VISTA RAILING SYSTEMS INC.
TEST REPORT

SCOPE OF WORK
REPORT OF VISTA PIPE HANDRAIL SYSTEM TESTED IN ACCORDANCE WITH ASTM E935-21, *STANDARD TEST METHODS FOR PERFORMANCE OF PERMANENT METAL RAILING SYSTEMS AND RAILS FOR BUILDINGS*

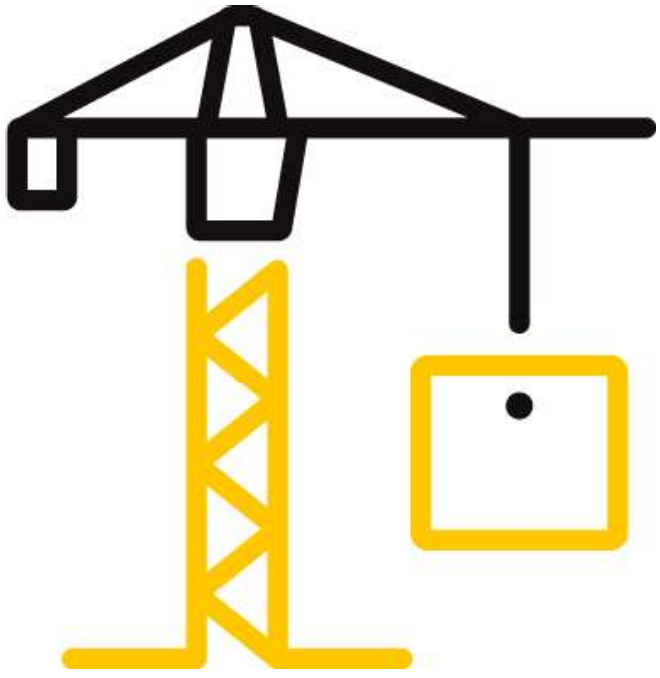
REPORT NUMBER
106477111COQ-001

TEST DATE
04/15/26 – 04/16/26

ISSUE DATE
05/01/26

PAGES
23

DOCUMENT CONTROL NUMBER
GFT-OP-10c (09/29/20)



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TEST REPORT FOR VISTA RAILING SYSTEMS INC.
Report No.: 106477111COQ-001
Date: 05/01/26

REPORT ISSUED TO

VISTA RAILING SYSTEMS INC.
23282 River Road
Maple Ridge, BC, V2W 1B6
Canada

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Vista Railing Systems Inc., 23282 River Road, Maple Ridge, BC, V2W 1B6, Canada, to perform testing on their Vista Pipe Handrail System in accordance with ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings*. The scope of the testing as requested by Vista Railing Systems Inc., was to assess the ability of the handrail system to resist the load requirements of Section 3.4.6.5, 4.1.5.14, and Section 9.8.7.7 of the 2025 NBC, 2024 BCBC, 2023 NBC-AE, and 2024 OBC. Results obtained are tested values. Testing was conducted at the Intertek test facility in Coquitlam, BC, Canada on April 15-16, 2026.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Chris Chang, P.Eng.	**REVIEWED BY:**	Baldeep Sandhu
TITLE:	Sr. Tech – Building & Construction	**TITLE:**	Manager – Building & Construction
SIGNATURE:	 EGBC Permit No.: 1000953	**SIGNATURE:**	
DATE:	05/01/26	**DATE:**	05/01/26

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Engineer's Disclaimer:	Engineers Approval Stamp
• Intertek Engineers do not assume professional responsibility of Engineer of Record. • Compliance to Building Codes must be approved by the Engineer of Record or Authority Having Jurisdiction. • Intertek Engineer's seal and signature is limited to the review of applicable code required loads, review of test setup, and witnessing of laboratory testing. • Additional disclaimers are shown in Notes of Section 7 and Section 8	LICENSED PROFESSIONAL ENGINEER K. S. KOONER 100155556 PROVINCE OF ONTARIO 05/01/26 Kal Kooner, P.Eng. EGBC Permit No.: 1000953 Director, Building & Construction Intertek PROFESSIONAL PROVINCE OF D. G. LUNGU # 28490 BRITISH COLUMBIA ENGINEER 5/1/2026 PROFESSIONAL ENGINEER DAN G. LUNGU PROFESSIONAL ENGINEER ALBERTA 5/1/2026 Dan Lungu, P.Eng. EGBC Permit No.: 1000953 Engineer, Building & Construction Intertek

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TEST REPORT FOR VISTA RAILING SYSTEMS INC.
Report No.: 106477111COQ-001
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SECTION 2
SUMMARY OF TEST RESULTS

SYSTEM DESCRIPTION	DIRECTION	TEST	PASS/FAIL
Vista Pipe Handrail System	Horizontal	Uniform Distributed Load	Pass
		Concentrated Load on Handrail at midspan	Pass
		Concentrated Load on Handrail at Mounting Bracket	Pass
		Concentrated Load on Handrail Extension Adjacent to Handrail Joint	Pass
		Concentrated Load on Handrail Extension	Pass
	Vertical	Uniform Distributed Load	Pass
		Concentrated Load on Handrail at midspan	Pass
		Concentrated Load on Handrail at Mounting Bracket	Pass
		Concentrated Load on Handrail Extension Adjacent to Handrail Joint	Pass

Refer to Appendix B for photos of testing.

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SECTION 3
TEST LOADS

The handrail specimen was evaluated in accordance with the following:

> **ASTM E935-21**, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings*

The required test loads were based on the Specified Loads per the following Building Code articles with the Safety Factors applied as indicated in this report:

2025 National Building Code of Canada (NBC)

- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

2024 British Columbia Building Code (BCBC)

- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

2023 National Building Code – Alberta Edition (NBC-AE)

- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

2024 Ontario Building Code (OBC)

- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

SECTION 4
MATERIAL SOURCE

The client submitted the handrail system to the Evaluation Center on April 8, 2026 (Coquitlam ID# VAN2604171230-001). The sample was received in good condition and was suitable for testing unless noted otherwise. The sample was not independently selected for testing.

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SECTION 5
EQUIPMENT

Calibration of test equipment was performed by Intertek B&C in accordance with ISO 17025 requirements.

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
D7833	Artech 5k lb S-Type Load Cell	20210-5k	07/21/26
P60610	T&D Temperature and Humidity Logger	TR-72Ui	12/05/26
P60623	Extech Stopwatch	365515	12/02/26
D7810	Micro Mule	Intertek-York	11/25/26
D7812	Tyco Electronics Linear Transducer	PT1MA-20-UP-420E-M6	05/25/26

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Stanley Miguel	Intertek B&C
Chris Chang	Intertek B&C
Kal Kooner	Intertek B&C
Dan Lungu	Intertek B&C

The above observer(s) witnessed part of the test program.

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SECTION 7
TESTING PROCEDURE

The evaluation was conducted in accordance with the testing procedures of ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.* The test specimen was loaded at a rate to achieve the specified loads between 10 seconds and 5 minutes. The specified test loads were held for one minute before the load was released. For each test, deflection measurements were taken at the point of load application. Testing was conducted with reference to the specified load requirements of the following:

2025 NBC / 2024 BCBC / 2023 NBC-AE / 2024 OBC:
SECTION 3.4.6.5 (14) HANDRAILS
SECTION 4.1.5.14 (7) LOADS ON GUARDS AND HANDRAILS
SECTION 9.8.7.7 (1) DESIGN AND ATTACHMENT OF HANDRAILS

Handrails and their supports shall be designed and constructed to withstand the following loads, which need not to be considered to act simultaneously:

a) a concentrated load not less than 0.9 kN applied at any point and in any direction for all handrails, and
b) a uniform load not less than 0.7 kN/m applied in any direction to handrails not located within dwelling units.

Note 1: A safety factor of 1.67-2.24 was applied to the above loads, based on an assumed failure mode and tested material. The safety factor was calculated by dividing the live load factor of 1.5 by the material resistance factors below, as defined in the CAN/CSA S157, *Strength Design in Aluminum* standard.

- ø=0.90 resistance factor for bending failure mode, resulting safety factor = 1.67
- ø=0.67 resistance factor for brittle failure mode, resulting safety factor = 2.24

UNIFORM LOAD TEST

Uniform test loads were applied to the handrail in two (2) orientations – horizontal and vertical. The test loads were applied using quarter point loads. After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and visible cracks in any component.

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CONCENTRATED LOAD TEST

The handrail system was subjected to seven (7) separate tests where a concentrated load was applied:

- horizontally on the handrail at midspan
- horizontally on the handrail at the mounting bracket
- horizontally on the handrail extension adjacent to handrail joint
- horizontally on the handrail extension
- vertically on the handrail at midspan
- vertically on the handrail at mounting bracket
- vertically on the handrail extension adjacent to handrail joint

After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and visible cracks in any component.

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SECTION 8
TEST SPECIMEN DESCRIPTION

The sample was identified as the following:

TABLE 1. HANDRAIL CONFIGURATION

PART NAME	PART NUMBER	QTY	PART DIMENSIONS				REPORTED MATERIAL
			LENGTH	WIDTH	HEIGHT	NOMINAL THICKNESS	
Pipe Handrail	V1400	1	58.0 in.	N/A	1.66 in. dia.	0.14 in.	Aluminum
Handrail Extension	V1400	2	11.5 in.	12.0 in.	1.66 in.	0.14 in.	Aluminum
Handrail 90 Mitered Wall Return	V5455	2	4.00 in.	4.00 in.	1.69 in.	0.16 in.	Aluminum
Handrail Bracket	PM5407	2	3.69 in.	1.25in.	2.87 in.	0.25 in.	Aluminum
RTW Pipe HR Clip Assembly	PB5457	2	1.38 in.	1.50 in.	2.94 in.	N/A	Aluminum
Inside HR Sleeve	V1401	2	5.00 in.	1.38 in.	1.00 in.	0.07 in.	Aluminum

Note 1: For detailed drawings of the test sample and components, refer to Appendix C.

Note 2: The supporting structure attachment was outside the scope of this evaluation, and is subject to evaluation and approval by the Engineer of Record and Authority Having Jurisdiction (AHJ). The handrail was attached to a railing assembly by the client; the railing assembly was not tested in this evaluation. The railing was attached to a rigid test support using steel plates with four (4) 3/8 in. Grade 5 bolts on the post baseplate on each post baseplate.

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SECTION 9
TEST RESULTS

A full set of test results is included in Appendix A.

SECTION 10
CONCLUSION

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Vista Railing Systems Inc. on their Vista Pipe Handrail System per ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.* The scope of the testing as requested by Vista Railing Systems Inc., was to assess the ability of the handrail system to resist the loads as prescribed in the following building code articles:

2025 National Building Code of Canada (NBC)
- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

2024 British Columbia Building Code (BCBC)
- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

2023 National Building Code – Alberta Edition (NBC-AE)
- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

2024 Ontario Building Code (OBC)
- Section 3.4.6.5 (14) *Handrails*
- Section 4.1.5.14 (7) *Loads on Guards and Handrails*
- Section 9.8.7.7 (1) *Design and Attachment of Handrails*

The Vista Railing Systems Inc. Vista Pipe Handrail System identified and evaluated in this report has met the load requirements using the safety factors as defined in Section 7, Note 1 of this report. Overall compliance with the Building Codes must be evaluated and approved by the Engineer of Record and Authority Having Jurisdiction.

The conclusions of this test may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

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SECTION 11

APPENDIX A – TEST DATA (2 PAGES)

Company	Vista Railing Systems Inc.	Technician(s)	Chris Chang / Stanley Miguel
Project No.	G106477111	Reviewer	Baldeep Sandhu
Models	Vista Pipe Handrail System	Start/End Date	April 15-16, 2026
Product Name	Same as above	Sample ID	VAN2602231440-001
Standard	**ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings* with reference to 2025 NBC / 2024 BCBC, 2023 NBC-AE, 2024 OBC, Section 3.4.6.5(14), 4.1.5.14(7), 9.8.7.7(1)**		

Test Data Package

Table of Contents

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Test:	**Design and Attachment of Handrails**	Project:	G106477111
Date:	15-Apr-26	Eng/Tech:	Chris Chang / Stanley Miguel
Client:	Vista Railing Systems Inc.	Reviewer:	Baldeep Sandhu
Product:	**Vista Pipe Handrail System**	Location:	Coquitlam, BC, Canada

Post Spacing: 4.00 ft 1.22 m (between bracket spacing)

Method: ASTM E935-21, *Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings*
2025 National Building Code of Canada,
- 3.4.6.5 *Handrails* (14), 4.1.5.14 *Loads on Guards and Handrails* (7), 9.8.7.7 *Design and Attachment of Handrails* (1)
2024 Ontario Building Code
- 3.4.6.5 *Handrails* (14), 4.1.5.14 *Loads on Guards and Handrails* (7), 9.8.7.7 *Design and Attachment of Handrails* (1)
2024 British Columbia Building Code
- 3.4.6.5 *Handrails* (14), 4.1.5.14 *Loads on Guards and Handrails* (7), 9.8.7.7 *Design and Attachment of Handrails* (1)
2023 National Building Code - Alberta Edition,
- 3.4.6.5 *Handrails* (14), 4.1.5.14 *Loads on Guards and Handrails* (7), 9.8.7.7 *Design and Attachment of Handrails* (1)

Safety Factor: 1.67 (based on a resistance factor Ø = 0.9 for aluminum)
2.24 (based on a resistance factor Ø = 0.67 for connection)

Equipment: Artech 5000 lbf Load Cell (Intertek ID# D7833, cal due July 21, 2026)
T&D TR-72Ui Temperature and Humidity Logger (Intertek ID# P60610, cal due December 5, 2026)
Extech Stopwatch (Intertek ID# P60623, cal due December 2, 2026)
Micro Mule (Intertek ID# D7810, cal due November 25, 2026)
Tyco Electronics Linear Transducer (Intertek ID# D7812, cal due May 25, 2026)

Time/Temp/RH: 9:00AM / 21.0°C / 48.0%

Description	Test	Location	Design Load (kN)	Factored Load (kN)	Calculated Moment (kNm)	Equivalent Quarter-Point Load (kN)	Required Proof Load (kN)	Required Proof Load (lbf)	Deflections (mm)	Pass/Fail
Horizontal	Uniform Distributed Load (per m)	1	0.7	1.17	0.22	0.71	1.42	319.8	22.64	**Pass**
	Point Load on Handrail at Midspan	2	0.9	1.50	-	-	1.50	337.2	31.79	**Pass**
	Point Load on Handrail at Mounting Bracket	3	0.9	2.01	-	-	2.01	453.0	40.40	**Pass**
	Point Load on Handrail at Joint	4	0.9	2.01	-	-	2.01	453.0	47.71	**Pass**
	Point Load on Handrail	5	0.9	1.50	-	-	1.50	337.2	130.18	**Pass**
Vertical	Uniform Distributed Load (per m)	1	0.7	1.17	0.22	0.71	1.42	319.8	10.46	**Pass**
	Point Load on Handrail at Midspan	2	0.9	1.50	-	-	1.50	337.2	18.02	**Pass**
	Point Load on Handrail at Mounting Bracket	3	0.9	2.01	-	-	2.01	453.0	11.64	**Pass**
	Point Load on Handrail at Joint	4	0.9	2.01	-	-	2.01	453.0	22.23	**Pass**

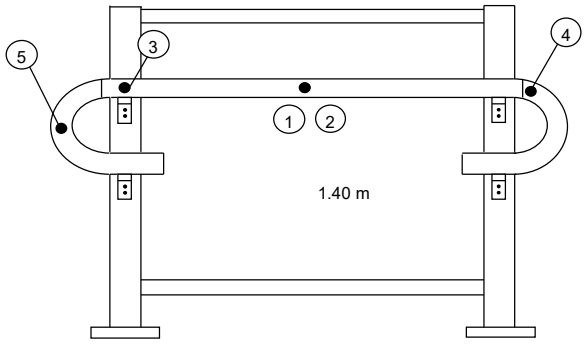

Figure 1. Location of Tests
(Not to Scale)

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APPENDIX B – PHOTOS (2 PAGES)

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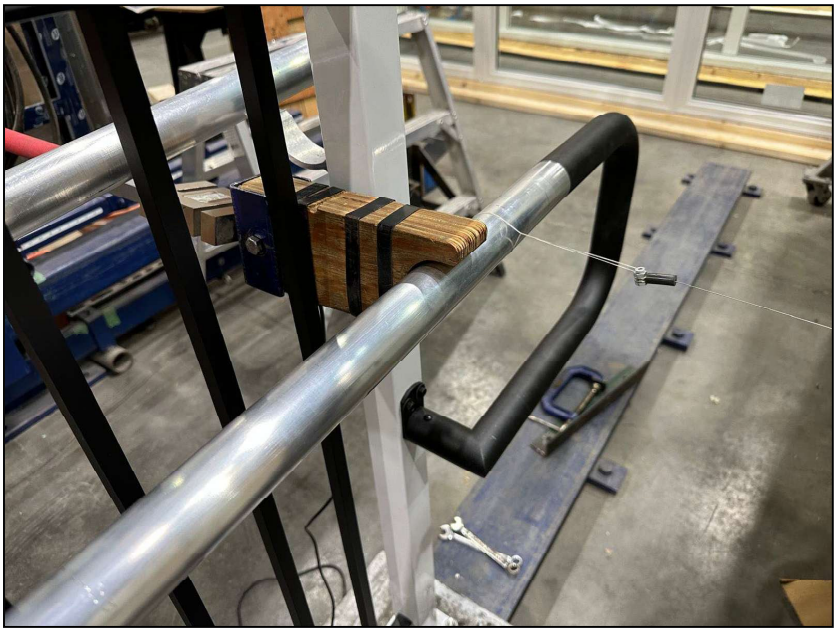

Figure 1 – Horizontal Concentrated Load on Mounting Bracket

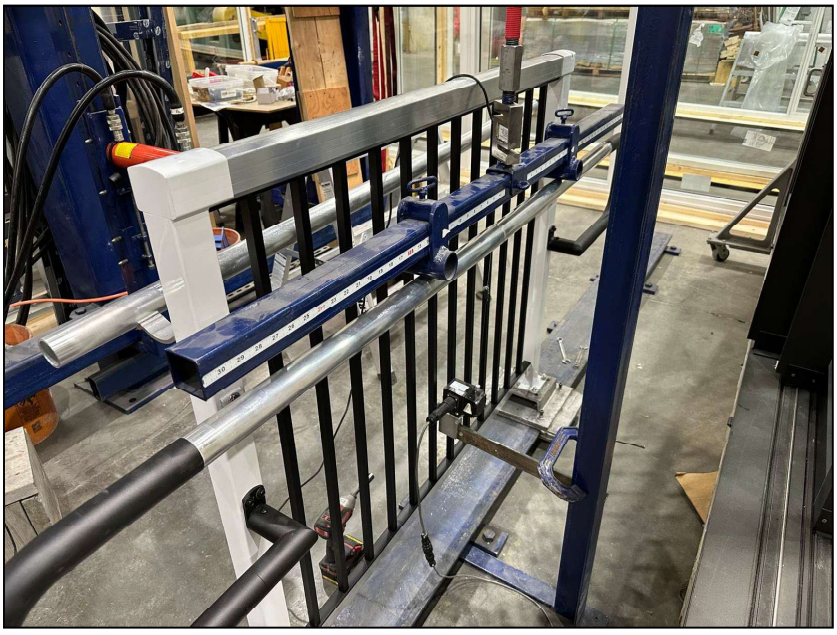

Figure 2 – Vertical Uniform Load

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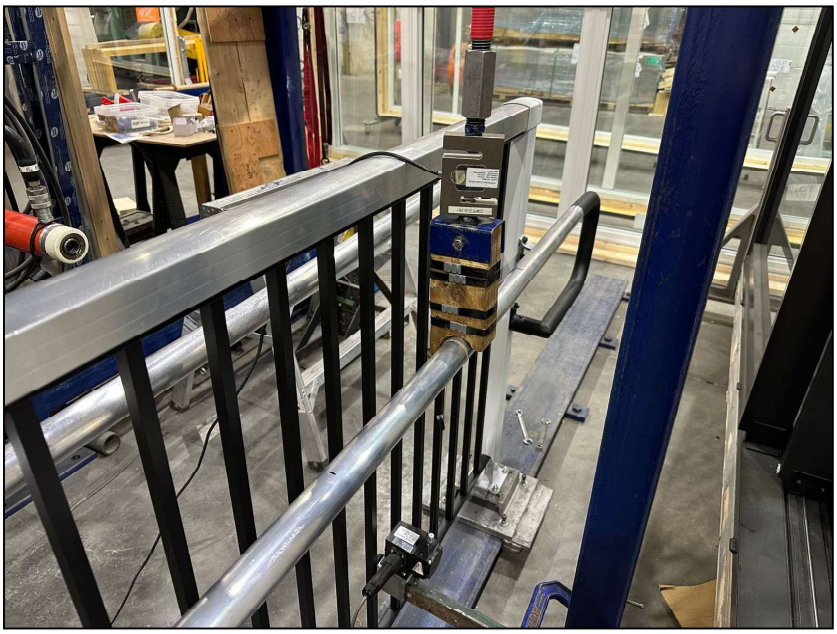

Figure 3 – Vertical Concentrated Load on Handrail at Midspan

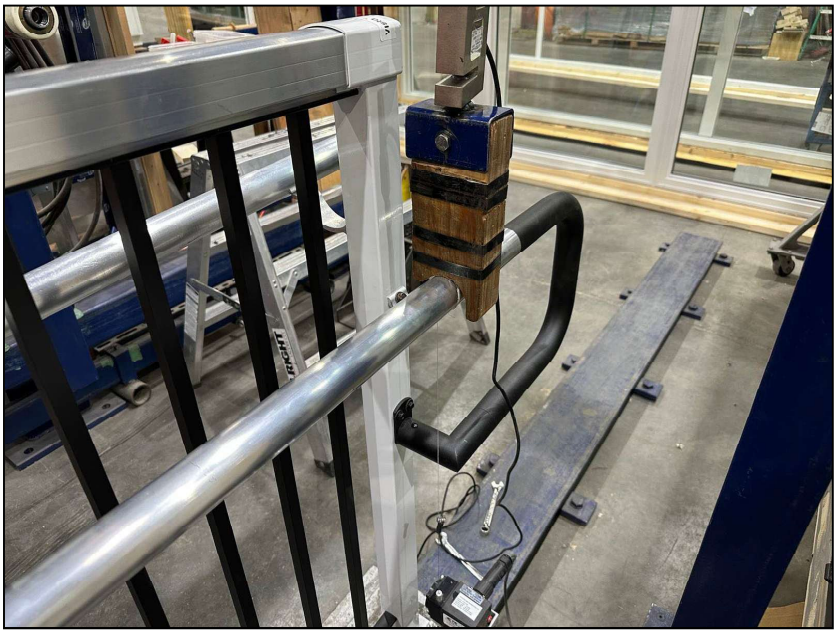

Figure 4 – Vertical Concentrated Load at Mounting Bracket

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SECTION 12

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	05/01/26	N/A	Original Report Issue