PFS Test Report

PFS TEST REPORT # 15-072

RDI ALUMINUM HAND RAIL ASSSEMBLY TESTING TO CONFIRM WITH IBC 2015 AND IRC 2015 HAND RAIL LOAD REQUIREMENT FOR BARRETTE OUTDOOR LIVING EGG HARBOR, NEW JERSEY

By:
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1507 Matt Pass
Cottage Grove, WI 53527

ACCREDITED
TL-109

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RDI ALUMINUM HAND RAIL ASSEMBLY TESTING
TO CONFIRM WITH
IBC 2015 AND IRC 2015 HANDRAIL LOAD REQUIREMENT
FOR
BARRETTE OUTDOOR LIVING
EGG HARBOR, NEW JERSEY

GENERAL

PFS Corporation, Cottage Grove, Wisconsin, was contracted by the client, Barrette Outdoor Living, 135 Steelmanville Rd, Egg Harbor Township, New Jersey, to evaluate the performance of client provided aluminum hand rail assembly. The handrail components were received in good order at PFS on July 9, 2015. The test was conducted on July 29, 2015.

TEST SPECIMENS

Client provided following components -
80-in. long Hand Rail composed of a 1.5-in. OD aluminum round tube, *Photo 1*
Mounting Bracket, *Photo 2*
Excalibur metal post and Avalon metal post, *Photo 3*

One handrail test specimen was assembled by PFS by mounting the hand rail on the Posts at 72-in. on center. The handrail was mounted at 36-in. from the base, with Excalibur post on the left side and Avalon post on the right side. The mounting bracket was attached to the metal posts with FX2 coated Square drive #10 1-1/2-in. long 410 Stainless Steel screw (3 screws). The hand rail was attached to the mounting bracket with #12 Phillips 1" long 316 Stainless Steel screws (2 screws), see *Photo 4*. 1/8-in. pilot holes were drilled for all screws.

CONDITIONING

The boards were stored and tested in the ambient laboratory atmosphere of approximately 70 - 75°F and 40 - 50% relative humidity.

TEST PROCEDURE AND RESULTS

The handrail assembly was tested according to ASTM E985-06, Sec. 7.1.1 to confirm with the IBC 2015 and IRC 2015 load requirements of 50 plf uniformly distributed load and 200 lbf concentrated load. One handrail assembly was tested for the following eight loading configurations in sequence -

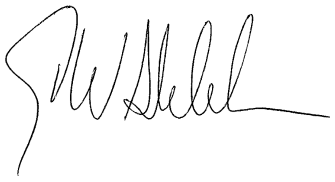
1. 200 lbf Horizontal Concentrated Load applied at the Midspan
2. 200 lbf Horizontal Concentrated Load applied at Right Support Connection
3. 200 lbf Horizontal Concentrated Load applied at Left Support Connection
4. 50 plf Horizontal Uniform Load (300 lbf at quarter points)
5. 50 plf Vertical Uniform Load (300 lbf at quarter points)
6. 200 lbf Vertical Concentrated Load applied at Midspan
7. 200 lbf Vertical Concentrated Load applied at Right Support Connection
8. 200 lbf Vertical Concentrated Load applied at Left Support Connection

The tests were performed on one assembly with one load configuration at a time. The load was applied with a pulley system at a uniform rate to reach the peak load in approximately 2 minutes. The test force was measured with an electronic load cell positioned inline with the pulley system. The 50 plf uniform load test was applied with reactions points located at 1/4 of the test span.

The handrail assembly mounted on the Excalibur and Avalon metal posts as described was able to sustain 200 lbs concentrated load or the equivalent 50 plf uniform load applied on the handrail.

TEST REPORT DUPLICATION

Testing Performed by:



Jim Sheldon
Lead Lab Technician

Report Prepared and
Tests Witnessed by:

Deepak Shrestha, PhD, PE
General Manager – PFS Lab

Photo 1: Hand Rail

Photo 2: Hand Rail Mounting Bracket Assembly

Photo 3: Metal Posts for Mounting Hand Rail

Photo 4: Typical Hand Rail Mounting

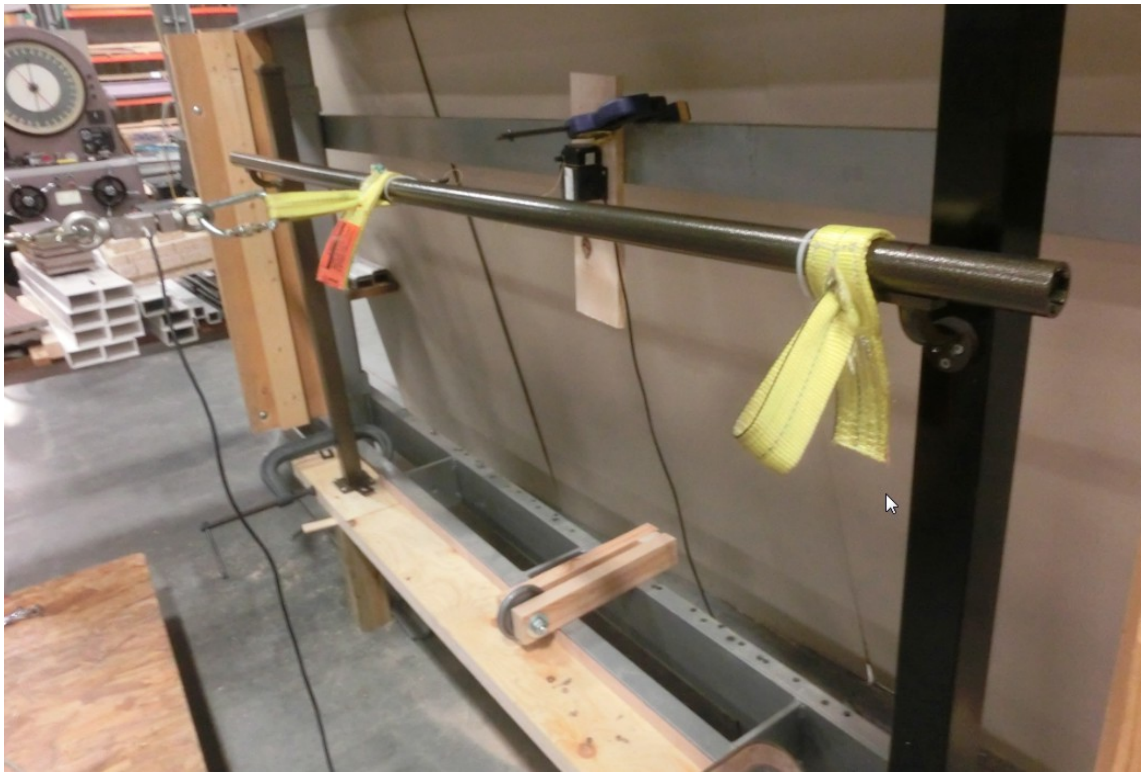


Photo 5: Typical Setup for Horizontal Concentrated Load at Midspan

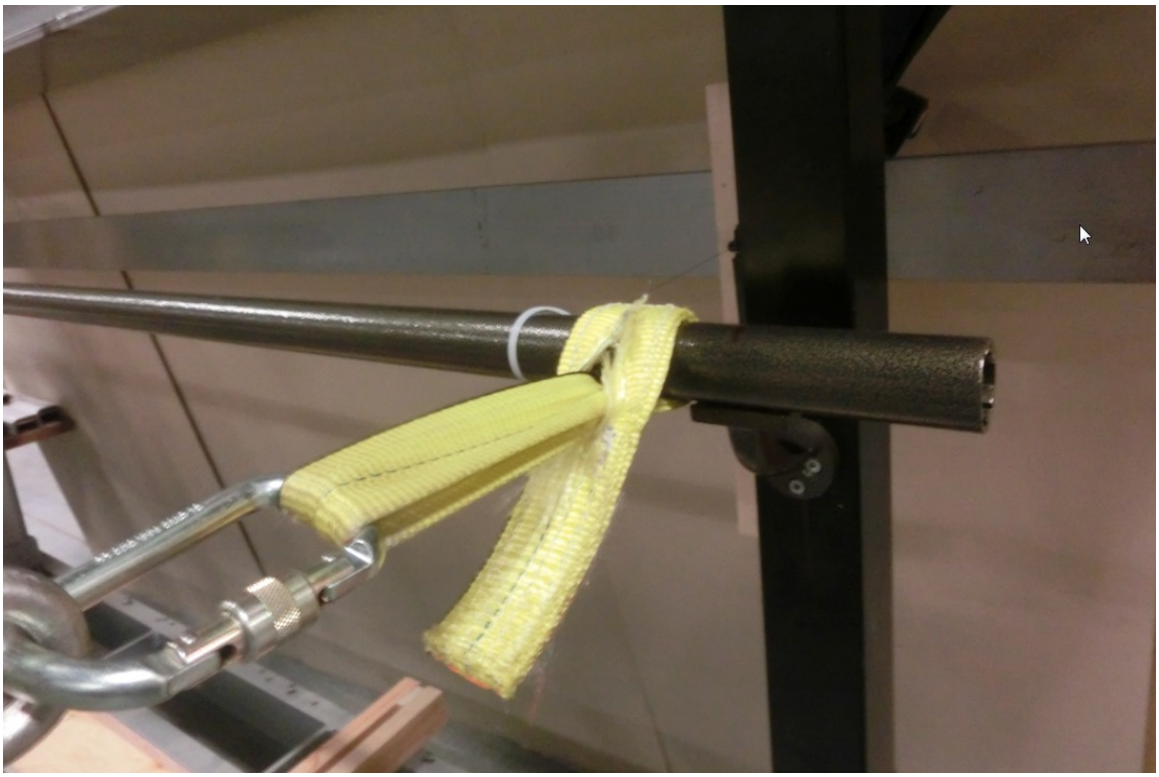


Photo 6: Typical Setup for Horizontal Concentrated Load Near Support

Photo 7: Typical Setup for Horizontal Uniform Load

Photo 8: Typical Setup for Vertical Concentrated Load at Midspan

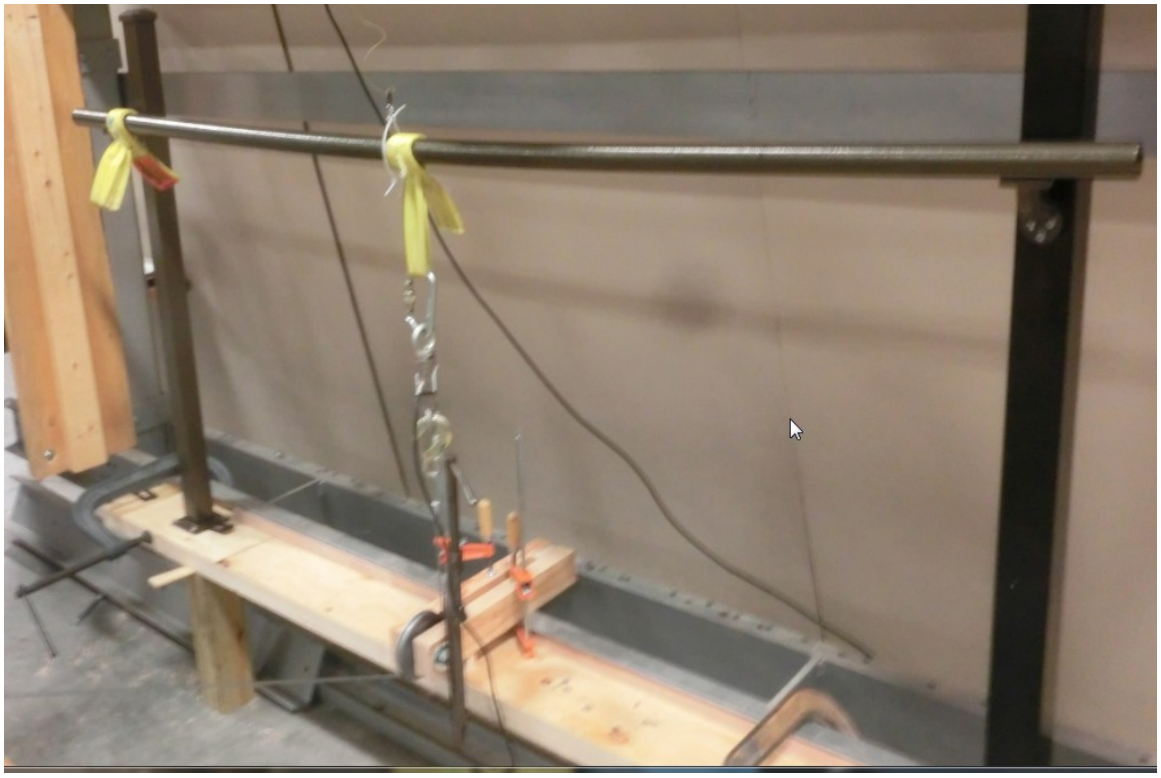


Photo 9: Typical Setup for Vertical Concentrated Load at Midspan

Photo 10: Typical Setup for Vertical Concentrated Load Near Support