

# CENDEK RAILINGS LTD.

## TEST REPORT

### SCOPE OF WORK

REPORT OF CENDEK RAILINGS LTD. 8 FT. CENTURY COMPONENT PICKET FASCIA MOUNT RAILING SYSTEM TESTED IN ACCORDANCE WITH ASTM E935-21, *STANDARD TEST METHODS FOR PERFORMANCE OF PERMANENT METAL RAILING SYSTEMS AND RAILS FOR BUILDINGS*

### REPORT NUMBER

105973968COQ-001A

### TEST DATES

10/18/24

### ISSUE DATE

11/04/24

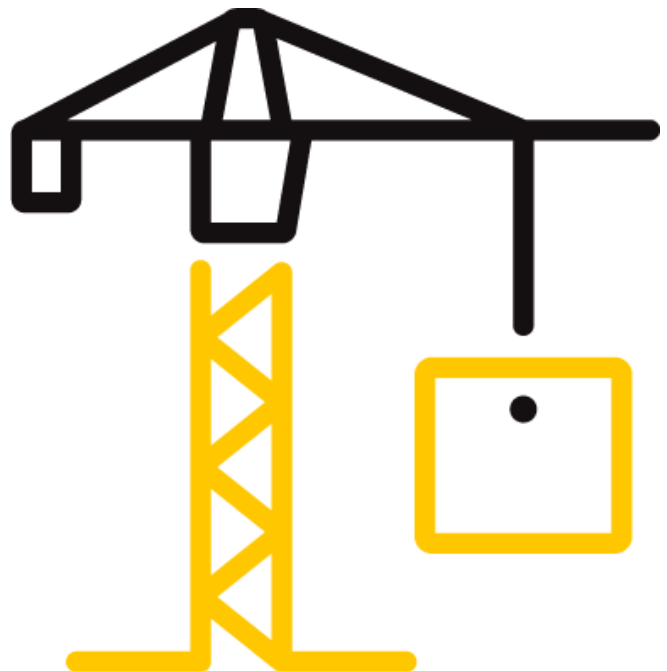
### PAGES

24

### DOCUMENT CONTROL NUMBER

GFT-OP-10c (09/29/20)

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## TEST REPORT FOR CENDEK RAILINGS LTD.

Report No.: 105973968COQ-001A

Date: 11/04/24

### REPORT ISSUED TO CENDEK RAILINGS LTD.

9685 Agur Street  
Summerland, BC, V0H 1Z2  
Canada

### SECTION 1 SCOPE

Intertek Building & Construction (B&C) was contracted by Cendek Railings Ltd., 9685 Agur Street, Summerland, BC, V0H 1Z2, Canada, to perform testing on the 8 ft. Century Component Picket Fascia Mount Railing 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 Cendek Railings Ltd., was to assess the ability of the guard system to resist the load requirements of R301.5 of the 2024 IRC. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek test facility in Coquitlam, BC, Canada on October 18, 2024.

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

For INTERTEK B&C:

<b>COMPLETED</b>			
<b>BY:</b>	Chris Chang, P.Eng.	<b>REVIEWED BY:</b>	Baldeep Sandhu
<b>TITLE:</b>	Senior Technician – Building & Construction	<b>TITLE:</b>	Manager – Building & Construction
<b>SIGNATURE:</b>		<b>SIGNATURE:</b>	
<b>DATE:</b>	11/04/24	<b>DATE:</b>	11/04/24

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**TEST REPORT FOR CENDEK RAILINGS LTD.**

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**SECTION 2**

**SUMMARY OF TEST RESULTS**

SYSTEM DESCRIPTION	TEST	PASS/FAIL
8 ft. Century Component Picket Fascia Mount Railing System	In-fill Load	Pass
	Horizontal – Mid-Span Concentrated Load	Pass
	Horizontal – Adjacent to Post Concentrated Load	Pass
	Horizontal – Top of Post Concentrated Load	Pass

Refer to Appendix B for photos of testing.

## TEST REPORT FOR CENDEK RAILINGS LTD.

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### SECTION 3

#### TEST METHOD

The guard 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.

#### **2024 International Residential Code (IRC)**

- R301.5 *Live Load*

### SECTION 4

#### MATERIAL SOURCE

The client submitted the railing system to the Evaluation Center on September 19, 2024 (Coquitlam ID# VAN2409230952-001). The sample was received in good condition and was suitable for testing unless noted otherwise. The sample was not independently selected for testing.

## TEST REPORT FOR CENDEK RAILINGS LTD.

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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
P60692	Artech 5k lb S-Type Load Cell	20210-5k	01/15/25
D7830	Extech Temperature and Humidity Logger	RH550	11/07/24
P60624	Extech Stopwatch	365515	12/15/24
52650	Mitutoyo 8 in. Digital Caliper	CD-8	06/28/25
P60494	Stanley Tape Measure	FatMax	10/19/24

### SECTION 6 LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Chris Chang	Intertek B&C
Stanley Miguel	Intertek B&C

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

**TEST REPORT FOR CENDEK RAILINGS LTD.**

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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. Testing was conducted with reference to the specified load requirements of the following:

**IN-FILL LOAD TEST**

The in-fill load test was conducted in accordance with Section 1607.9.1.2 *Guard Component Loads* of the 2024 IBC and Table R301.5 *Minimum Uniformly Distributed Live Loads* of the 2024 IRC. Testing was conducted with reference to Section 4.5.1.2 *Guard System Component Loads* of ASCE/SEI 7-22, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* with a safety factor of 2.5. A load of 125 lbs was applied using a 1 square foot block normal to the in-fill. After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and/or visible cracking from any component.

**CONCENTRATED LOAD TEST**

The concentrated load tests were conducted in accordance with Section 1607.9.1 *Concentrated Load* of the 2024 IBC and Table R301.5 *Minimum Uniformly Distributed Live Loads* of the 2024 IRC. Testing was conducted with reference to Section 4.5.1 *Loads on Handrail and Guardrail Systems* of ASCE/SEI 7-22, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* with a safety factor of 2.5. The top rail of the guardrail system was subjected to three (3) separate horizontal tests where a concentrated load of 500 lbs was applied:

- horizontally at the mid-span of the top rail,
- horizontally at the top rail adjacent to the post connection to verify the connection capacity, and
- horizontally at the top of the post.

After release of the load, the system was evaluated for failure, any evidence of disengagements of any component and/or visible cracking from any component.

## TEST REPORT FOR CENDEK RAILINGS LTD.

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### SECTION 8

#### TEST SPECIMEN DESCRIPTION

The sample was identified as the following:

TABLE 1. RAILING CONFIGURATION						
PART NAME	QTY	PART DIMENSIONS				REPORTED MATERIAL
		LENGTH	WIDTH	HEIGHT	NOMINAL THICKNESS	
Post	2	42.25 in.	2.50 in.	2.50 in.	0.07 in.	6063-T5 Aluminum
Baseplate	2	4.00 in.	4.00 in.	0.25 in.	N/A	6063-T5 Aluminum
Fascia Bracket	2	5.29 in.	4.50 in.	7.00 in.	N/A	6063-T5 Aluminum
Top Rail	1	95.29 in.	2.36 in.	1.89 in.	0.07 in.	6063-T5 Aluminum
Bottom Rail	1	95.29 in.	1.32 in.	1.41 in.	0.07 in.	6063-T5 Aluminum
Infill - Picket	21	37.88 in.	0.63 in.	0.63 in.	0.05 in.	6063-T5 Aluminum
Support Leg	2	3.82 in.	1.25 in.	6.93 in.	0.19 in.	6063-T5 Aluminum

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

### SECTION 9

#### TEST RESULTS

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

## TEST REPORT FOR CENDEK RAILINGS LTD.

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### SECTION 10

#### CONCLUSION

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Cendek Railings Ltd. on the 8 ft. Century Component Picket Fascia Mount Railing 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 Cendek Railings Ltd. was to assess the ability of the guard system to resist the loads as prescribed in the following building code articles:

#### **2024 International Residential Code (IRC)**

- R301.5 *Live Load*

The Cendek Railings Ltd. 8 ft. Century Component Picket Fascia Mount Railing System identified and evaluated in this report has met the load requirements of the above criteria. 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.



**TEST REPORT FOR CENDEK RAILINGS LTD.**

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Date: 11/04/24

**SECTION 11**

**APPENDIX A – TEST DATA (2 PAGES)**

Company	Cendek Railings Ltd.	Technician(s)	Chris Chang / Stanley Miguel
Project No.	G105973968	Reviewer	Baldeep Sandhu
Models	Fascia Mount	Start/End Date	October 18, 2024
Product Name	8 ft. Century Component Picket	Sample ID	VAN2409230952-001
Standard	2024 IRC		

### Test Data Package

#### Table of Contents

Sheet	Page
Table of Contents (This Sheet)	1
8 ft. Century Component Picket - Fascia Mount	2

Test:	<b>Loads on Guards</b>		Project:	G105973968
Date:	18-Oct-24		Eng/Tech:	Chris Chang
Client:	Cendek Railings Ltd.			Stanley Miguel
Product:	<b>8 ft. Century Component - Fascia Mount</b>		Reviewer:	Coquitlam, BC, Canada
Post Spacing:	8.21 ft	2.50 m		
Height of Guard:	42.1 in	1070 mm		
Opening in Guard:	3.88 in	98 mm		(between pickets)
Method:	ASTM E935-13e1, <i>Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings</i> 2024 International Residential Code (IRC)			
Safety Factor:	2.50			
Equipment:	Artech 5000 lbf Load Cell (Intertek ID# P60692, cal due January 15, 2025) Extech RH550 Temperature and Humidity Logger (Intertek ID# D7830, cal due November 7, 2024) Stopwatch (Intertek ID# P60624, cal due December 15, 2024) Mitutoyo Digital Caliper (Intertek ID# 52650, cal due June 28, 2025) Stanley Tape Measure (Intertek ID# P60494, cal due October 19, 2024)			
Time/Temp/RH:	9:05AM / 22.4°C / 48.1%			

Direction	Test	Design Load (Inward/Outward) (lbf)	Factored Load	Calculated Moment (lbf-ft)	Equivalent Quarter-Point Load (lbf)	Required Proof Load (lbf)	Pass/Fail
Outward	Individual Elements (over 12 in. x 12 in.) (most critical location)	50	125	-	-	125	Pass
	Midspan Horizontal Concentrated Load	200	500	-	-	500	Pass
	Top Rail Adjacent to Connection Concentrated Load	200	500	-	-	500	Pass
	Top of Post	200	500	-	-	500	Pass

Direction	Test	Design Load (Inward/Outward) (kN)	Factored Load	Calculated Moment (kNm)	Equivalent Quarter-Point Load (kN)	Required Proof Load (kN)	Pass/Fail
Outward	Individual Elements (over 305 mm in. x 305 mm) (most critical location)	0.22	0.56	-	-	0.56	Pass
	Midspan Horizontal Concentrated Load	0.89	2.22	-	-	2.22	Pass
	Top Rail Adjacent to Connection Concentrated Load	0.89	2.22	-	-	2.22	Pass
	Top of Post	0.89	2.22	-	-	2.22	Pass

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**SECTION 11**

**APPENDIX B – PHOTOS (2 PAGES)**

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**Figure 1. In-fill Load Test**



**Figure 2. Horizontal – Mid-span of Top Rail Concentrated Load**

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**Figure 3. Horizontal – Adjacent to Post Connection Concentrated Load**



**Figure 4. Horizontal – Top of Post Concentrated Load**

**TEST REPORT FOR CENDEK RAILINGS LTD.**

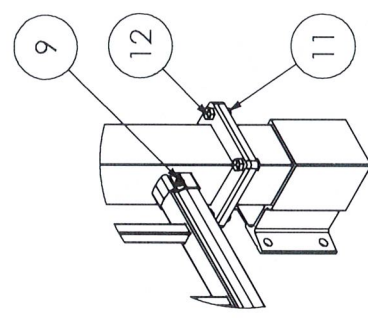
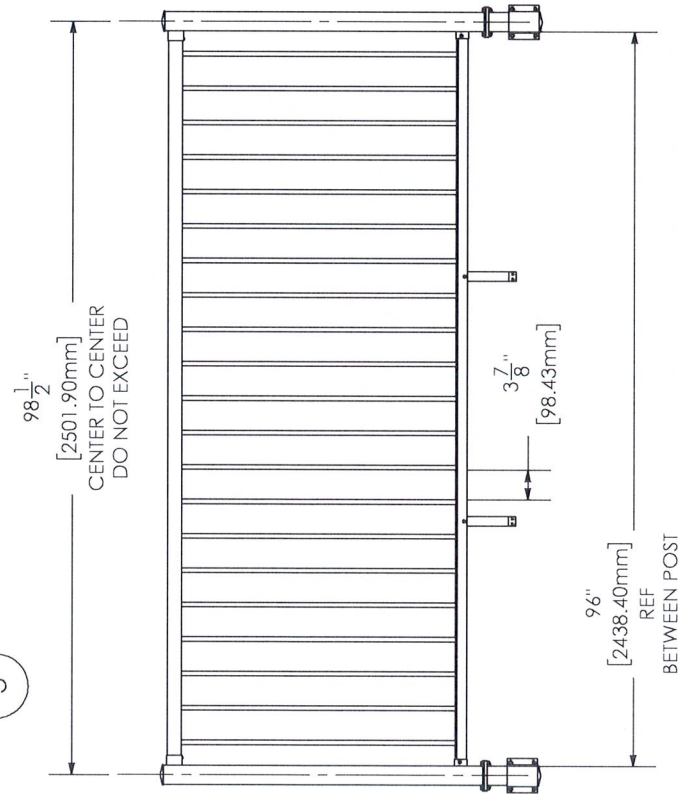
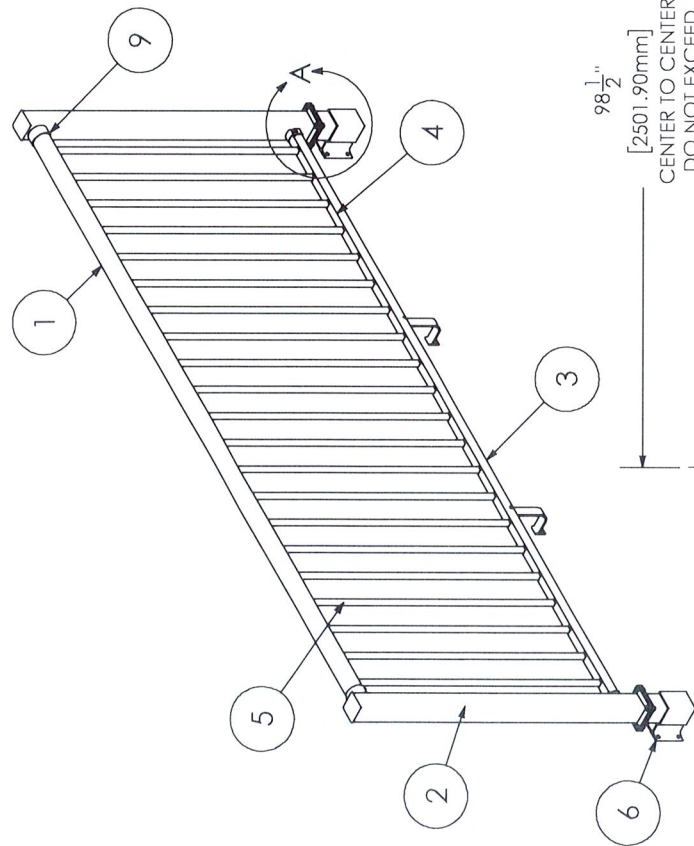
Report No.: 105973968COQ-001A

Date: 11/04/24

**SECTION 12**

**APPENDIX C – DRAWINGS (8 PAGES)**





DETAIL A  
SCALE 1 : 8

**intertek**

Test sample complies with these details.  
Deviations are noted.

Report #: 105973968600-001A

Date: 11/04/24 Tech: C.C.

Item No.	Eng No.	Material	DESCRIPTION	QTY.
1	0041PB	6063-T5	Top Rail Component Round 6"	1
2	0863AB1	6063-T5	2-1/2" End Post Round 42"	2
3	0057PD	6063-T5	Bottom Rail Glass 8"	1
4	0111PB	6063-T5	Bottom Rail Clip Punched 5/8" 3-7/8" Straight 8"	1
5	0489P	6063-T5	5/8" Picket 37-7/8"	21
6	0217A	6063-T5	Fascia Bracket 2-1/2" Line/End/Stair with baseplate	2
7	0158PB	PVC Rigid	Vinyl Top Rail Picket Universal/Round 8"	1
8	0159P	PVC Rigid	Vinyl Inset Bottom Rail Picket 6"	1
9	0096PA	C1018	Screw #10x3/4" PH Robertson TEK Zinc	12
10	0076PG	6063-T5	Support Leg 2" Offset Fascia for 2-1/2" 1-1/4"	2
11	2557P	AISI 304	Nut Hex 5/16" Nyloc NC Stainless	8
12	2077P	AISI 304	Bolt Hex 5/16" x 1" NC Stainless	8




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DRAWN BY		DESCRIPTION	
Admin	3/3/2020	8' Century Fascia Component	
CREATED		Railing System	
MATERIAL			
DIE NO.			
ALL DIMENSION IN INCHES/mm			
Part No.	Eng No. 0866A	Weight	32.35 Lbs
		SHEET 1 OF 1	Rev -

REVISIONS		
REV.	DESCRIPTION	DATE INITIALS

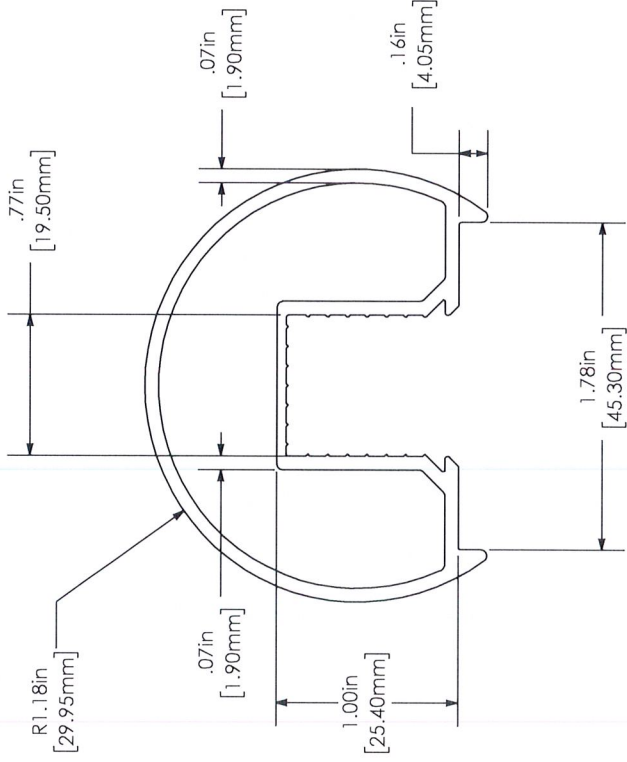





Test sample complies with these details.  
Deviations are noted.

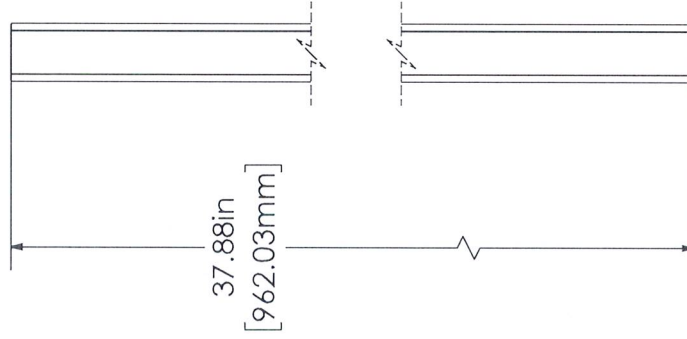
Report #: 105973968CQ-001A

Date: 11/04/24 Tech: C.C.



<div> <b>CenDek Railings Ltd.</b></div> <div>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF CENDEK RAILINGS LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF CENDEK RAILINGS LTD IS PROHIBITED.</div>	DRAWN BY Admin	DESCRIPTION Century Top Rail Die		
	CREATED 11/3/2017			
	MATERIAL 6063-T5			
	DIE NO. DYG12073190			
	ALL DIMENSION IN INCHES/mm			
	Part No.	Eng No. 0041P		
	Weight	0.77 Lbs	SHEET 2 OF 2	Rev -

REVISIONS			
REV.	DESCRIPTION	DATE	INITIALS



EXTRUSION TOLERANCE	
<1	±0.10
<1-2	±0.12
<2-3	±0.14
<3-4	±0.16
<4-6	±0.18
<6-12	±0.20
<12-19	±0.23
<19-25	±0.25
<25-38	±0.30
<38-50	±0.36
<50-100	±0.61
<100-150	±0.86
<150-200	±1.12
<200-250	±1.38

CUT LENGTH TOLERANCE		MACHINING TOLERANCE	
Dimension (mm)	Tolerance	Dimension (mm)	Tolerance
≤100	±0.5	≤10	±0.2
>100<500	±0.8	>10<20	±0.3
>500<1000	±1.0	>20<30	±0.4
>1000<1500	±1.5	>30<40	±0.5
>1500<3000	±1.8	>40<60	±0.6
>3000<6000	±2.0	>60<100	±0.8
Above 6000	±2.5	Above 100	±1.0

REVISIONS		
REV.	DESCRIPTION	DATE
INITIALS		

**intertek**

Test sample complies with these details.  
Deviations are noted.

Report #: 105973968C0Q-001A

Date: 11/04/24 Tech: C.C.

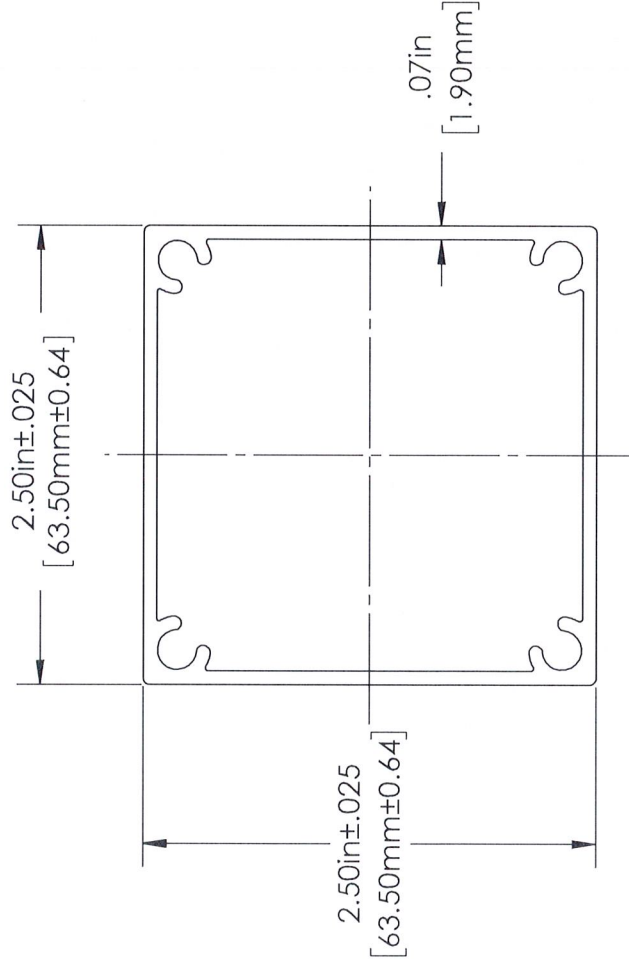
<b>CenDek Railings Ltd.</b> <small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF CENDEK RAILINGS LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF CENDEK RAILINGS LTD IS PROHIBITED.</small>		DRAWN BY: Admin CREATED: 2/28/2018 MATERIAL: 6063-T5 DIE NO.: DYF10473127 ALL DIMENSION IN INCHES/MM	DESCRIPTION: 5/8" Picket 37-7/8" for Component
		Part No. Weight: 0.41 Lbs	Eng No. 0063PC SHEET 2 OF 2

intertek

Test sample complies with these details.  
Deviations are noted.

Report #: 105923968 CQG-2017

Date: 11/01/24 Tech: C.C.



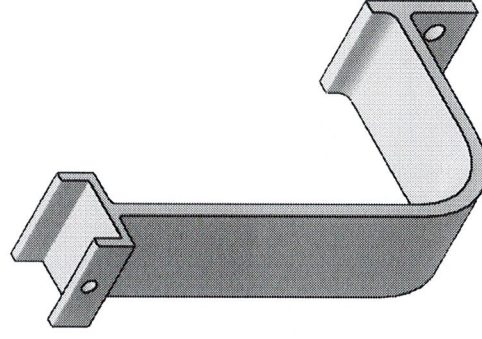
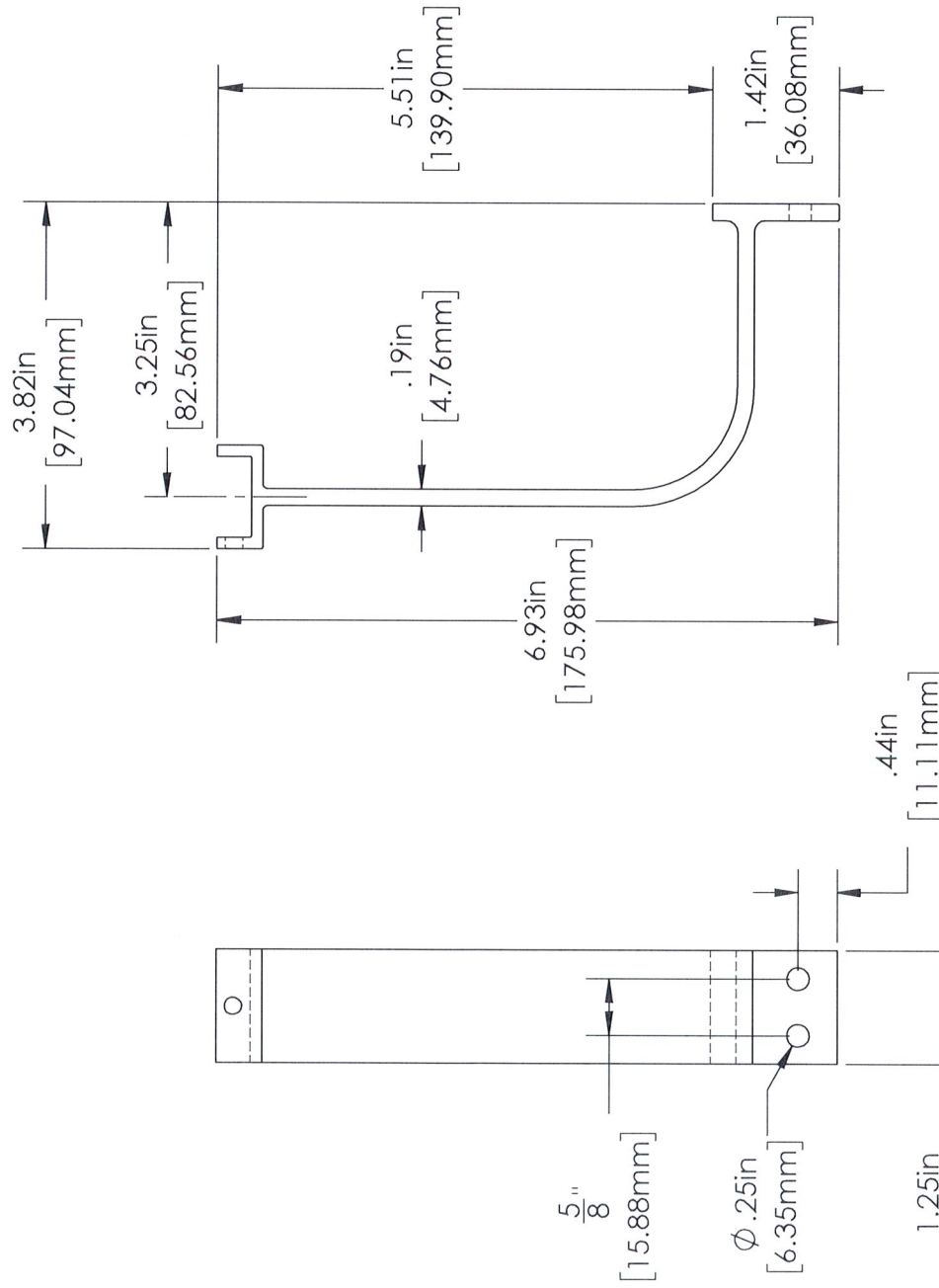
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DRAWN BY	Admin
CREATED	11/16/2017
MATERIAL	6063-T5
DIE NO.	DYG12076190
ALL DIMENSION IN INCHES/mm	

DESCRIPTION  
2-1/2" Post Material 12"

REVISIONS		
REV.	DESCRIPTION	DATE

Part No.	Eng No. 0071PV
Weight	SHEET 2 OF 2
	Rev 2



**intertek**

Test sample complies with these details.  
Deviations are noted.

Report #: 105973968.C00-0014

Date: 11/04/24 Tech: C.C.

REV.	DESCRIPTION	DATE	INITIALS

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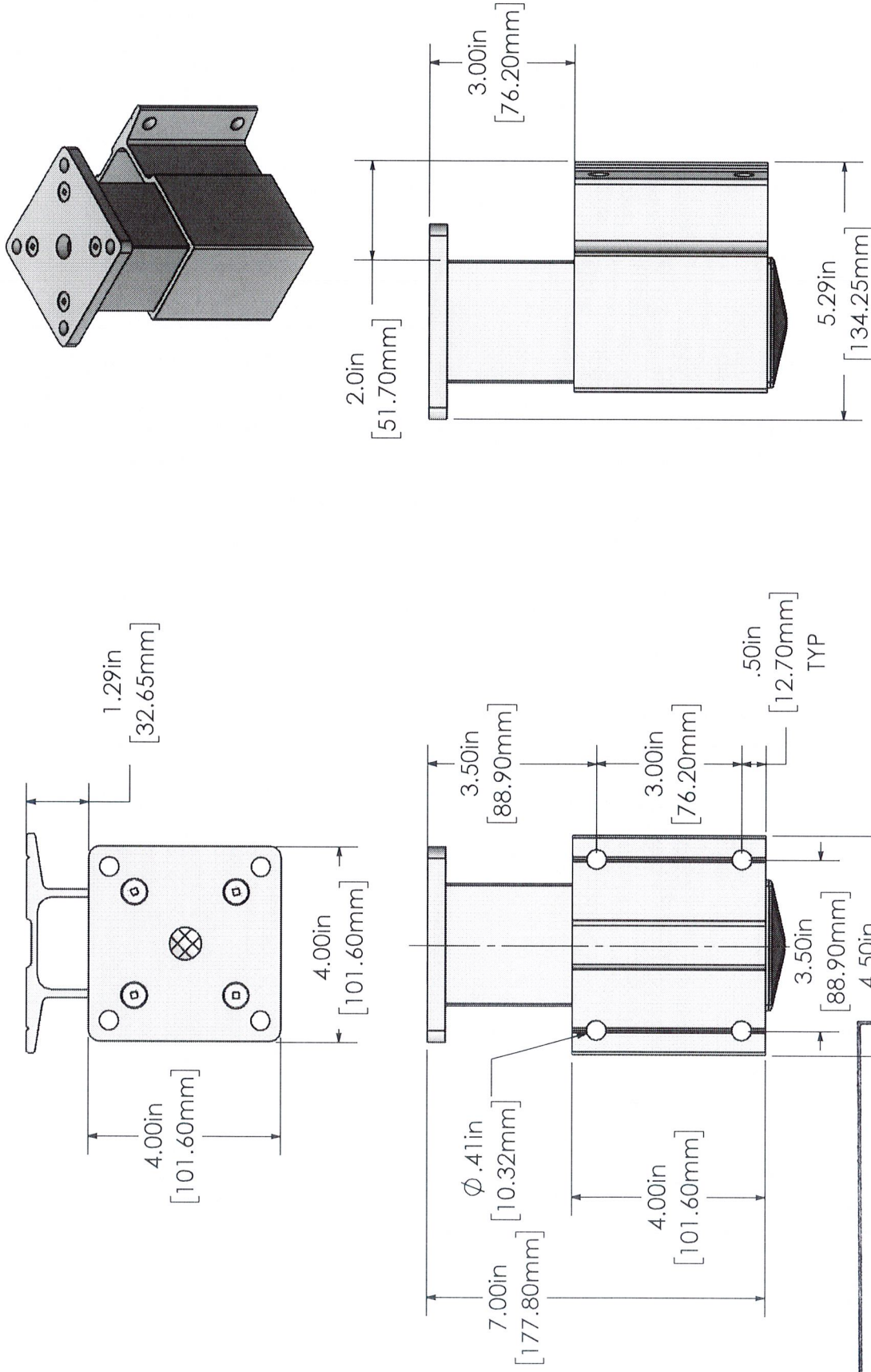
DRAWN BY	Admin
CREATED	12/22/2017
MATERIAL	6063-T5
DIE NO.	
ALL DIMENSION IN INCHES/MM	

**DESCRIPTION**  
Support Leg 2" Offset Fascia for 2-  
1/2" 1-1/4"

Part No. D000667  
Weight 0.24 Lbs

Eng No. 0076PG  
SHEET 1 OF 1 Rev -





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**DESCRIPTION**

Fascia Bracket 2-1/2" Line/End/Stair  
with baseplate

DRAWN BY Admin

CREATED 10/21/2024

MATERIAL 6063-T5

DIE NO.

ALL DIMENSION IN INCHES/mm

Part No. D000610

Weight 2.39 Lbs

Eng No. 0217A

SHEET 2 OF 2

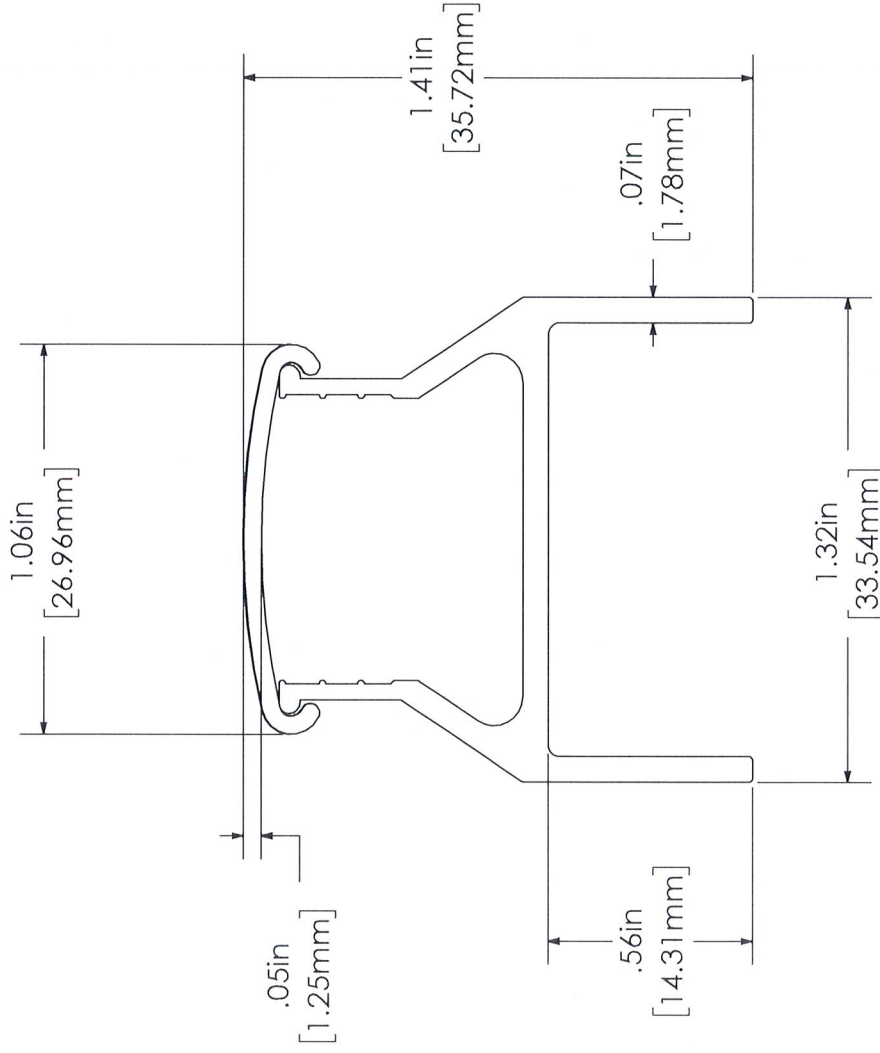
Rev 2

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Test sample complies with these details.  
Deviations are noted.

Report #: 10597396800-001A

Date: 11/04/24 Tech: C.C.



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Test sample complies with these details.  
Deviations are noted.

Report #: 105973968 C02-C01A

Date: 11/01/24 Tech: CC.

**REVISIONS**

REV.	DESCRIPTION	DATE	INITIALS

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DRAWN BY

CREATED 7/21/2021

MATERIAL

DIE NO.

ALL DIMENSION IN INCHES/MM

**DESCRIPTION**

5/8" Picket Bottom Rail

Part No.

Eng No. 0684AH

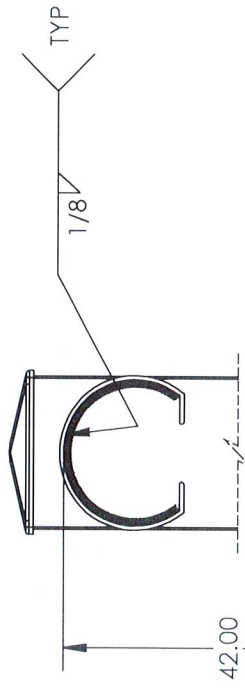
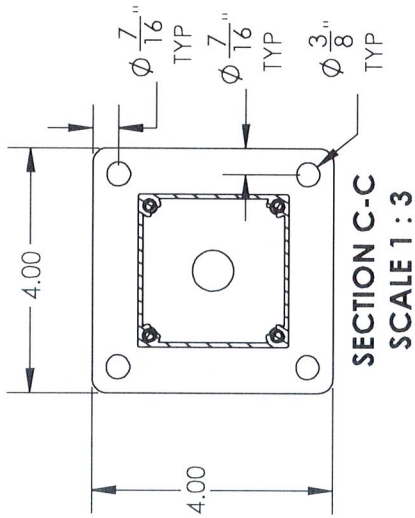
Weight

SHEET 1 OF 1

Rev

-

ITEM NO.	Eng No.	Part No.	DESCRIPTION	QTY.
1	0054PB	D000063	Baseplate 4"x 4" 2-1/2" Post	1
2	0078P	D000167	Post Cap Pyramid 2-1/2" (Inner)	1
3	0012P	D000506	Sleeve Round 1-1/4"	1
4	0071PD	D001471	2-1/2" Post Material 42-1/4"	1
5	0051PA	D000505	Sleeve Bottom Rail Welded 1"	1

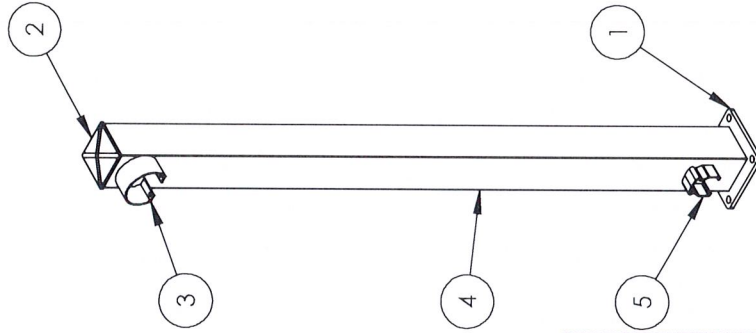


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Test sample complies with these details.  
Deviations are noted.

Report #: 105973968 C00-001A

Date: 11/04/24 Tech: C.C.



REV.	DESCRIPTION	DATE	INITIALS
1	WELD TABLE	11/15/18	CC

CenDek

Railings Ltd.

DRAWN BY	Admin
CREATED	10/18/2017
MATERIAL	6063-T5
DIE NO.	
ALL DIMENSION IN INCHES/MM	

**DESCRIPTION**  
2-1/2" End Post Round 42"

Part No. D000507	Eng No. 0863AB1
Weight 4.03 Lbs	SHEET 2 OF 2 Rev 1

REVISIONS

**TEST REPORT FOR CENDEK RAILINGS LTD.**

Report No.: 105973968COQ-001A

Date: 11/04/24

**SECTION 13**

**REVISION LOG**

REVISION #	DATE	PAGES	REVISION
0	11/04/24	N/A	Original Report Issue