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CERTIFICATION TEST REPORT

Flotation Systems
374 County Road 184
Crane Hill, Alabama 35803

REPORT NO. 46774-01
CUSTOMER P.O. NO. 8128
CONTRACT N/A
NUMBER OF PAGES 11
DATE February 19, 1998

1.0 SPECIMEN: 3-Inch Post-Rail System

2.0 PART NUMBER: N/A

3.0 SERIAL NUMBER: N/A

4.0 REFERENCES

- Southern Building Code Congress Int. (SBCCI), "Standard Building Code 1997 Edition"
- Flotation Systems' Purchase Order No. 8128
- Wyle Laboratories' Quality Assurance Program Manual, Revision 1
- ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment, General Requirements"
- ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment"
- MIL-STD-45662A, "Calibration System Requirements"

STATE OF ALABAMA }
COUNTY OF MADISON }SS

R. L. Porter, Department Manager being
duly sworn, deposes and says: The information contained in this report is the
result of complete and carefully conducted testing and is to the best of his
knowledge true and correct in all respects.

R. L. Porter SEAL
SUBSCRIBED and sworn to before me this 20th day of Feb, 19 98

Sumner A. Bridges
Notary Public in and for the State of Alabama at Large
My Commission expires September 5, 2001

Wyle shall have no liability for damages of any kind to person or property,
including special or consequential damages, resulting from Wyle's providing the
services covered by this report.

PREPARED BY Don Bennett #2119198
Don Bennett, Project Engineer

APPROVED BY D. P. Sandlin 2-20-98
D. P. Sandlin, Engineering Supervisor

WYLE Q. A. R. G. Thomas 2-23-98
R. G. Thomas, Q. A. Manager

5.0 REQUIREMENTS

Load testing shall be conducted on an aluminum 3-inch Post-Rail. The testing shall be as specified by SBCCI Standard Building Code, Section 1608.2.2, Special Loads for Guardrails.

- 1608.2.2.1 Guardrail systems shall be designed and constructed for a concentrated load of 200 lb. applied at any point and in any direction at the top of the guardrail.
- 1608.2.2.2 Guardrail systems located other than within dwellings shall be designed and constructed for a load of 50 plf applied horizontally at the required guardrail height, and a simultaneous load of 100 plf shall be applied vertically downward at the top of the guardrail.
- 1608.2.2.3 The Guardrail system shall be designed and constructed to resist a 200 lb. concentrated horizontal load applied on a 1-foot square area at any point in the system, including intermediate rails or other elements serving this purpose.

6.0 TEST PERFORMANCE AND RESULTS

6.1 Load Testing

The 3-inch guardrail test sample was made up of two guardrails mounted to aluminum decking and fastened to a wooden foundation. The guardrails were approximately 6-foot and 5-foot, 6-inches long, respectively. They shared a common center post. The load was provided using dead weights and tension pulling. The dead weights were verified by pre-weighing and the tension pulls were measured using a load cell. Deflections were measured using dial indicators. Each load was applied for a duration of approximately five minutes.

6.2 Results

6.2.1 Guardrail Systems shall be designed and constructed for a concentrated load of 200 lb. applied at any point and in any direction at the top of the guardrail.

The deflection data, as shown in Table 1, is measured from loads applied at the locations described in Figure 1, presented on Page 3. As shown in the data tables, the guardrail sample exhibited displacements under loading. On removal of loading, the sample was visually examined and no visual set was observed.

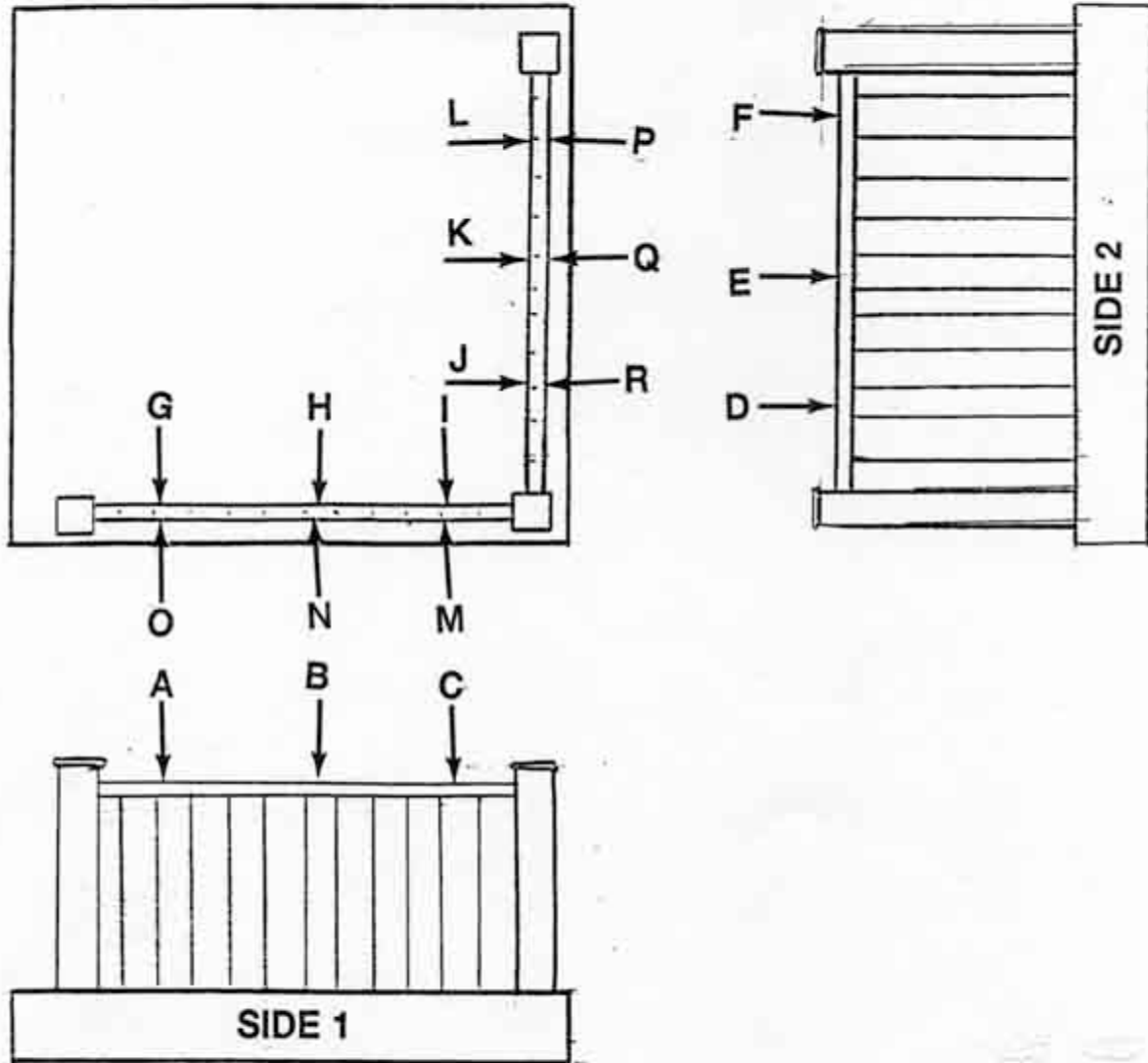


Figure 1
Concentrated Load Applied at the Top of the Guardrail (SBCCI 1608.2.2.1)

6.0 TEST PERFORMANCE AND RESULTS

6.2 Test Results (Continued)

Table I. Concentrated Load Applied at Top of Guardrail

Load (lb.)	Location	Deflection (in.)
200	A	0.071
200	B	0.319
200	C	0.056
200	D	0.044
200	E	0.305
200	F	0.046
200	G	0.890
200	H	0.777
200	I	0.581
200	J	0.558
200	K	0.772
200	L	1.050
200	M	0.474
200	N	0.608
200	O	1.035
200	P	0.896
200	Q	0.777
200	R	0.464

Photographs 1 and 2, presented on Page 9, show the test setup.

A listing of the instrumentation used and the calibration data is presented on Page 11 of this report.

- 6.2.2 Guardrail systems located other than within dwellings shall be designed and constructed for a load of 50 plf applied horizontally at the required guardrail height and a simultaneous load of 100 plf shall be applied vertically downward at the top of the guardrail.

The data, as shown in Table II, is measured from loads applied as shown on Figure 2, presented on Page 5. As shown in the data tables, the guardrail sample exhibited displacements under loading. On removal of the loading, the sample was visually examined and no visual set was observed.

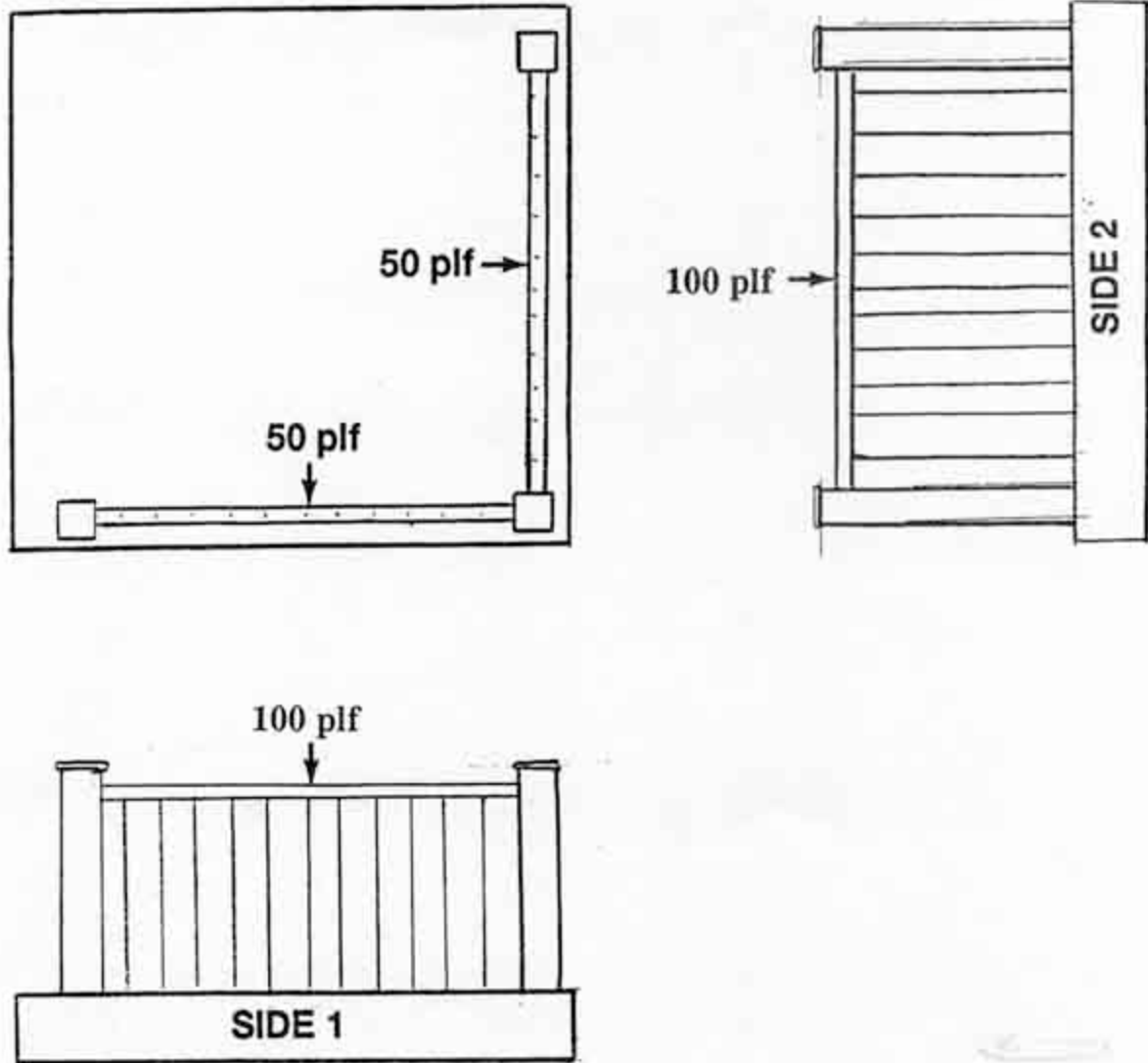


Figure 2
50 plf Load Applied Horizontally at Guardrail Height with Simultaneous 100 plf Applied Vertically Downwards (SBCCI 1608.2.2.2)

6.0 TEST PERFORMANCE AND RESULTS

6.2 Test Results (Continued)

Table II. 50 plf Load Applied Horizontally, 100 plf Applied Vertically Downward

Location	Deflection	
	100 plf Load Downward	50 plf Load Horizontally
Side 1	0.806 in.	0.744 in.
Side 2	0.853 in.	0.763 in.

Photograph 3, presented on Page 10, shows the test setup.

A listing of the instrumentation used and the calibration data is presented on Page 11 of this report.

- 6.2.3 The guardrail system shall be designed and constructed to resist a 200 lb. concentrated horizontal load applied on a 1-foot square area at any point in the system, including intermediate rails or other elements serving this purpose.

The deflection data, as shown in Table III, is measured from loads applied as shown on Figure 3, presented on Page 7. The guardrail sample exhibited displacements under loading, as shown in the data table. On removal of loading, the sample was visually examined and no visual set was observed.

Table III. 200 psf Load Applied at Intermediate Rails

Position	Deflection (in.)
1	0.673
2	0.612
3	0.533
4	0.738
5	0.729
6	0.508
7	0.227
8	0.488

Photograph 4, presented on Page 10 of this report, shows the test setup.

A listing of the instrumentation used and the calibration data is presented on Page 11 of this report.

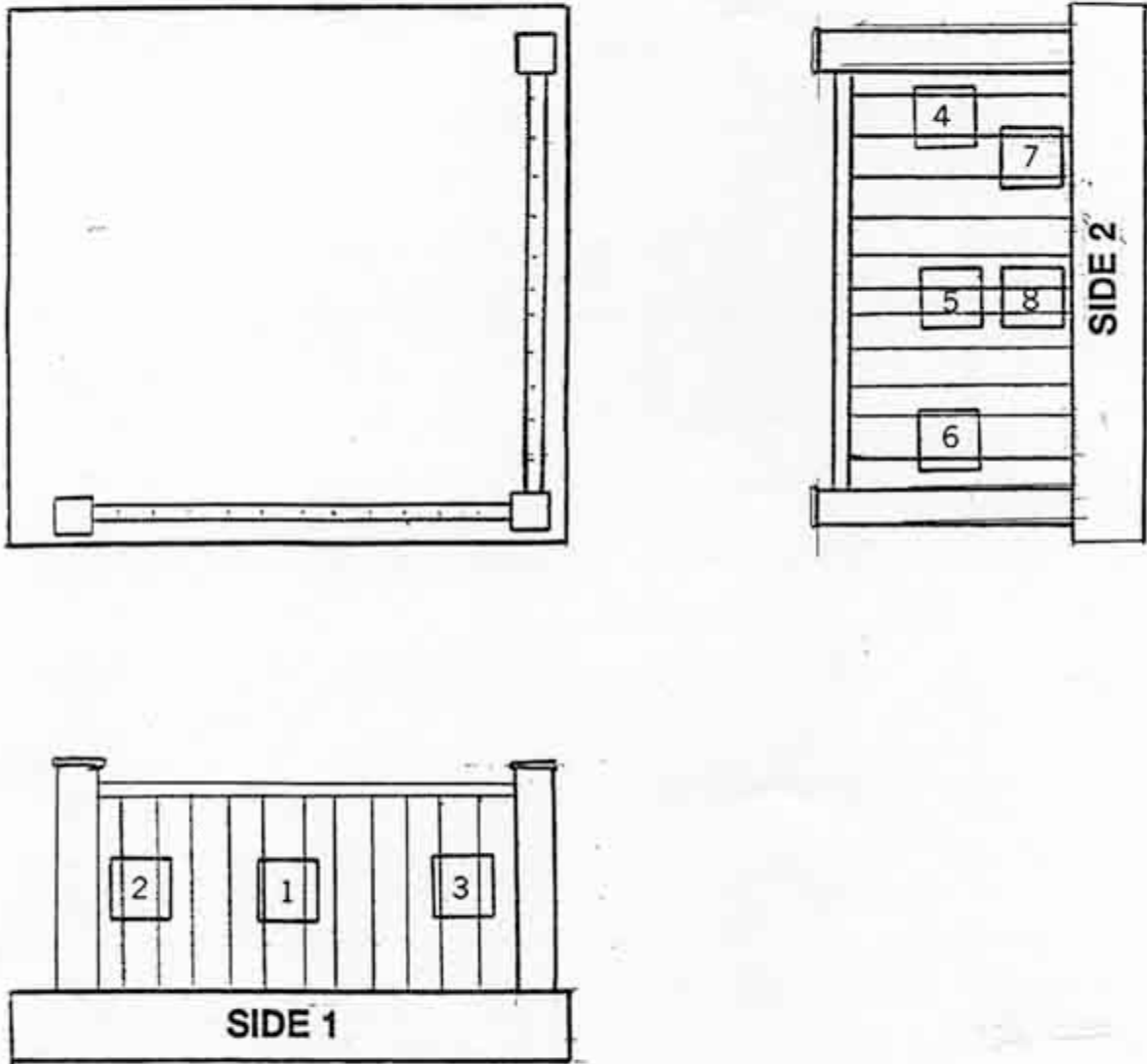


Figure 3
200 psf Load Applied Between any Two Intermediate Rails (SBCCI 1608.2.2.3)

7.0 QUALITY ASSURANCE

All work performed in this test program was completed in accordance with Wyle Laboratories' Quality Assurance Program.

The Wyle Laboratories, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001 International Quality Standard. Registration has been completed by Quality Management Institute (QMI), a Division of Canadian Standards Association (CSA).

8.0 TEST EQUIPMENT AND INSTRUMENTATION

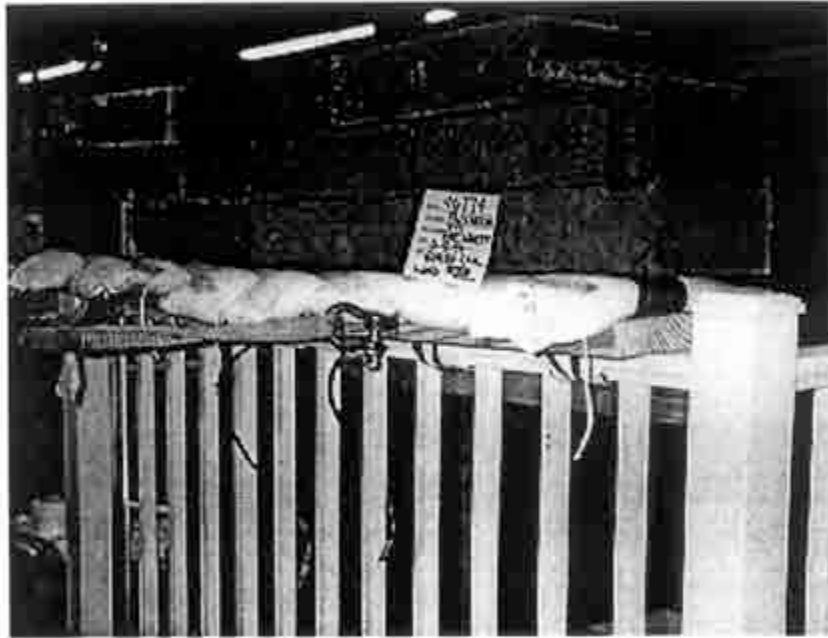
All instrumentation, measuring, and test equipment used in the performance of this test program were calibrated in accordance with Wyle Laboratories Quality Assurance Program which complies with requirements of ANSI/NCSL Z540-1, ISO 10012-1, and Military Specification MIL-STD-45662A. Standards used in performing all calibrations are traceable to the National Institute of Standards and Technology (NIST) by report number and date. When no national standards exist, the standards are traceable to international standards or the basis for calibration is otherwise documented.



Photograph 1



Photograph 2



Photograph 3



Photograph 4