

# DECK SUPPLY SERVICES LLC TEST REPORT

**SCOPE OF WORK**

STRUCTURAL PERFORMANCE TESTING ON THE 8 FT BY 36 IN *RALEIGH*, ALUMINUM  
GUARDRAIL SYSTEM WITH THE 2-1/2 IN SQUARE POST

**REPORT NUMBER**

T1373.01-119-19 R1

**TEST DATE**

12/15/25

**ISSUE DATE**

03/02/26

**REVISED DATE**

03/11/26

**RECORD RETENTION END DATE**

12/15/29

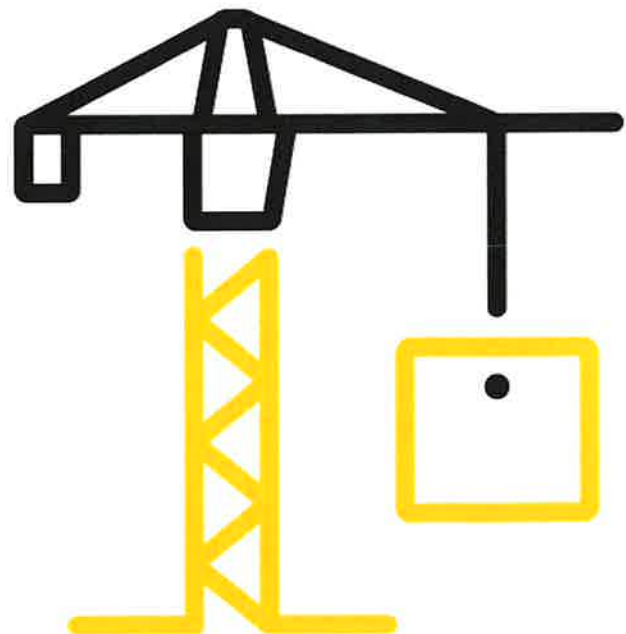
**PAGES**

20

**DOCUMENT CONTROL NUMBER**

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

© 2017 INTERTEK





Total Quality. Assured.

130 Derry Court  
York, Pennsylvania 17406

Telephone: 717-764-7700  
Facsimile: 717-764-4129  
www.intertek.com/building

### TEST REPORT FOR DECK SUPPLY SERVICES LLC

Report No.: T1373.01-119-19 R1

Date: 03/02/26 Revised Date: 03/11/26

#### REPORT ISSUED TO

#### DECK SUPPLY SERVICES LLC

233 E. Walcott Rd.

Walcott, IA 52773

#### SECTION 1

##### SCOPE

Intertek Building & Construction (B&C) was contracted by Deck Supply Services LLC to perform structural performance testing in accordance with the 2024 IRC on their 8 ft by 36 in *Raleigh* aluminum guardrail system with the 2-1/2 in square Post. All tests performed were to evaluate structural performance of the guardrail assembly to carry and transfer imposed loads to the supporting structure. The test specimens evaluated included the infill, rails, rail brackets, and support posts. Anchorage of support posts to the supporting structure is not included in the scope of this testing and would need to be evaluated separately.

Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek test facility in York, Pennsylvania. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

#### SECTION 2

##### SUMMARY OF TEST RESULTS

The specimen met the 2024 IRC design load performance requirements.

#### For INTERTEK B&C:

**COMPLETED BY:** Jeffrey C. Jones

**TITLE:** Technician II

**SIGNATURE:** 

Digitally Signed by: Jeffrey Jones

**DATE:** 03/11/26

**REVIEWED BY:** V. Thomas Mickley, Jr., P.E.

**TITLE:** Senior Staff Engineer

**SIGNATURE:** 

Digitally Signed by: Virgal Thomas Mickley, Jr

**DATE:** 03/11/26

JCl:vtm/aas

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample(s) tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.



Total Quality. Assured.

130 Derry Court  
York, Pennsylvania 17406

Telephone: 717-764-7700  
Facsimile: 717-764-4129  
www.intertek.com/building

## TEST REPORT FOR DECK SUPPLY SERVICES LLC

Report No.: T1373.01-119-19 R1

Date: 03/02/26      Revised Date: 03/11/26

### SECTION 3 TEST METHODS

The specimen was evaluated in accordance with the following:

**2024, International Building Code® (IBC)**, International Code Council

**2024, International Residential Code® (IRC)**, International Code Council

Structural tests were performed according to Chapter 17 (Structural Tests and Special Inspections) of IBC 2024.

### SECTION 4 MATERIAL SOURCE/INSTALLATION

Test samples were provided by the client. Representative samples of the test specimen will be retained by Intertek B&C for a minimum of four years from the test completion date.

The 8 ft by 36 in guardrail assembly was installed and tested as a single railing section by directly securing the posts into the surface of a rigid steel channel (to simulate anchorage into concrete) with four 3/8 in bolts. Transducers mounted to an independent reference frame were located to record movement of reference points on the guardrail system components (ends and mid-point) to determine net component deflections. See photographs in Section 11 for individual test setups.

### SECTION 5 EQUIPMENT

The guardrail was tested in a self-contained structural frame designed to accommodate anchorage of the guardrail assembly and application of the required test loads. The specimen was loaded using an electric winch mounted to a rigid steel test frame. High strength steel cables, nylon straps, and load distribution beams were used to impose test loads on the specimen. Applied load was measured using an electronic load cell located in-line with the loading system. Electronic linear motion transducers were used to measure deflections.

### SECTION 6 LIST OF OFFICIAL OBSERVERS

| NAME             | COMPANY      |
|------------------|--------------|
| Jeffrey C. Jones | Intertek B&C |

**TEST REPORT FOR DECK SUPPLY SERVICES LLC**

Report No.: T1373.01-119-19 R1

Date: 03/02/26

Revised Date: 03/11/26

**SECTION 7**

**TEST SPECIMEN DESCRIPTION**

Deck Supply Services LLC provided the test specimens with the following details:

|                                   |   |
|-----------------------------------|---|
| <b>PRODUCT</b>                    | <i>Raleigh</i>  |
| <b>TYPE</b>                       | Aluminum guardrail system   |
| <b>GUARDRAIL LENGTH</b>           | 95-5/8 in (inside of post to inside of post)<br>8 ft (nominal)  |
| <b>GUARDRAIL HEIGHT</b>           | 35-3/8 in (top of top rail to bottom of bottom rail)<br>36 in (nominal)   |
| <b>TOP RAIL</b>                   | 1-1/4 in high by 1-13/16 in wide by 0.070 in thick contoured 6005-T5 extruded aluminum  |
| <b>BOTTOM RAIL</b>                | 1-1/2 in high by 1-7/16 in wide by 0.080 in thick contoured 6005-T5 extruded aluminum   |
| <b>PICKETS (IN-FILL)</b>          | 3/4 in square by 0.030/0.050 in thick 6063 extruded aluminum  |
| <b>RAIL BRACKETS</b>              | Cast aluminum collar brackets with accompanying cover   |
| <b>SUPPORT BLOCK <sup>1</sup></b> | 3/4 in square by 1-3/4 in long by 0.030/0.050 in thick 6005-T5 extruded aluminum post<br>1-3/4 square by 1-1/2 in high cast aluminum base   |
| <b>SUPPORT POST</b>               | 2-1/2 in square by 0.120 in thick, 6005-T5 extruded aluminum post attached to a 4-1/2 in square by 5/16 in thick 6005-T5 aluminum base plate with 1/4 in fillet weld all around. The base plate included four, 13/32 in wide by 17/32 in long slotted holes at each corner  |
| <b>FASTENERS</b>                  | Top Rail Bracket to Post: Three, #8-18 by 3/4 in (0.115 in minor diameter) square drive, pan head, self-drilling, stainless steel screws<br>Bottom Rail Bracket to Post: Two, #8-18 by 3/4 in (0.115 in minor diameter) square drive, pan head, self-drilling, stainless steel screws<br>Top Rail to Bracket: Three, #8-18 by 3/4 in (0.115 in minor diameter) square drive, flat head, self-drilling, stainless steel screws<br>Bottom Rail to Bracket: Two, #8-18 by 3/4 in (0.115 in minor diameter) square drive, flat head, self-drilling, stainless steel screws<br>Baluster Plug to Bottom Rail: One, #8-18 by 3/4 in (0.115 in minor diameter) square drive, flat head, self-drilling, stainless steel screw<br>Baluster to Baluster Plug (Bottom Rail): Compression fit; No mechanical connection<br>Baluster to Top Rail: Slip fit into routing; No mechanical connection<br>Support Block Base to Support Block Post: One, #8-18 by 3/4 in (0.115 in minor diameter) square drive, flat head, self-drilling, stainless steel screw |

<sup>1</sup> One located at midspan, attached to the bottom rail with a baluster plug.



Total Quality. Assured.

130 Derry Court  
York, Pennsylvania 17406

Telephone: 717-764-7700  
Facsimile: 717-764-4129  
[www.intertek.com/building](http://www.intertek.com/building)

## TEST REPORT FOR DECK SUPPLY SERVICES LLC

Report No.: T1373.01-119-19 R1

Date: 03/02/26      Revised Date: 03/11/26

### SECTION 8

#### TEST PROCEDURE

Each test specimen was inspected prior to testing to verify size and general condition of the materials, assembly, and installation. No potentially compromising defects were observed prior to testing.

An initial load, not exceeding 50% of design load, was applied and transducers were zeroed. Load was then applied at a steady uniform rate until reaching 2.0 times design load in no less than 10 seconds. After reaching 2.0 times design load, the load was released. After allowing a minimum period of one minute for stabilization, load was reapplied to the initial load level used at the start of the loading procedure, and deflections were recorded and used to analyse recovery. Load was then increased at a steady uniform rate until reaching 2.5 times design load or until failure occurred. The testing time was continually recorded from the application of initial test load until the ultimate test load was reached.

Deflection and permanent set were component deflections relative to their end-points; they were not overall system displacements. All loads and displacement measurements were horizontal, unless noted otherwise.



Total Quality. Assured.

130 Derry Court  
York, Pennsylvania 17406

Telephone: 717-764-7700  
Facsimile: 717-764-4129  
www.intertek.com/building

### TEST REPORT FOR DECK SUPPLY SERVICES LLC

Report No.: T1373.01-119-19 R1

Date: 03/02/26      Revised Date: 03/11/26

#### SECTION 9

#### TEST RESULTS

##### Key to Test Results Tables:

Load Level: Target test load

Test Load: Actual applied load at the designated load level (target).

Elapsed Time (E.T.): The amount of time into the test with zero established at the beginning of the loading procedure.

##### Test Series No. 1

**8 ft (95-5/8 in) by 36 in *Raleigh* Level/In-Line Aluminum Guardrail System  
IRC- One- and Two-Family Dwellings**

##### Test No. 1

Test Date: 12/15/25

Design Load: 50 lb / 1 Square ft at Center of In-fill (on 2 Pickets)

| LOAD LEVEL                          | TEST LOAD (lb) | E.T. (min:sec) | DISPLACEMENT (in)             |
|-------------------------------------|----------------|----------------|-------------------------------|
| Initial Load                        | 25             | 00:00          | 0.00                          |
| 2.0x Design Load                    | 1.5            | 00:09          | 0.62                          |
| Initial Load                        | 26             | 01:28          | 0.02                          |
| 97% Recovery from 2.0 x Design Load |                |                |                               |
| 2.5x Design Load                    | 129            | 01:40          | Achieved Load without Failure |

##### Test No. 2

Test Date: 12/15/25

Design Load: 50 lb / 1 Square ft at Bottom of In-fill (on 2 Pickets)

| LOAD LEVEL                           | TEST LOAD (lb) | E.T. (min:sec) | DISPLACEMENT (in)             |
|--------------------------------------|----------------|----------------|-------------------------------|
| Initial Load                         | 25             | 00:00          | 0.00                          |
| 2.0x Design Load                     | 103            | 00:09          | 0.55                          |
| Initial Load                         | 25             | 01:34          | 0.00                          |
| 100% Recovery from 2.0 x Design Load |                |                |                               |
| 2.5x Design Load                     | 129            | 01:46          | Achieved Load without Failure |

**TEST REPORT FOR DECK SUPPLY SERVICES LLC**

Report No.: T1373.01-119-19 R1

Date: 03/02/26

Revised Date: 03/11/26

**Test No. 3**

**Test Date: 12/15/25**

**Design Load: 200 lb Horizontal Concentrated Load at Midspan of Top Rail**

| LOAD LEVEL                          | TEST LOAD (lb) | E.T. (min:sec) | RAIL DISPLACEMENT (in)        |      |      |                  |
|-------------------------------------|----------------|----------------|-------------------------------|------|------|------------------|
|                                     |                |                | END                           | MID  | END  | NET <sup>1</sup> |
| Initial Load                        | 40             | 00:00          | 0.00                          | 0.00 | 0.00 | 0.00             |
| 2.0x Design Load                    | 405            | 00:46          | 0.65                          | 3.54 | 0.69 | 2.87             |
| Initial Load                        | 41             | 02:12          | 0.12                          | 0.34 | 0.03 | 0.27             |
| 91% Recovery from 2.0 x Design Load |                |                |                               |      |      |                  |
| 2.5x Design Load                    | 503            | 02:55          | Achieved Load without Failure |      |      |                  |

<sup>1</sup> Net displacement was mid-rail displacement relative to the rail at the support posts.

**Test No. 4**

**Test Date: 12/15/25**

**Design Load: 200 lb Vertical Concentrated Load at Midspan of Top Rail**

| LOAD LEVEL                          | TEST LOAD (lb) | E.T. (min:sec) | RAIL DISPLACEMENT (in)        |
|-------------------------------------|----------------|----------------|-------------------------------|
| Initial Load                        | 40             | 00:00          | 0.00                          |
| 2.0x Design Load                    | 402            | 00:38          | 0.11                          |
| Initial Load                        | 46             | 02:17          | 0.04                          |
| 64% Recovery from 2.0 x Design Load |                |                |                               |
| 2.5x Design Load                    | 520            | 02:31          | Achieved Load without Failure |

**Test No. 5A**

**Test Date: 12/15/25**

**Design Load: 200 lb Concentrated Load at Ends of Top Rail (Brackets) (Horizontal)**

| LOAD LEVEL <sup>1</sup>   | TEST LOAD (lb) | E.T. (min:sec) | RAIL DISPLACEMENT (in)        |                |
|---|----------------|----------------|-------------------------------|----------------|
|   |                |                | RAIL END NO. 1                | RAIL END NO. 2 |
| Initial Load  | 80             | 00:00          | 0.00                          | 0.00           |
| (2.0x Design Load) x 2  | 810            | 00:59          | 1.83                          | 1.77           |
| Initial Load  | 86             | 02:28          | 0.72                          | 0.49           |
| 61% (Rail End No. 1) and 72% (Rail End No. 2) Recovery from 2.0 x Design Load |                |                |                               |                |
| (2.5x Design Load) x 2  | 1007           | 03:10          | Achieved Load without Failure |                |

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



Total Quality. Assured.

130 Derry Court  
York, Pennsylvania 17406

Telephone: 717-764-7700  
Facsimile: 717-764-4129  
www.intertek.com/building

### TEST REPORT FOR DECK SUPPLY SERVICES LLC

Report No.: T1373.01-119-19 R1

Date: 03/02/26 Revised Date: 03/11/26

#### Test No. 5B

Test Date: 12/15/25

Design Load: 200 lb Horizontal Concentrated Load at Top of Post Mount <sup>2</sup>

| LOAD LEVEL <sup>1</sup>   | TEST LOAD (lb) | E.T. (min:sec) | POST DISPLACEMENT (in)                     |            |
|---|----------------|----------------|--|------------|
|   |                |                | POST NO. 1                                 | POST NO. 2 |
| Initial Load  | 80             | 00:00          | 0.00                                       | 0.00       |
| (2.0x Design Load) x 2  | 810            | 00:59          | 1.83                                       | 1.77       |
| Initial Load  | 86             | 02:28          | 0.72                                       | 0.49       |
| 61% (Post No. 1) and 72% (Post No. 2) Recovery from 2.0 x Design Load |                |                |  |            |
| (2.5x Design Load) x 2  | 1007           | 03:10          | Achieved Load without Failure <sup>3</sup> |            |

<sup>1</sup> A spreader beam was used to impose loads on both posts; therefore, loads were doubled.

<sup>2</sup> Load was applied to the end of the top rail (brackets) and transferred to the posts through the brackets at a height of 36 in measured from the bottom of the base plate.

<sup>3</sup> The post mount meets the requirements for Residential, One- and Two-Family Dwelling applications.

#### Test No. 6

Test Date: 12/15/25

Design Load: 200 lb Concentrated Load at Ends of Top Rail (Brackets) (Vertical)

| LOAD LEVEL <sup>1</sup>              | TEST LOAD (lb) | E.T. (min:sec) | RAIL DISPLACEMENT (in)        |
|--------------------------------------|----------------|----------------|-------------------------------|
| Initial Load                         | 80             | 00:00          | 0.00                          |
| (2.0x Design Load) x 2               | 812            | 00:20          | 0.08                          |
| Initial Load                         | 83             | 01:58          | 0.00                          |
| 100% Recovery from 2.0 x Design Load |                |                |                               |
| (2.5x Design Load) x 2               | 1045           | 02:09          | Achieved Load without Failure |

<sup>1</sup> 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 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 8 ft by 36 in *Raleigh* aluminium guardrail 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.

## TEST REPORT FOR DECK SUPPLY SERVICES LLC

Report No.: T1373.01-119-19 R1

Date: 03/02/26

Revised Date: 03/11/26

### SECTION II PHOTOGRAPHS



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



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

**TEST REPORT FOR DECK SUPPLY SERVICES LLC**

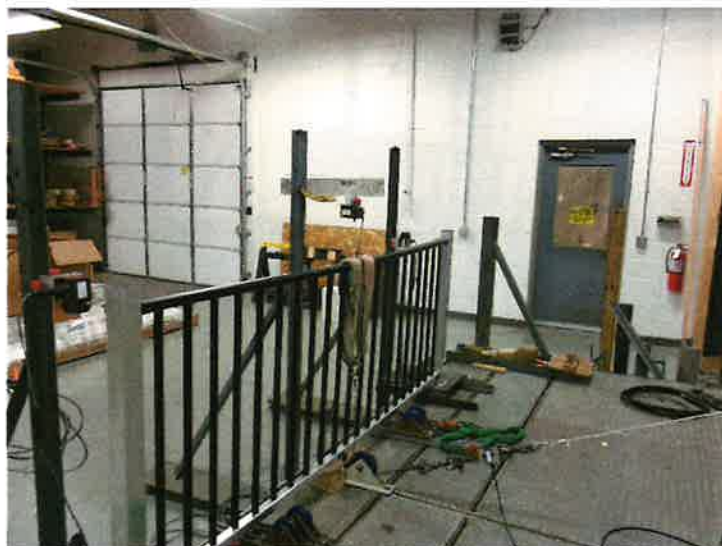
Report No.: T1373.01-119-19 R1

Date: 03/02/26

Revised Date: 03/11/26



**Photo No. 3**  
**Concentrated Load Test at Midspan of Top Rail (Horizontal)**



**Photo No. 4**  
**Concentrated Load Test at Midspan of Top Rail (Vertical)**

**TEST REPORT FOR DECK SUPPLY SERVICES LLC**

Report No.: T1373.01-119-19 R1

Date: 03/02/26

Revised Date: 03/11/26



**Photo No. 5**

**Concentrated Load Test at Ends of Top Rail (Brackets) (Horizontal)**



**Photo No. 6**

**Concentrated Load Test at Ends of Top Rail (Brackets) (Vertical)**

## TEST REPORT FOR DECK SUPPLY SERVICES LLC

Report No.: T1373.01-119-19 R1

Date: 03/02/26

Revised Date: 03/11/26



Photo No. 7

Cast Aluminum Bracket for Top Rail (right) Bottom Rail (left)

### SECTION 12

#### DRAWINGS

The "As-Built" drawings for the 8 ft by 36 in *Raleigh* aluminum guardrail system, which follow, have been reviewed by Intertek B&C and are representative of the project reported herein. Project construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.