

BOCA

Glass: 51 ½" – May 8/98 – 1/98

Insert Panel: 96" – Oct.21/98 – 8/98 (Rev.)

Welded Picket: 96" – Oct.21/98 – 4/98



Intertek Testing Services

REPORT OF: Product Evaluation

AT: Western Railco Plant DATE: May 8/98

PROJECT: 481-0848 REPORT NO: 1/98

REPORTED TO: Western Railco Products Ltd. PAGE: 1 of 2
 13272 Comber Way
 Surrey, BC
 V3W 6N9

INTRODUCTION

Intertek Testing Services NA Ltd./Warnock Hersey has conducted a Concentrated load test on the glass in-fill panel on an aluminum guardrail assembly which was manufactured at Western Railco Products Ltd. manufacturing plant in Surrey, BC. The rail assembly was identified as the "2000 Series Component (Glass Panel) Rail System" and was tested on April 29, 1998.

The testing was conducted in accordance with the BOCA National Building Code/1993, Section 1615.8 "Guards and Handrails", Sub-section 1615.8.2.1 "In-Fill Areas."

DESCRIPTION

The guardrail is (51-1/2") wide measured from centre of post to centre of post and (42") high measured from deck level to the top of the guardrail.

The top rail runs continuously over the top of each support post and the bottom rails are fastened to brackets screwed to the base of each support post at either side. A 6 mm thick piece of tempered glass is positioned between the top rail and the bottom rail, set on a 3/8" high setting block at 1/4 points and secured within rigid vinyl sleeves top and bottom. A gap of approximately 1" exists at either end of the glazing panel to the support posts. See attached "Section" drawing in the appendix for a general layout.

The main support posts are 1-5/8" square complete with a screw chase at each inside corner and a wall thickness of 0.080" thick. The post is welded to the baseplate. The baseplate assembly is 3-1/2" wide x 3-1/2" deep x 1/4" thick and has four holes drill through (see attached drawings for details).



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Intertek Testing Services NA Ltd.

211 Schoolhouse Street, Coquitlam, BC V3K 4X9 Canada
 Telephone 604-520-3321 Fax 604-524-9186 Home Page www.worldlab.com

TEST RESULTS

BOCA Building Code/1993, Sub-section 1615.8.2.1 In-Fill Areas

A load of 200 lbs was applied over a 12" x 12" area between the upper and lower rails and positioned to the edge of the glass.

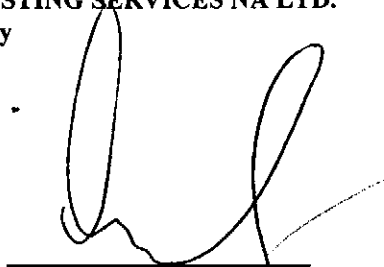
The guardrail assembly withstood the loading conditions as described above which included a 2.0 safety factor.

CONCLUSION

The guardrail system in-fill panel as described in this report (and attached drawings) meets the loading requirements of the BOCA Building Code/1993, Sub-section 1615.8.2.1 In-Fill Areas.

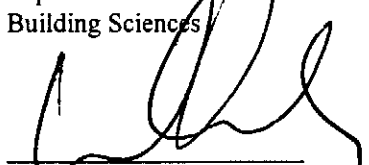
**INTERTEK TESTING SERVICES NA LTD.
Warnock Hersey**

Tested by:



Doug Docherty, ASCT
Supervisor
Building Sciences

Reviewed by:



Lawrence Gibson, P.Eng.
Operations Manager



DD/cr

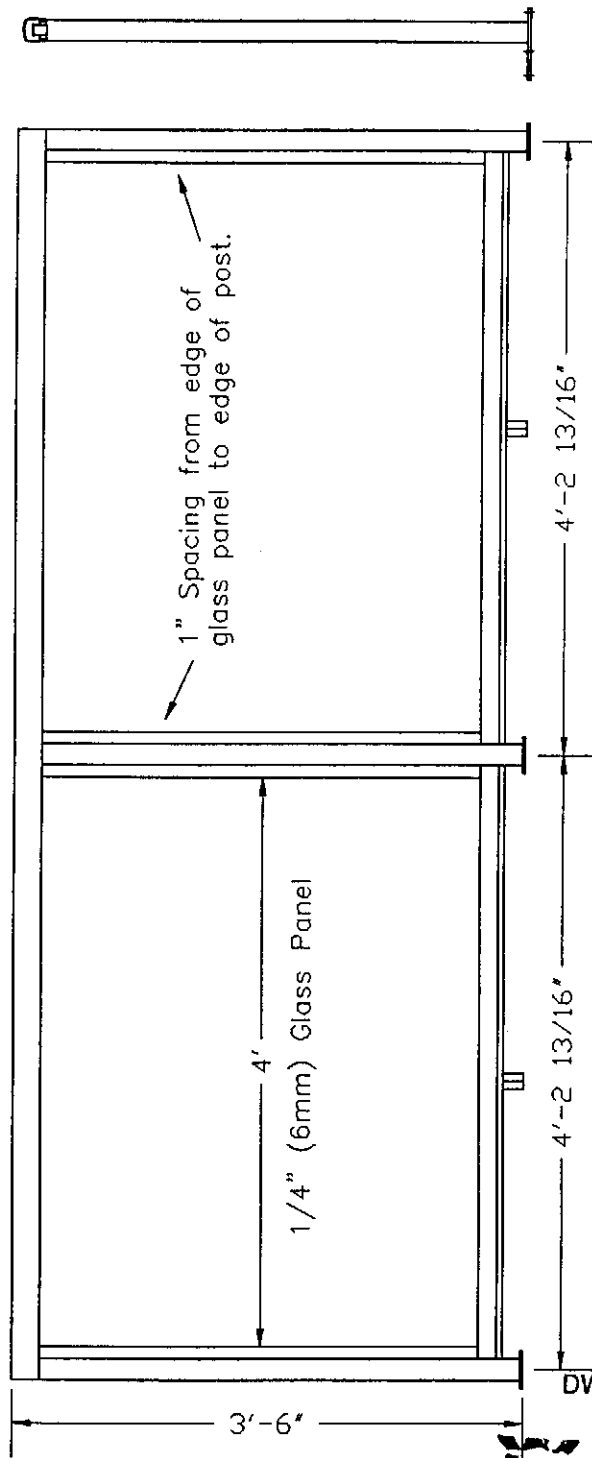
TOP RAILS



2000-R
Small Round
Die #796422
Die #660-294
Die #VH-6433



2000-S
New Small Sq.
Die #796435
Die #660-292
Die #VH-6434



SUPPORT LEG



New H-Rail
Support Leg
Die #628012

BOTTOM RAIL



Deep H-Rail
Die #640-743

POST MATERIAL



1-5/8" Post Mount Plate
Die #640-745

1-5/8" Square
Die #660-306

DWG No. 1/2

MAY 12 1998

APP BY [Signature]

**WESTERN
RAILCO
PRODUCTS LTD.**

13272 COMBER WAY
SURREY, B.C.
CANADA V3W 5V9

Bus. (604) 543-7245
Fax. (604) 543-4447

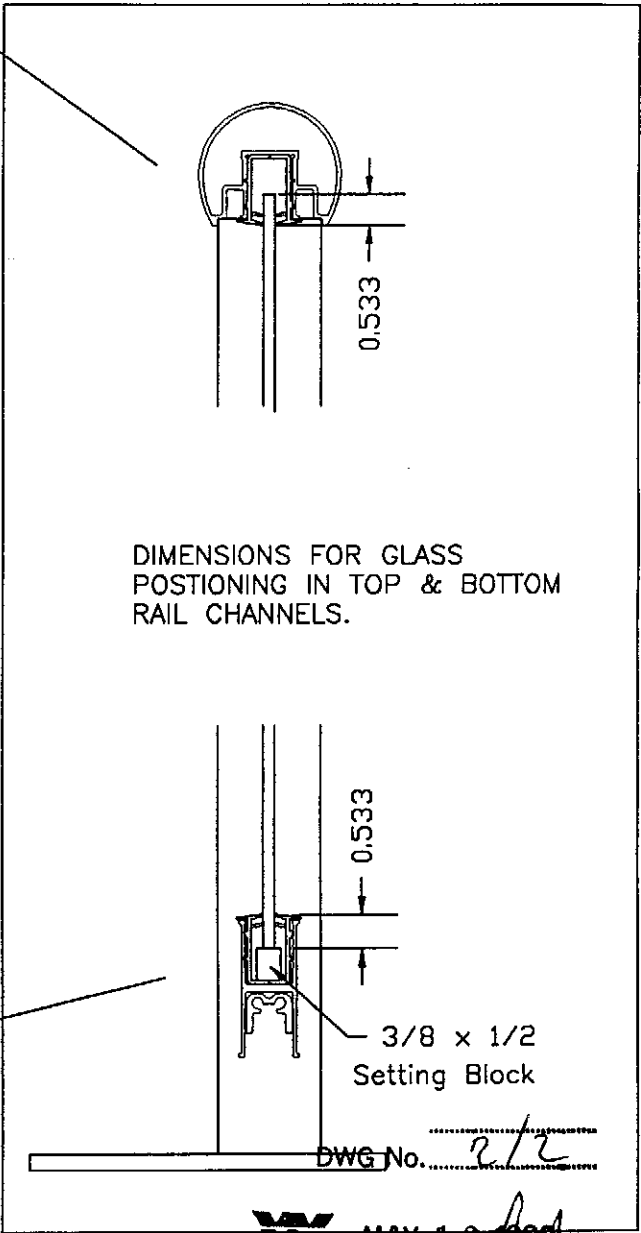
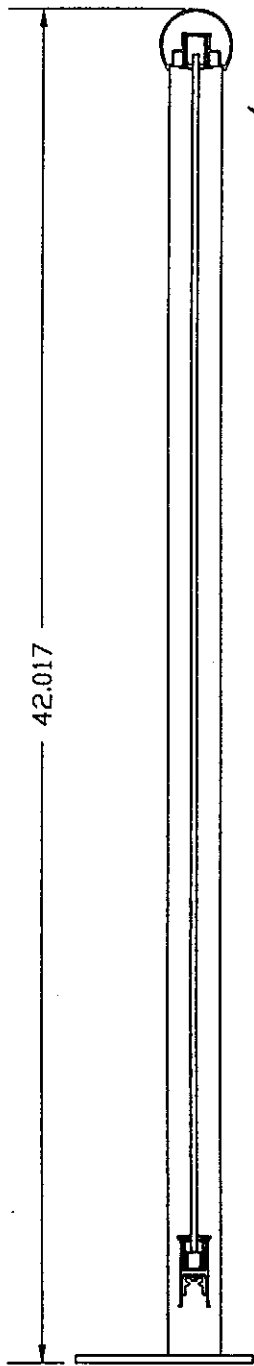


TITLE 1-5/8" GLASS SYSTEM - FULL HEIGHT @ 42"		
SCALE 3/4" = 1'	DATE Apr.29/98	Glass panel load test
DRAFT P.Bacon	CHK'D	BOCA Code
ENG.	CHK'D	
APPR'D	AS BUILT	JOB No. ITS / Warnock Hersey Test

DRAWING No.

001





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CANADA V3W 5V9

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MAY 12 1998

APP. BY *[Signature]*

TITLE Cross Section of Glass Railing		
SCALE 2" = 1'	DATE Dec.12/97	
DRAFT P.Bacon	CHK'D	
ENG	CHK'D	
APPR'D	AS BUILT	JOB No.



DRAWING No.
C-Sec





Intertek Testing Services

REPORT OF: Product Evaluation

AT: Western Railco Plant

DATE: Oct. 21/98

PROJECT: 481-0967

REPORT NO: 8/98 Rev.

REPORTED TO: Western Railco Products Ltd.
13272 Comber Way
Surrey, BC
V3W 6N9

PAGE: 1 of 2

Revised: December 14, 1998

INTRODUCTION

Intertek Testing Services NA Ltd./Warnock Hersey has conducted Uniform and Concentrated load tests on an aluminum guardrail assembly manufactured and tested at Western Railco Products Ltd., manufacturing plant in Surrey, BC. The rail assembly was identified as the 2000 Series "Welded Picket Insert Panel System" and was tested on October 1, 1998.

The testing was conducted in accordance with the BOCA National Building Code/1993, sections 1615.8.2 "Guard Design and Construction" and 1615.8.2.1 "In-fill Areas."

DESCRIPTION

The guardrail is (96") wide measured from centre of post to centre of post and (42") high measured from deck level to the top of the guardrail.

The top rail runs continuously over the top of each support post and the bottom rails are fastened to channel brackets welded to the base of each support post at either side. A 9/16" wide section of extruded aluminum profile 640-745 is fastened to the top of the post using two #8 x 3/4" panhead screws on either side and two #8 x 3/4" panhead screws are fastened through it into the top rail. Aluminum pickets 5/8" x 5/8" are welded between the upper and lower rail channels and are spaced 4-1/2" C/C. The upper rail channel fits within a pocket at the underside of the top rail and is secured using a #12 x 1-1/2" panhead screw in the centre and 3" from either post.

The main support posts are 1-5/8" square complete with a screw chase at each inside corner with a wall thickness of 0.080" thick. The post is fully welded to the baseplate. The baseplate assembly is 4" wide x 4-3/4" deep x 1/4" thick, has a 1-7/8" x 5-3/4" x 1/4" thick aluminum gusset welded to the outward side and has four holes drilled through (see attached drawings for details). Four #14 x 2" painted steel panhead screws secure each baseplate to a 3" x 10" rough fir timber. The timber itself was quick bolted to the concrete floor of the manufacturing plant.

The left side of assembly consisted of a 1-5/8" corner post complete with a 90° corner connecting to a 6 foot section of rail with the endpoint secured to a wood framed wall mount connection. The right side of the assembly consisted of a 5/8" corner picket post complete with a 90° corner connecting to a 6 foot section of rail with the endpoint secured to a wood framed wall mount connection. The 6 foot rail sections are secured to each of the 90° corner sleeves using a #12 x 1-1/2" panhead screw at either end of the sleeves from below.

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Intertek Testing Services NA Ltd.

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TEST RESULTS

BOCA National Building Code: Sections 1615.8.2 and 1615.8.2.1

1615.8.2

Guards shall be designed and constructed for a concentrated load of 200 pounds (91 kg) applied at any point and in any direction along the top railing member. Guards located in other than dwelling units in occupancies in Use Groups R-2 and R-3 shall also be designed and constructed for a uniform load of 50 pounds per foot (74 kg/m) applied horizontally at the required guard height and a simultaneous uniform load of 100 pounds per foot (149 kg/m) applied vertically downward at the top of the guard. The concentrated and uniform loading conditions shall not be applied simultaneously.

1615.8.2.1

The in-fill area of a guard shall be designed and constructed for a horizontal concentrated load of 200 pounds (91 kg) applied on a 1-square foot (0.093 m²) area at any point in the system, including intermediate rails or other elements serving this purpose. This loading condition shall not be applied simultaneously with the loading conditions in Section 1615.8.2.


The guardrail assembly withstood the loading conditions as described above which included a 2.0 safety factor.

CONCLUSION

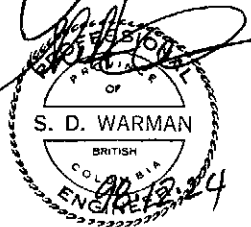
The guardrail system and installation as described in this report (and attached drawings) meets the loading requirements of the BOCA National Building Code 1993 Edition, Sections 1615.8.2 and 1615.8.2.1.

INTERTEK TESTING SERVICES NA LTD.
Warnock Hersey

Tested by:



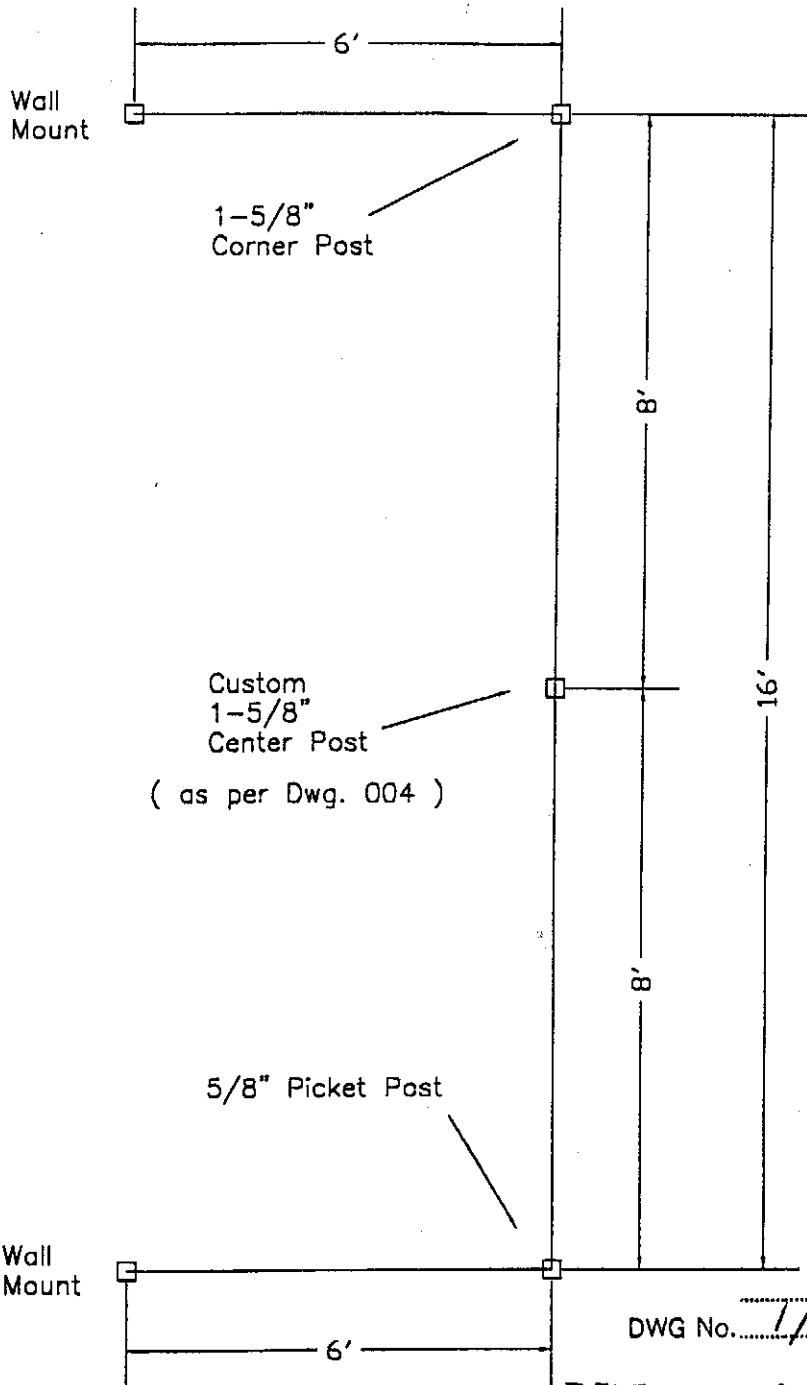
Doug Docherty, AScT
Supervisor
Building Sciences



Reviewed by:

Sheldon Warman, P.Eng.
Manager
Physical Testing and Certification

DD/cr



DWG No. 1/8

DEC 23 1998

APP BY *[Signature]*

**WESTERN
RAILCO
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13272 COMBER WAY
SURREY, B.C.
CANADA V3W 5V9

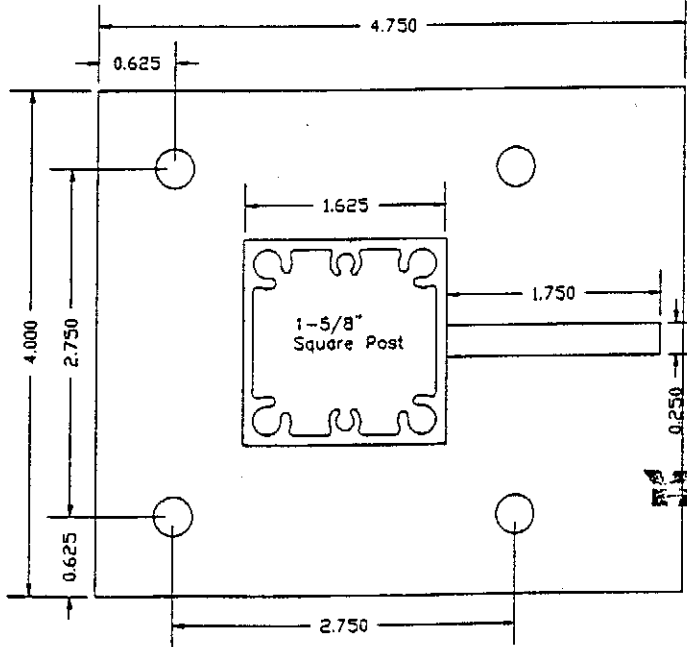
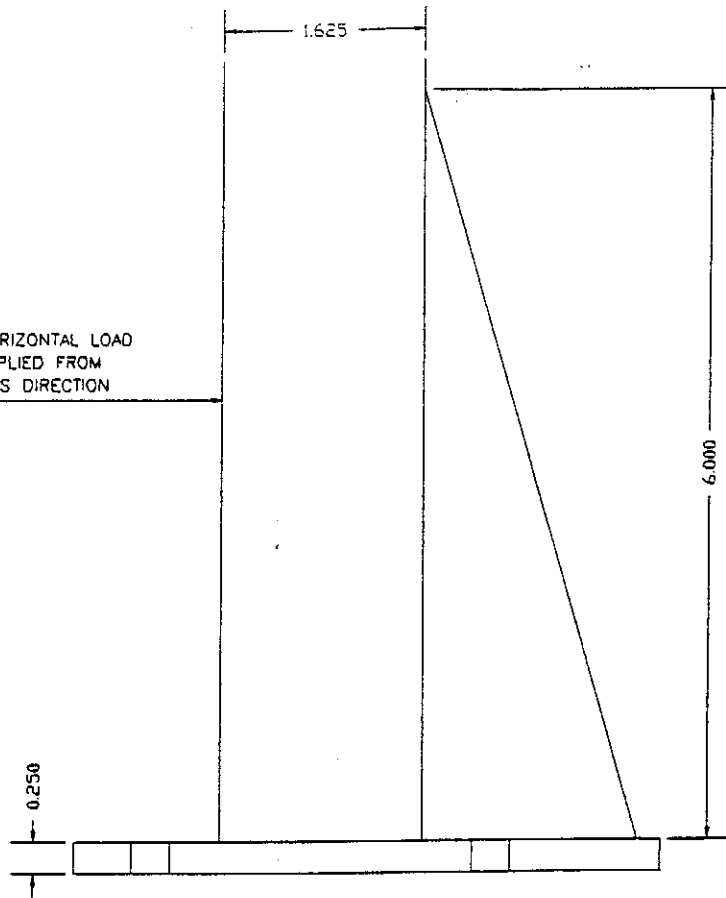
Bus. (604) 543-7245
Fax. (604) 543-4447



TITLE Welded Panel Test - 42" Height		
SCALE 3/8" = 1'	DATE Oct.12/98	
DRAFT P.Bacon	CHK'D	
ENG.	CHK'D	
APPR'D	AS BUILT	JOB No.

DRAWING No. 003 

HORIZONTAL LOAD
APPLIED FROM
THIS DIRECTION



DWG No. 2/8

DEC 23 1998

APP BY [Signature]

TITLE 1-5/8" POST FOR
42" RAIL

Bus.(604) 543-7245
Fax.(604) 543-4447

13272 COMBER WAY
SURREY, B.C.
CANADA V3W 5V9



SCALE NTS DATE DEC.14/98

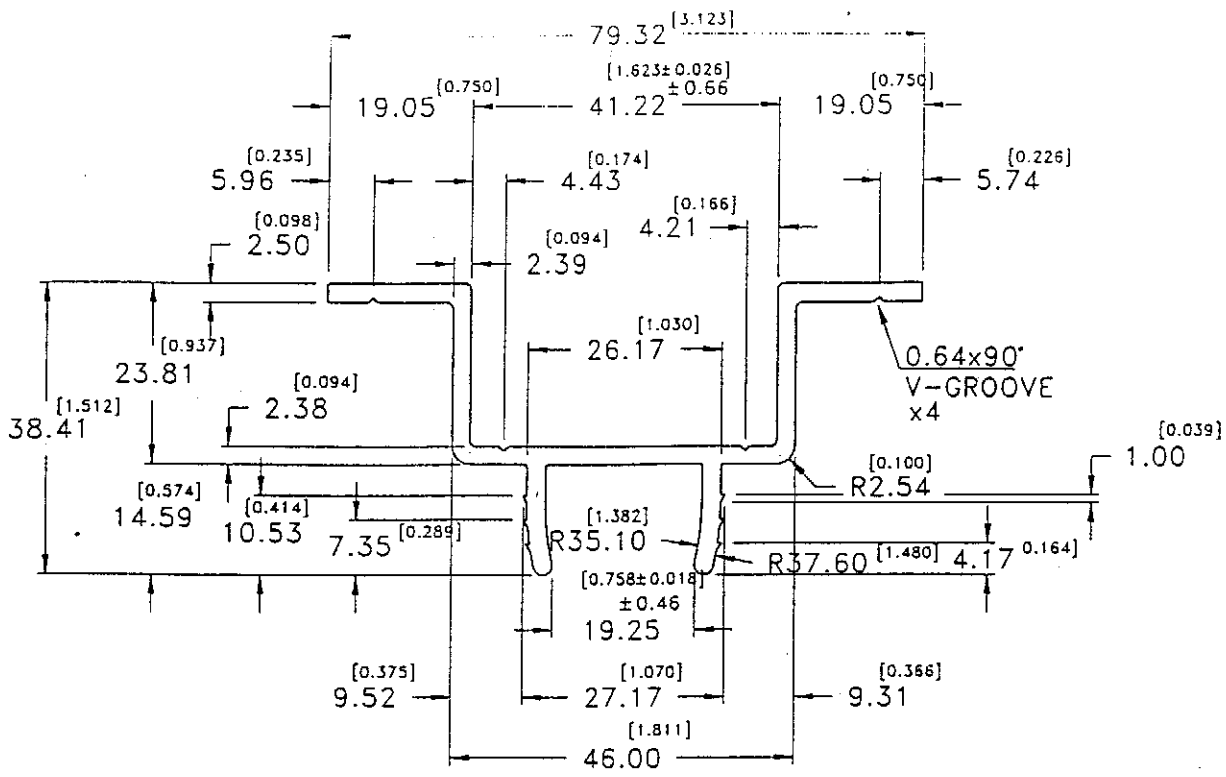
DRAFT C.BEZZEGH

**WESTERN
RAILCO
PRODUCTS LTD.**

DRAWING NAME
002a



DEC.14/98



UNMARKED WALL THICKNESS 2.50^[0.098]
 UNMARKED RADII 0.80^[0.031]
 BREAK SHARP CORNERS 0.38R^[0.015]

PLEASE SPECIFY EXPOSED SURFACE : *NONE*

DWG No. 3/8

DEC 23 1998

APP BY: *[Signature]*

REVISIONS			

Kawneer COMPANY CANADA LIMITED
 4000-18 AVE N LETHBRIDGE AB.
 T1H 5S8 TEL (403)320-7755

ESTIMATED AREA	SO.IN.	364.67	SO.MM
ESTIMATED WEIGHT	0.665 LB/FT	0.989	KG/M
ESTIMATED PERIMETER	12.087 IN.	307.02	MM
EST. PER. INTERIOR	IN.		MM

CUSTOMER WESTERN RAILCO PRODOCTS LTD.
 CITY SURREY PROV. B.C.

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CUST. PART NO. LOCATION OF I.D. MARK SEE T-2013
 SCALE FULL DATE FEB 24/97

STANDARD COMMERCIAL TOLERANCES FOR EXTRUDED ROD, BAR & SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE
 ALUMINUM EXTRUDED PRODUCTS ALLOY: 6063 TEMPER T54

END USE CCD = 3.123 in.
 DIE COST: TSP NO. TS-3386

CUSTOMER'S APPROVAL

DATE DIE DWG. NO. 640-745

