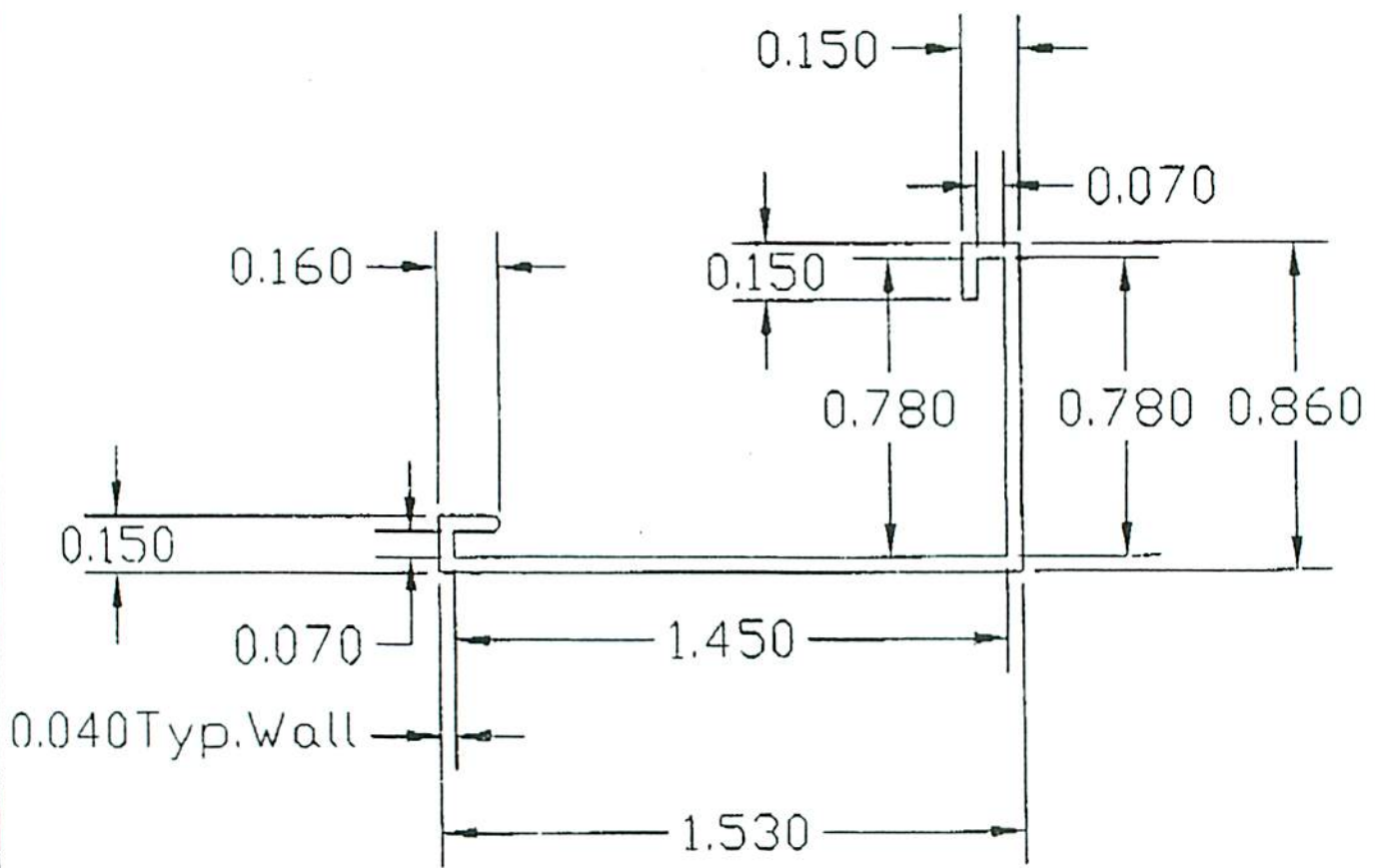


**Vinyl Profiles Ltd.**

120 Norfinch Drive Unit 6,  
North York, Ont. M3N 1X3  
Tel: 416-739-6336  
Fax: 416-739-7070

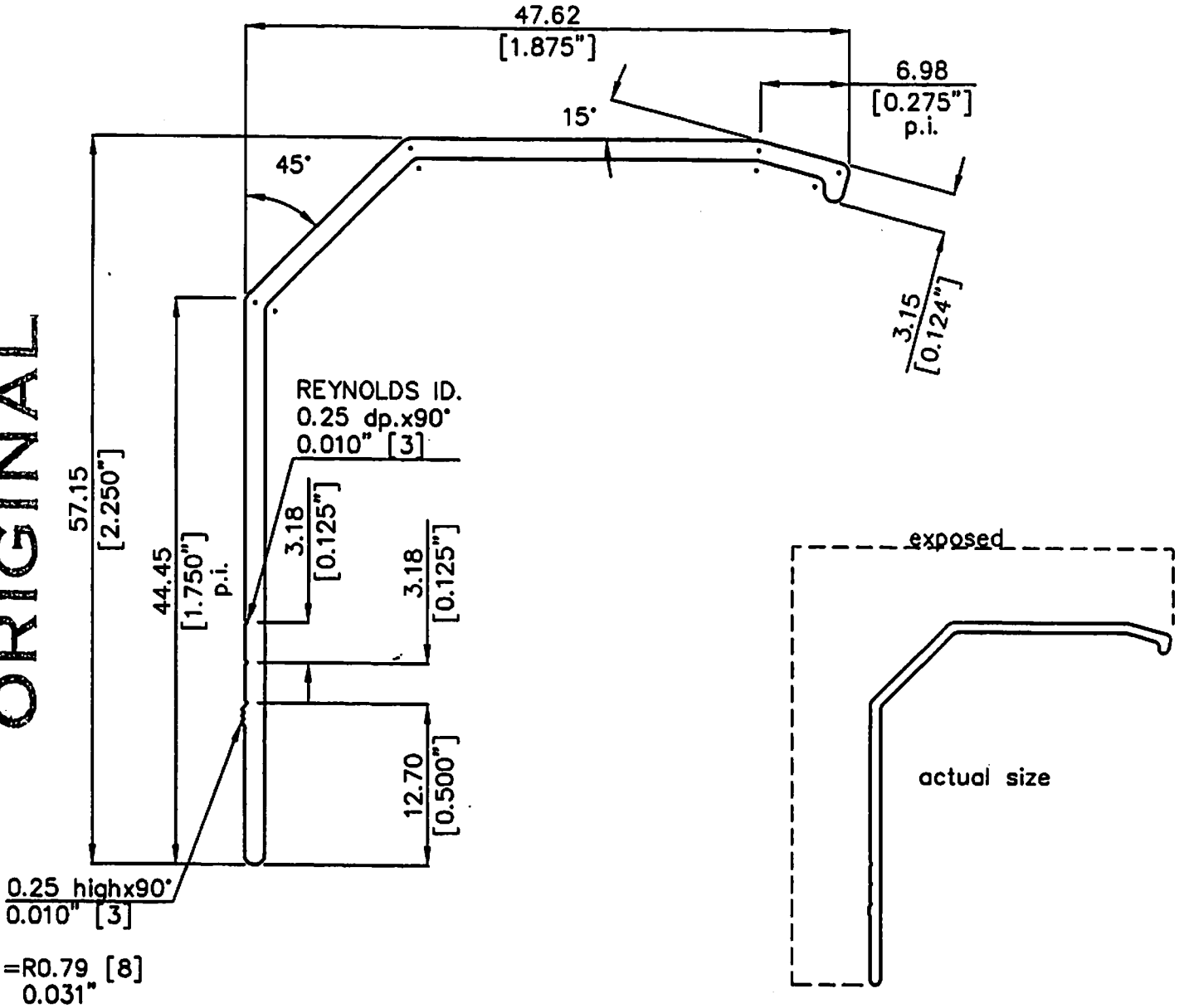
Artistic Skylight Domes - Sash Thermal Cover


V-130



PROPOSAL NO.	CUSTOMER	DIE NO.
	ARTISTIC SKYLIGHT	PA-37250

ORIGINAL



VENDOR:		DATE ORDERED:		DATE DUE:		P.O.#:	
ITEM	ACCOUNT #	QTY	COPY NO.	DESCRIPTION			TOTAL \$
1							
Rev. #	Revision		Date	Rev. #	Revision		Date
CUSTOMER PART #			<b>RomiShape</b> <input type="checkbox"/>	DESCRIPTION: DOME CAP			
CONTAINER: 7"	DIE TYPE: D+B	BACKER: 37250		UNMARKED THICKNESS:	1.27 mm	0.050 inches	
NO. CAVITIES: 2	RING: 9" STEP	BOLSTER: 1B-25428		UNMARKED RADII:	FULL mm	FULL inches	
DIE RATIO: 81	DIE PLATE: 13/4	SUB-BOL: -		DRAWN: FORBIE	AREA: 154 mm <sup>2</sup>	0.238 inches <sup>2</sup>	
DIE STACK: 9x4	FEEDER: PIF	SHIM: -		SCALE: 2:1	MASS: 0.425 kg/m	0.286 lbs/ft	
Sharp corner tolerance: + 0.40 mm 0.016 inches				DATE: NOV/01/1995	PERIMETER: 197.9 mm	7.791 inches	
Standard Aluminum Association tolerances apply unless otherwise stated				ALLOY: 6063	EXT. PER: - mm	- inches	
 <b>Bon L Canada Inc.</b> AURORA, ONTARIO PICKERING, ONTARIO RICHMOND HILL, ONTARIO STE. THERESE, QUEBEC				CLASS: SOLID	FACTOR: 466 metric	27 Imperial	
				DISKETTE:	C.C.D.: 73 mm	2.87 inches	