intertek
Total Quality. Assured.

DECK SUPPLY SERVICES LLC
TEST REPORT

SCOPE OF WORK
STRUCTURAL PERFORMANCE TESTING ON THE 10 FT BY 42 IN *GEORGIAN*, ALUMINUM GUARDRAIL SYSTEM WITH THE 3-1/2 IN SQUARE POST

REPORT NUMBER
T1683.01-119-19 R1

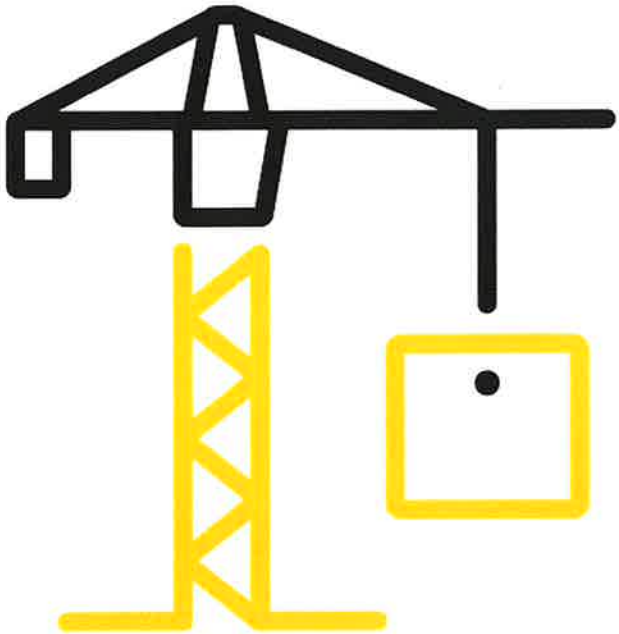
TEST DATES
12/16/25 - 12/17/25

ISSUE DATE 03/02/26
REVISED DATE 03/11/26

RECORD RETENTION END DATE
12/17/29

PAGES
25

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



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.: T1683.01-119-19 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 10 ft by 36 in *Georgian* aluminum guardrail system with the 3-1/2 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	**REVIEWED BY:**	V. Thomas Mickley, Jr., P.E.
TITLE:	Technician II	**TITLE:**	Senior Staff Engineer
SIGNATURE:	Digitally Signed by: Jeffrey Jones	**SIGNATURE:**	Digitally Signed by:Virgal Thomas Mickley, Jr.
DATE:	03/11/26	**DATE:**	03/11/26

JCJ:vtm/aas

intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

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

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 10 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

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.: T1683.01-119-19 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:

PRODUCT	*Georgian*
TYPE	Aluminum guardrail system
GUARDRAIL LENGTH	119-1/2 in (inside of post to inside of post
	10 ft (nominal)
GUARDRAIL HEIGHT	35-3/8 in (top of top rail to bottom of bottom rail)
	36 in (nominal)
TOP RAIL	1-13/16 in high by 2-3/4 in wide by 0.080 in thick contoured 6005-T5 extruded aluminum
BOTTOM RAIL	1-1/2 in high by 1-7/16 in wide by 0.080 in thick contoured 6005-T5 extruded aluminum
PICKETS (IN-FILL)	3/4 in square by 0.030/0.050 in thick 6063 extruded aluminum
RAIL BRACKETS	Cast aluminum collar brackets with accompanying cover
SUPPORT BLOCK [1]	3/4 in square by 1-3/4 in long by 0.030/0.050 in thick 6005-T5 extruded aluminum post
	1-3/4 square by 1-1/2 in high cast aluminum base
SUPPORT POST	3-1/2 in square by 0.080 in thick, 6005-T5 extruded aluminum post attached to a 5-1/2 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
FASTENERS	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
	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
	Top Rail to Bracket: One, #8-18 by 3/4 in (0.115 in minor diameter) square drive, pan head, self-drilling, stainless steel screws
	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
	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
	Baluster to Baluster Plug (Bottom Rail): Compression fit; No mechanical connection
	Baluster to Top Rail: Slip fit into routing; No mechanical connection
	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

[1] *One located at midspan, attached to the bottom rail with a baluster plug.*

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.: T1683.01-119-19 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.

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.: T1683.01-119-19 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
10 ft (119-1/2 in) by 36 in *Georgian* Level/In-Line Aluminum Guardrail System
IRC- One- and Two-Family Dwellings

Test No. 1
Test Date: 12/16/25
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	103	00:09	0.73
Initial Load	25	01:26	0.00
100% Recovery from 2.0 x Design Load			
2.5x Design Load	138	01:34	Achieved Load without Failure

Test No. 2
Test Date: 12/16/25
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	104	00:13	0.90
Initial Load	30	01:33	0.02
98% Recovery from 2.0 x Design Load			
2.5x Design Load	129	01:44	Achieved Load without Failure

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.: T1683.01-119-19 R1
Date: 03/02/26 Revised Date: 03/11/26

Test No. 3
Test Date: 12/16/25
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 [1]
Initial Load	40	00:00	0.00	0.00	0.00	0.00
2.0x Design Load	403	00:47	0.39	2.68	0.38	2.30
Initial Load	43	02:14	0.02	0.10	0.02	0.08
97% Recovery from 2.0 x Design Load						
2.5x Design Load	509	02:39	Achieved Load without Failure			

[1] *Net displacement was mid-rail displacement relative to the rail at the support posts.*

Test No. 4
Test Date: 12/16/25
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	39	00:00	0.00
2.0x Design Load	423	00:10	0.18
Initial Load	42	01:28	0.01
94% Recovery from 2.0 x Design Load			
2.5x Design Load	511	01:43	Achieved Load without Failure

Test No. 5A
Test Date: 12/16/25
Design Load: 200 lb Concentrated Load at Ends of Top Rail (Brackets) (Horizontal)

LOAD LEVEL [1]	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	802	00:36	0.92	0.90
Initial Load	81	02:13	0.10	0.11
89% (Rail End No. 1) and 88% (Rail End No. 2) Recovery from 2.0 x Design Load				
(2.5x Design Load) x 2	1008	02:38	Achieved Load without Failure	

[1] *A spreader beam was used to impose loads on* both *ends of the railing system; therefore, loads were doubled.*

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.: T1683.01-119-19 R1
Date: 03/02/26 Revised Date: 03/11/26

Test No. 5B
Test Date: 12/16/25
Design Load: 200 lb Horizontal Concentrated Load at Top of Post Mount [2]

LOAD LEVEL [1]	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	802	00:36	0.92	0.90
Initial Load	81	02:13	0.10	0.11
89% (Post No. 1) and 88% (Post No. 2) Recovery from 2.0 x Design Load				
(2.5x Design Load) x 2	1008	02:38	Achieved Load without Failure [3]	

[1] *A spreader beam was used to impose loads on* both *posts; therefore, loads were doubled.*
[2] *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.*
[3] *The post mount meets the requirements for Residential, One- and Two-Family Dwelling applications.*

Test No. 6
Test Date: 12/16/25
Design Load: 200 lb Concentrated Load at Ends of Top Rail (Brackets) (Vertical)

LOAD LEVEL [1]	TEST LOAD (lb)	E.T. (min:sec)	RAIL DISPLACEMENT (in)
Initial Load	76	00:00	0.00
(2.0x Design Load) x 2	805	00:21	0.03
Initial Load	89	02:33	0.00
100% Recovery from 2.0 x Design Load			
(2.5x Design Load) 2	1039	02:45	Achieved Load without Failure

[1] *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 10 ft by 36 in *Georgian* aluminum guardrail system 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.

intertek
Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

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

SECTION 11

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

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.: T1683.01-119-19 R1
Date: 03/02/26 Revised Date: 03/11/26

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

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

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.: T1683.01-119-19 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)

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.: T1683.01-119-19 R1
Date: 03/02/26 Revised Date: 03/11/26

Photo No. 7
Cast Aluminum Bracket for Top Rail

Photo No. 8
Cast Aluminum Bracket for Bottom Rail