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September 4, 2008

Roger Rock
Rock Lock Fastening Systems, Inc.
6519 Rock Creek Drive
Lake Worth, FL 33467

TEST REPORT NUMBER:	DATE OF TESTING	MANUFACTURE PLANT
28205	8/28/2008	N/A

SCOPE OF TESTING

ASTM D7032 "Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems"

PRODUCT IDENTIFICATION

- Spring Bolt Connection System
- Fasco Fas-Stick Epoxy Glue (Part 1&2)
- Tite-Bond Wood Glue

PROCEDURE

Components of the test specimen were delivered to Cerny and Ivey Engineers, Inc. by the client on 8/26/2008. The components were assembled by the client under the supervision of Cerny and Ivey Engineers, Inc. The test specimen consisted of two (2) newel posts, one (1) top rail, one (1) sole plate, multiple balustrades, and the proprietary Spring Bolt system that when assembled are intended to be used as an interior handrail system. The newel posts, top rail, sole plate and balustrades were made from a hardwood and are typical of those available at most home improvement centers.

The test specimen was anchored to a wood deck assembly, which was constructed using typical construction practices. The wood deck was secured to the floor of the testing laboratory. Three (3) pieces of 2x6 blocking were placed under the deck where the newel posts were secured. The deck was not subjected to testing.

The sole plate was secured to the edge of the deck using 2in. Brad Nails spaced 16in. apart along the joists of the deck. The Spring Bolt System was installed into the sole plate at the location of the newel posts. The depth of the system was set, so that the system remained concealed after installation. For the condition on the 1in. high sole plate a 1-1/4in. diameter hole was drilled to a depth of 3in. to accommodate the spring. The same was done on the newel post. The Spring Bolt system used 1-1/4in. outer diameter springs measuring 3-3/4in. long and 7/8in. diameter hot rolled steel rods measuring 6in. long. This system was used on one side. The other side used the Spring Bolt system with 1-1/4in. outer diameter springs and a 7/8in. schedule 40 pipe nipple.

Figure 1: Newel Post Attachment

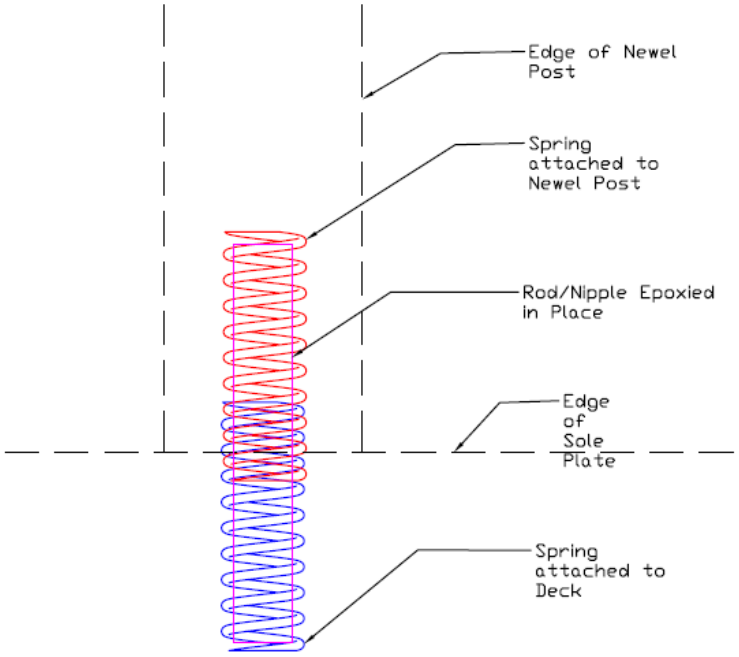
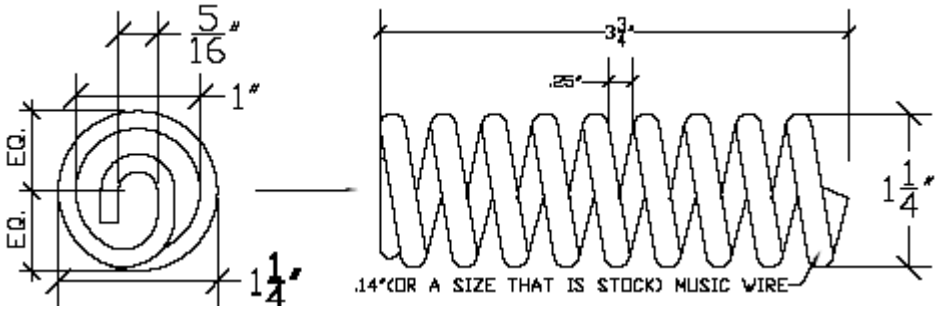


Figure 2: Newel Post Spring Dimensions (provided by client, verified by C&I)



Holes were drilled for the balustrades in the sole plate and the top rail for installation. The balustrades were placed every 4in in between the newel posts. Wood Glue was used at the sole plate only to secure the balustrades.

The top rail was secured to the newel post using the Spring Bolt system on one side and a #10 x 3in. wood screw on the other side. The Spring Bolt system used 9/16in. outside diameter springs and a 5/16in. threaded rod. The Spring Bolt system was epoxied in place, while the face of the top rail end received a coat of wood glue.

Figure 3: Top Rail Attachment (1 side only)

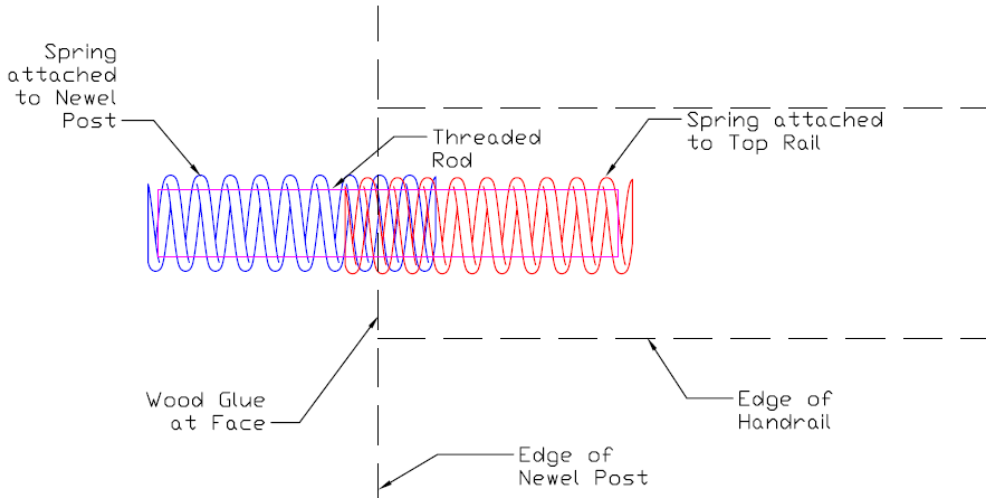
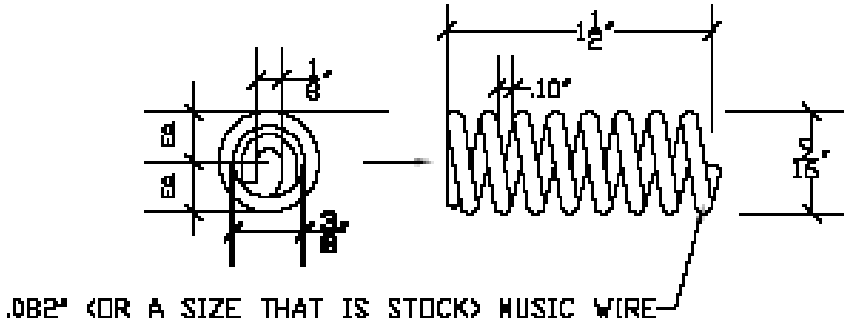


Figure 4: Top Rail Spring Dimensions (provided by client, verified by C&I)



The total length of the specimen was 75in, with 3in wide newel posts. The height of the of the top rail was 36 in.

Application Of The Load

Three (3) separate loads were placed on the test specimen to simulate the conditions set forth in the 2006 International Building Code with a minimum factor of safety of 2.5.

The initial load applied to the railing assembly was an in-fill load to the perceived weakest 12in. x 12in. section of the test specimen. The weakest area was determined to be the center of the balustrades near the center of the assembly. The infill load was set so that only three (3) balustrades were loaded. A 125lb. load was applied, in accordance with ASTM D7032.

The second load was applied uniformly to the top rail of the assembly. The top rail was determined to be the weakest component of the assembly. Pneumatic cylinders were placed approximately every 12in., as allowed by the spacing of the balustrades. A load of 235plf was applied at an angle of 58 degrees to provide a minimum of a 125plf horizontal and vertical component, in accordance with ASTM D7032.

The third load was a concentrated load applied horizontally to the top rail at the center of the assembly. The top rail was determined to be the weakest component of the assembly. A 500lb. load was applied, in accordance with ASTM D7032.

All loads were applied in the same general direction, which is outward from where the deck would exist. All handrail testing was done in accordance with ASTM D7032.

All pressures were measured using pressure gauge CI-PG-05. Pressures were converted to force using the appropriate conversion table for the pneumatic cylinder.

RESULTS

Handrails passed all standardized loading tests without any visible signs of failure.

Rock Lock Handrail with Spring Bolt Connections (Tested 8/28/2008)

	2006 IBC	Passed (Y/N)	ASTM D7032 (F.S. 2.5)	Passed (Y/N)
In-Fill Load	50 lbs/ft^2	Y	125 lbs/ft^2	Y
Uniform Load	50 plf	Y	125 plf	Y
Concentrated Load	200lbs	Y	500lbs	Y

CONCLUSIONS

The complete handrail assemblies are in accordance with the strength requirements of the 2006 International Building Code and ASTM D7032, when installed as detailed above.

If you have any questions please don't hesitate to contact us.

Respectfully submitted,

Charles G. Lester IV
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Vice President – Principal Engineer