

SENTINEL FENCE AND RAILING TEST REPORT

SCOPE OF WORK

STRUCTURAL PERFORMANCE TESTING ON THE 12 FT BY 42 IN MUSH II LEVEL GUARDRAIL SYSTEM

REPORT NUMBER

I4592.01-119-19 R0

TEST DATE(S)

05/21/18

ISSUE DATE

08/02/18

RECORD RETENTION END DATE

05/21/22

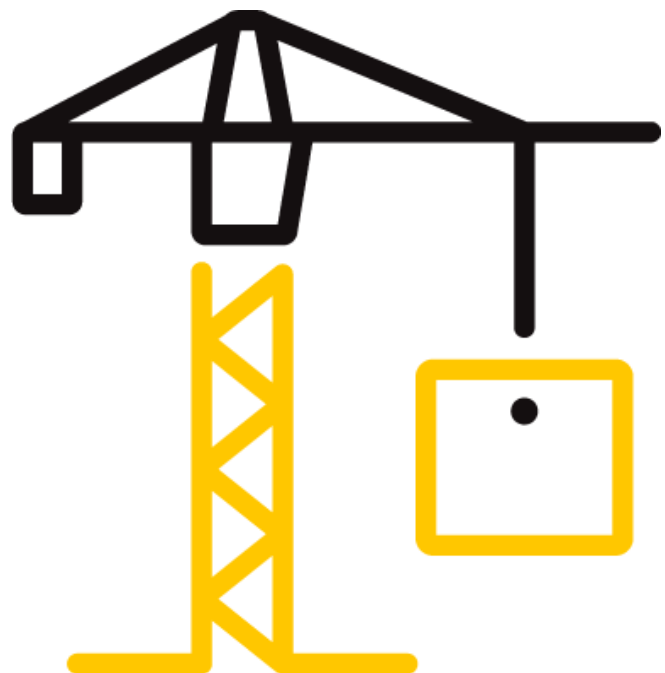
PAGES

20

DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-2846 (02/09/18)

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TEST REPORT FOR SENTINEL FENCE AND RAILING

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SECTION 9

TEST RESULTS

TEST NO. 1 - 05/21/18

DESIGN LOAD: 50 lb / 1 square ft at Center of In-fill (on 3 Pickets)

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (in)			
			END	MID	END	NET ¹
Initial Load	20	00:00	0.00	0.00	0.00	0.00
2.0x Design Load	106	00:13	0.34	0.90	0.70	0.39
Initial Load	22	01:53	0.01	0.07	0.06	0.03
93% Recovery from 2.0 x Design Load						
2.5x Design Load	142	02:17	Achieved Load without Failure			

¹ Net displacement was the infill displacement relative to its top and bottom.

TEST NO. 2 - 05/21/18

DESIGN LOAD: 50 lb / 1 square ft at Bottom of In-fill (on 3 Pickets)

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (in)			
			END	MID	END	NET ¹
Initial Load	20	00:00	0.00	0.00	0.00	0.00
2.0x Design Load	109	00:13	0.22	0.87	1.16	0.19
Initial Load	21	01:51	0.00	0.05	0.07	0.01
95% Recovery from 2.0 x Design Load						
2.5x Design Load	126	02:16	Achieved Load without Failure			

¹ Net displacement was the bottom rail displacement relative to its ends.

Test No. 3 - 05/21/18

DESIGN LOAD: 50 plf Uniform Horizontal Load on Top Rail

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	RAIL DISPLACEMENT (in)			
			END	MID	END	NET ¹
Initial Load	121	00:00	0.00	0.00	0.00	0.00
2.0x Design Load	1214	00:35	0.59	5.34	0.59	4.75
Initial Load	121	02:23	0.02	0.49	0.04	0.46
90% Recovery from 2.0 x Design Load						
2.5x Design Load	1512	03:20	Achieved Load without Failure			

¹ Net displacement was mid-rail displacement relative to the rail at the support posts.

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Test No. 4 - 05/21/18

DESIGN LOAD: 200 lb Concentrated Load at Ends of Top Rail (Brackets)

LOAD LEVEL ¹	TEST LOAD (lb)	E.T. (min:sec)	RAIL DISPLACEMENT (in)	
			RAIL END #1	RAIL END #2
Initial Load	80	00:00	0.00	0.00
2.0x Design Load	801	00:15	0.27	0.19
Initial Load	81	02:03	0.03	0.02
89% Recovery from 2.0 x Design Load				
2.5x Design Load	1002	02:34	Achieved Load without Failure	

¹ A spreader beam was used to impose loads on both ends of the railing system; therefore, loads were doubled.

**SECTION 10
CONCLUSION**

Using performance criteria of 75% deflection recovery from 2.0 times design load and withstanding an ultimate load of 2.5 times design load, the test results substantiate compliance with the design load requirements of the referenced building codes for the 145 in wide by 42 in high Mush II aluminum level guardrail system reported herein. Anchorage of support posts to the supporting structure is not included in the scope of this testing and would need to be evaluated separately.

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SECTION 11 PHOTOGRAPHS

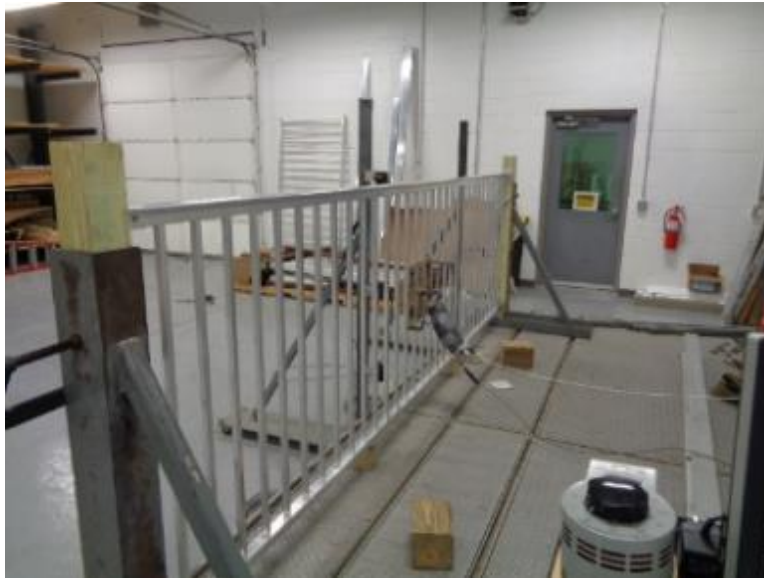


Photo No. 1
In-Fill Load Test at Center of Three Pickets

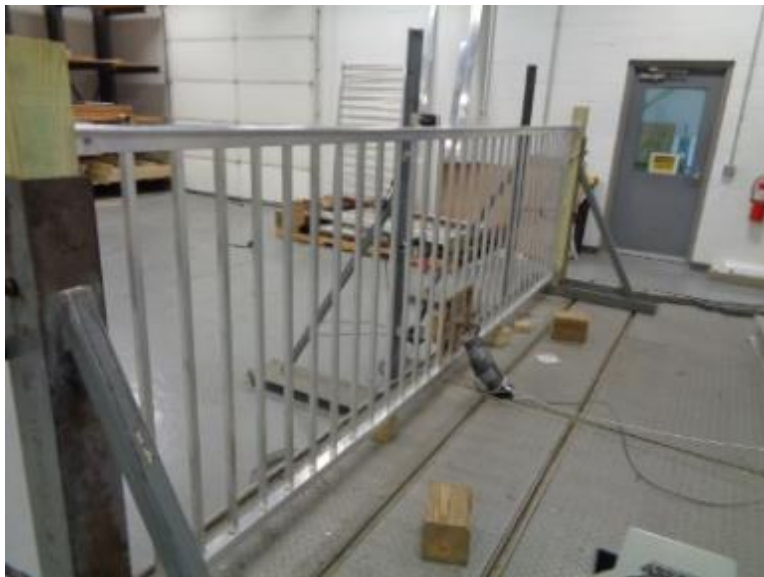


Photo No. 2
In-Fill Load Test at Bottom of Three Pickets

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Photo No. 3
Uniform Horizontal Load on Top Rail

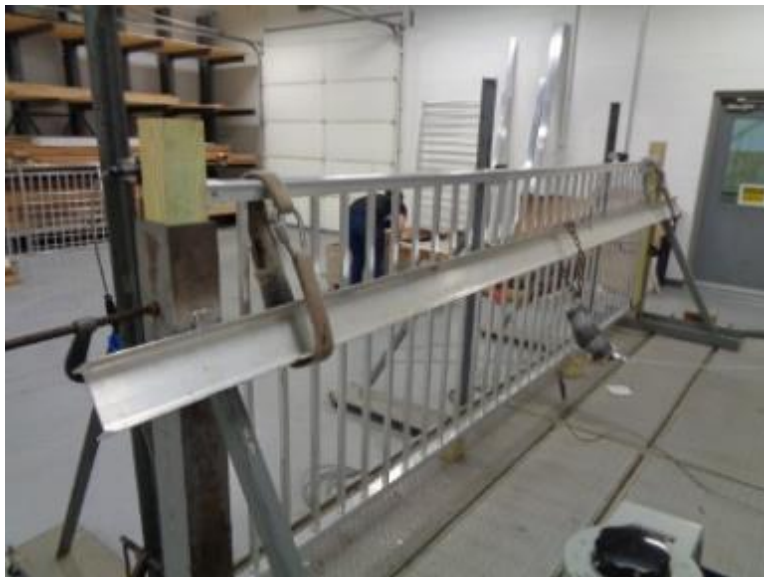


Photo No. 4
Concentrated Load Test at Ends of Top Rail (Brackets)