

REPORT OF

PRODUCT EVALUATION

CONDUCTED ON AN

“WELDED PICKET”
ALUMINUM GUARDRAIL ASSEMBLY

TO THE

UNIFORM BUILDING CODE, 1997 EDITION

FOR

ENSURCO DURADEK LTD.
8288 – 129TH STREET
SURREY, BC
V3W 0A6

REPORT PREPARED BY

REPORT NUMBER: 481-1457 – 1b

DATE: MARCH 6, 2000



INTRODUCTION

Intertek Testing Services NA Ltd./Warnock Hersey has conducted Uniform and Concentrated load tests on an aluminum guardrail assembly manufactured and tested at Ensurco Duradek Ltd.'s manufacturing plant in Surrey, BC. The guardrail assembly was identified as the "Welded Picket System (42" Height)" and was tested on January 19, 2000.

The testing was conducted in accordance with the Uniform Building Code 1997 Edition, Section 509 "guardrails", Table 16B.

DESCRIPTION

The guardrail is (120") wide measured from corner post to corner post and (42") high measured from deck level to the top of the guardrail.

The top rail is constructed in two pieces consisting of a sub-rail and a snap-on Square Top Rail cap. The sub-rail is fastened to the top of each corner post using two #12 x 1-1/2" panhead screws. The corner sleeve portion of the top cap is mitre cut and welded and extends approximately 4" to either side. Each top cap runs continuously from one 90° corner segment to the other. Where the top and bottom rails attach to the building wall structure a wall attachment plate is provided.

A 2-1/2" wide x 3" high x 1/8" aluminum plate assembly (complete with 1-1/2" long welded sleeve) is fastened to the end of the top rail using two #12 x 1-1/2" panhead screws and three #14 x 2" panhead screws (complete with Mungo brand, model MN8x40 sleeve anchors) which secure the wall attachment plate to the concrete wall structure. A 1-5/8" wide x 1-1/2" high x 1/8" thick aluminum plate assembly is fastened to the end of the bottom rail using a single #8 x 3/4" self tapping panhead screw and two #14 x 2" panhead screws (complete with Mungo brand, model MN8x40 sleeve anchors) which secure the wall attachment plate to the concrete wall structure. The bottom rails are fastened to a 1" long extruded aluminum rail clip using a single #8 x 3/4" self tapping panhead screw. Each of the rail clips, located on either side of each post, are fastened to the post using two #12 x 1-1/2" panhead screws.

Aluminum pickets measuring 5/8" x 5/8" x 0.050" thick are welded between the top sub-rail and the channel shaped bottom rail and spaced 4-1/2" apart c/c. Each picket is welded at either side to the top sub-rail and fits through a square punched opening in the bottom rail and welded to one side.

The corner posts are 1-5/8" square complete with a screw chase at each inside corner and mid-section with a wall thickness of 0.068" thick. An aluminum baseplate measuring 3-1/2" x 3-1/2" x 1/4" thick was fastened to the base of each post using four #12 x 2" hardened steel flathead screws (Robertson Whitehouse "Type "A"). Four #14 x 2" panhead screws (complete with Mungo brand, model MN8x40 sleeve anchors) secure each post to the concrete floor. Supporting the welded picket bottom rail at three equally spaced points between the posts are 1/2" 0.060" wall aluminum picket support legs which are inserted approximately 1" into the 5/8" pickets and secured using a single #8 x 1/2" self tapping screw. Each leg is fastened to the concrete floor using a #12 x 2" panhead screw (complete with a Mungo brand, model MN8x40 sleeve anchor). See attached drawings in the appendix for details and a general layout.

TEST RESULTS

Balcony railings, guardrails and handrails require a minimum horizontal (lateral) load of 50 lbs./ft. for exit facilities serving an occupant load greater than 50 persons and 20 lbs./ft. for other facilities.

2. A load of 25 lbs./ft² was uniformly applied over the guardrail area between posts and between the upper and lower rails.


The guardrail assembly withstood the loading conditions as described above which included a 2x safety factor.

CONCLUSION

The guardrail system and installation as described in this report (and attached drawings) meets the loading requirements of the Uniform Building Code, 1997 Edition, Section 509, Table 16-B for exit facilities serving an occupant load greater than 50 persons, for other than exit facilities and to components within.

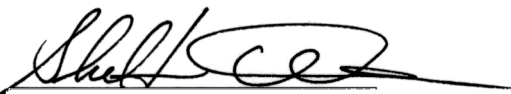
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Warnock Hersey

Tested by:



Doug Docherty, ASCT
Senior Technologist
Building Products

Reviewed by:



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

DD/cr

COMPONENTS



Square Top Rail



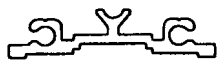
Square Top Sleeve



Round Top Rail



Round Top Sleeve



Top Rail Receiver



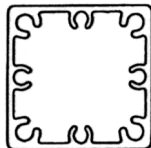
5/8" Square Picket



Bottom Rail



Rail Clip



1-5/8" Square Post

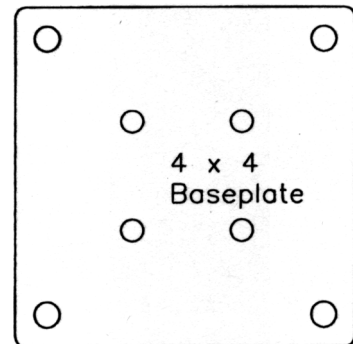
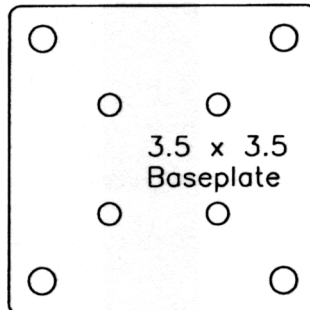
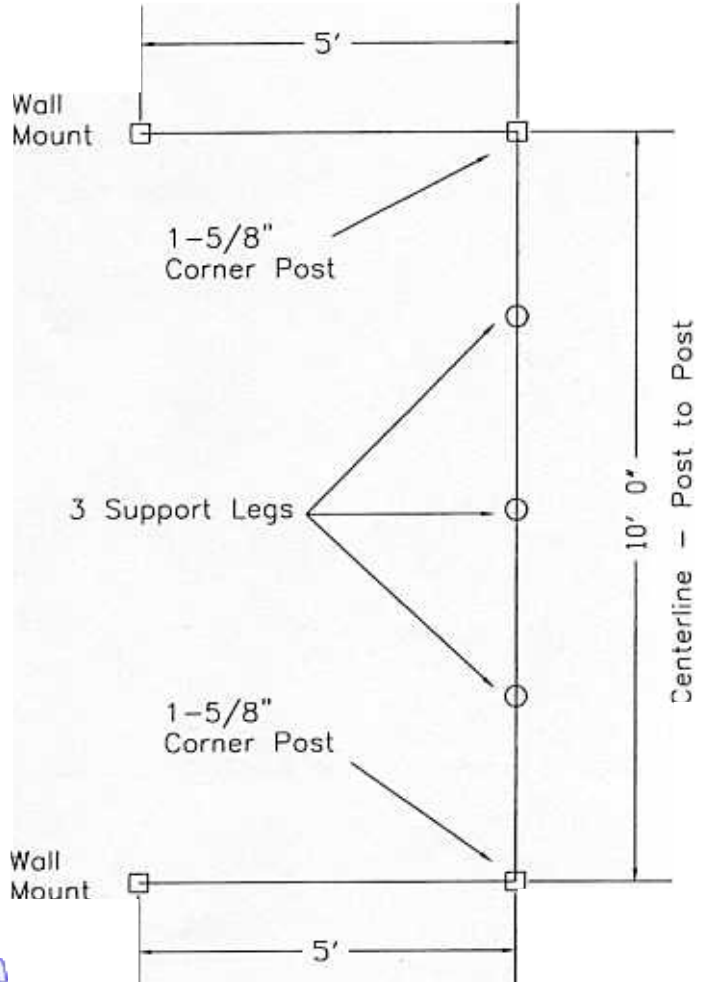
DWG No. 1/6

APR 26 2000

APP BY

Wall Mount

Wall Mount



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ENSURCO DURADEK LTD.

TITLE Welded Picket System @ 42" Height

SCALE 3/8" = 1'

DATE Jan.2000

N.B.C. 120" Centerline

DRAFT P.Bacon

CHK'D

U.B.C. 120" Centerline

ENG.

CHK'D

BOCA 20" Centerline

durarail™