TESTING OF SAFETY RAILING

Client:

SÄFTRON Manufacturing, LLC
6012 33rd St E
Bradenton, FL 34203- USA
Phone: (305) 233-5511, Fax: (941) 751-2802

General: Load tests on Aluminum / PCV Plastic Safety Railings to show conformance to requirements for the International Code Council, ICC ES AC 174.

Witness to Testing:
Robert Weise, SÄFTRON Manufacturing, LLC
George Dotzler, CRL Director of Operations

Yamil G. Kuri, P.E., Official Witness
Robert Vilan, CRL Test Engineer

Description of Specimen: The test specimen consisted of a composite structure of PVC pipe and aluminum pipe as shown in the below referenced drawings. The test specimen was also of the nominal dimensions as shown at right (as viewed from interior side, all diagrams are similar).

Statement of Conformance: The specimen is in conformance with drawings provided by the manufacturer. These drawings have been marked to indicate the portions descriptive of these tests.

Labeled:

2400 SERIES ALUMINUM TEST RAIL, PLATE MOUNT
Date: 4/22/2013   Sheet 1 of 1

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Test I – Load on Baluster:
A horizontal load was applied, for sixty seconds, to a 12" x 12" piece of ¾" plywood positioned at the mid-height of the baluster (as shown in the diagram at right). Results as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Load (Lbs.)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC ES AC 174</td>
<td>125.0</td>
<td>No Failure / Pass</td>
</tr>
</tbody>
</table>

Tests upon Handrails and Guards

Test II – Horizontal Point Load on Top Rail:
A single load was applied, for sixty seconds, to the mid-span of the top rail of the specimen (as shown in the diagram at right). Deflection Gauges were placed at the top of each post adjacent to the load and at the center of the Top Rail between the load points to record deflections. Gauges were zeroed before each subsequent load. Results as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Load (Pounds)</th>
<th>Defl’n / Set (In.) Top of post Lt.</th>
<th>Defl’n / Set (In.) Top Rail Center</th>
<th>Defl’n / Set (In.) Top of post Rt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC ES AC 174</td>
<td>200.0</td>
<td>0.730 / 0.010</td>
<td>1.440 / 0.020</td>
<td>0.765 / 0.005</td>
</tr>
</tbody>
</table>

Tests upon Posts

Test III – Horizontal Point Load on Post:
A single load was applied, for sixty seconds, to the top of the central post of the specimen (as shown in the diagram at right). Deflection Gauges were placed at the top of this post to record deflections. Gauges were zeroed before each subsequent load. Results as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Load (Lbs.)</th>
<th>Defl’n / Set (In.) Top of post</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC ES AC 174</td>
<td>Top Rail on Post</td>
<td>200.0</td>
</tr>
<tr>
<td>ICC ES AC 174</td>
<td>Rail req. 5 Ft x 50 PLF</td>
<td>250.0</td>
</tr>
</tbody>
</table>

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Test IV – Horizontal Point Load on Top Rail:
A single load was applied, for sixty seconds, to the top rail of the specimen immediately adjacent to the central post (as shown in the diagram at right). Deflection Gauges were placed at the top of this post to record deflections. Gauges were zeroed before each subsequent load. Results as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Load (Pounds)</th>
<th>Defl’n / Set (Inches) Top of post.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC ES AC 174</td>
<td>Top Rail near Post</td>
<td>200.0</td>
</tr>
<tr>
<td>ICC ES AC 174</td>
<td>Top Rail near Post</td>
<td>250.0</td>
</tr>
</tbody>
</table>

Tests upon Handrails and Guards

Test V – Distributed Horizontal Load : Top Rail:
Two equivalent and simultaneous loads were applied, for sixty seconds, to the top rail of the specimen (as shown in the diagram at right) at quarter points to simulate statically the equivalent conditions as a distributed load. Results as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Distributed load (Lbs.)</th>
<th>Eq. Load (Lbs.)</th>
<th>Total Load (Lbs.)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICC ES AC 174</td>
<td>125.0</td>
<td>312.5</td>
<td>625.0</td>
<td>No Failure / Pass</td>
</tr>
</tbody>
</table>

Summary: Tests were conducted in accordance with the requirements of the International Code Council, ICC ES AC 174 with recovery after deflections of greater than or equal to 80% in all cases.

Respectfully submitted,

CONSTRUCTION RESEARCH LABORATORY, INC.

Report by George Dotzler:
Test witnessed & report reviewed by Yamil G. Kuri, P.E.: APR 26 2013

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