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Letter Report No. G100978230TOR-003
Project No. G100978230

Mr. Kell Warsaw
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Subject: Load Tests of Handrail

Dear Mr. Warsaw

This letter report represents the results of the evaluation and tests of a 6 ft. long extruded aluminum handrail complete with mounting brackets. Load tests were performed as directed by client, using procedures given in Section 4.2.3 and 4.2.4 of ICC AC273 "Acceptance Criteria for Handrails and Guards". Only one handrail sample was set up and tested instead of three identical samples as required by Section 4.1 of AC 273.

The testing was conducted at the Intertek facility located at 6225 Kenway Drive, Mississauga, Ontario on January 23 and 24, 2013. The extruded aluminum handrail was installed onto a 2x4 stud (studs spaced 16" o.c.) wall sheathed with 1/2" drywall using two die cast metal brackets. As directed by client, the brackets were installed 32" on centre for the concentrated loads and 48" on centre for the uniform loads. The brackets were fastened directly into a stud using initially #14x2-1/2" flat head wood screws and then #12x2-1/2" flat head wood screws. Uniform Loads and Concentrated Loads as given in Section 4.2.3 and 4.2.4 were applied to the handrail.

Extruded Aluminum Handrail, 6 ft long mounted using two brackets 32" and 48" o.c.
Specified Uniform Load 125 plf x 4ft = 500 lbf
Specified Concentrated Load 500 lbf

The following table is a summary of results:

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AC 273 Section 4.2.3 Concentrated Load

Load Type	Bracket Spacing (in.)	Fasteners	Applied Load (lbf)	Deflection at Load (in.)	Comments
Concentrated Load, applied Horizontally at Bracket	32	Three #14x2-1/2"	500	0.393	No failure, nor evidence of disengagement. PASS
Concentrated Load, applied Horizontally at Bracket	32	Two #14x2-1/2"	500	0.590	No failure, nor evidence of disengagement. PASS
Concentrated Load, applied Horizontally at Bracket	32	Three #12x2-1/2"	500	0.512	No failure, nor evidence of disengagement. PASS

AC 273 Section 4.2.4 Uniform Load

Load Type	Bracket Spacing (in.)	Fasteners	Applied Load (lbf)	Deflection at Load (in.)	Comments
Uniform Load, applied at 45° from Horizontal	48	Three #14x2-1/2"	500	0.710	No failure, nor evidence of disengagement. PASS
Uniform Load, applied at 45° from Horizontal	48	Two #14x2-1/2"	500	0.866	No failure, nor evidence of disengagement. PASS
Uniform Load, applied at 45° from Horizontal	48	Three #12x2-1/2"	500	0.787	No failure, nor evidence of disengagement. PASS
Uniform Load, applied at 45° from Horizontal	48	Two #12x2-1/2"	500	0.945	No failure, nor evidence of disengagement. PASS



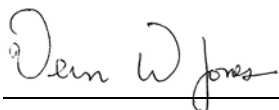
Test Equipment	
Description	Inventory Number
Electric Hydraulic Pump	-
Artech 10 K Load Cell	280-01-0716 Cal Due Dec 19/13
Admet Read Out	280-01-0696 Cal Due Dec 19/13
Tape Measure	300- 01-0956 Cal Due April 19/13
Shurlift Hydraulic Ram 2.5" bore x 12" stroke	-

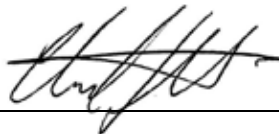
If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the undersigned.

The conclusions of this letter report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

Tested and
Reported by: Vern W Jones
Senior Technologist

Reviewed by: Claudio Sacilotto
Project Engineer

Signature:  _____

Signature  _____