Aluminium I-Plus Beams - Technical Datasheet

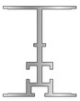
50mm I-Plus Rail

75mm I-Plus Rail

100mm I-Plus Rail

Wallbarn Aluminium I-Plus Beams are made from high grade extruded aluminium. They were designed by Wallbarn and made here in the United Kingdom. They are suited to both paving and decking applications and work seamlessly with our plastic and non-combustible pedestals.

PHYSICAL AND CHEMICAL PROPERTIES

	50mm	75mm	100mm
Profile			
Material	Aluminium 6063 T6	Aluminium 6063 T6	Aluminium 6063 T6
Weight	1.61kg/m	1.92kg/m	2.19kg/m
Height	50mm	75mm	100mm
Width	60mm	60mm	60mm
Length	3,600mm	3,600mm	3,600mm
Fire Classification	**Class A BS EN 13501-1 2018**		

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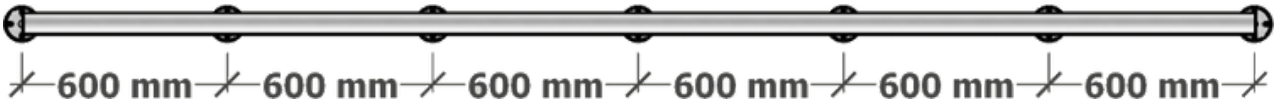
Recommended Pedestal Placement - I-Plus Rail

Wallbarn Aluminium I-Plus Rails/Joists are capable of longer spans. These products were independently tested for weight tolerance by testing organisation, Specialist Technical Services (U.K) Limited. (See Test : Appendix A)

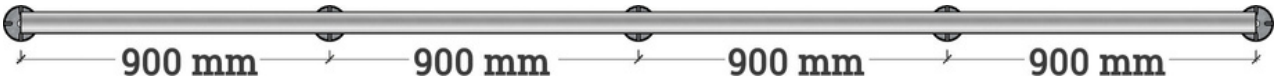
The testing was conducted in accordance with BS 8579:2020, using the test standard method BS 8527:2020, targeting a load resulting in a 5mm deflection. The recommended spacings provided ensure even distribution of the pedestals along the chosen rail, effectively distributing the weight and reducing point loading.

Rail/Joist Height	Recommended maximum distance between pedestals	STS UK Test - Maximum distance between pedestals
50mm	600mm	600mm
75mm	900mm	1,000mm
100mm	1,800mm	2,200mm

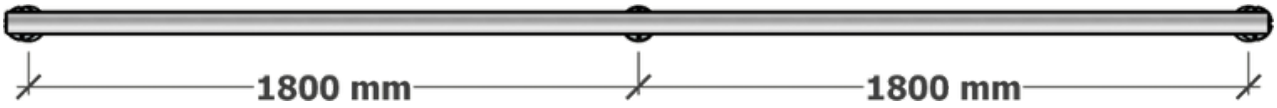
50mm Box Rail/Joist



75mm Box Rail/Joist



100mm Box Rail/Joist

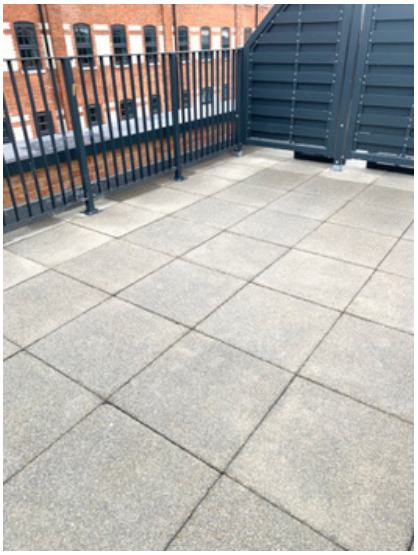


Load Testing - I-Plus Rail

Wallbarn Aluminium I-Plus Rails/Joists have been independently tested by Specialist Technical Services (U.K) Limited to determine destructive load possible. 2 metre lengths of each rail were clamped on each end and a vertical compressive load was applied to the centre. (See Test : Appendix B)

The table below displays the force applied and the corresponding deflection achieved prior to failure.

Test Product	STS UK Test - Load Obtained (kN)	STS UK Test - Maximum Displacement (mm)
50mm	4.08 (Approx. 415Kg)	44.96
75mm	6.58 (Approx. 670Kg)	32.65
100mm	8.10 (Approx. 825Kg)	27.86
1 Kilonewton (kN) is approximately equal to 101.9716213 kilograms		



Increasing Structural Integrity through Noggins

The use of noggins as part of Wallbarn's aluminium Box Rail and I-Plus Rail systems, significantly adds to their structural integrity and load-bearing capacity. By incorporating noggins at regular intervals, the rails have increased lateral stability and resistance to deflection under load. This added reinforcement is particularly important in applications where wider pedestal support spacings are required, ensuring a reliable decking or paving solution.

Independent testing has demonstrated the dramatic improvement achieved through the use of noggins, increasing the strength & stability by up to 40%.

Analysis One : 75mm I-Plus Rail

The 75mm I-Plus Rail, when tested as a single rail, supported a load of approximately 1.94kN at a 5mm deflection with a span of 1,300mm (See Appendix A).

When noggins were added between two 75mm I-Plus Rails at the same span, the load capacity increased significantly, recording 2.75kN at a 5mm deflection. This is an increase in strength of 41.75% (See Appendix C)

Appendix A Snapshot

TEST RESULTS:

Test Product	Load Achieved (kN)											
	100mm from Centre	200mm from Centre	300mm from Centre	400mm from Centre	500mm from Centre	600mm from Centre	700mm from Centre	800mm from Centre	900mm from Centre	1000mm from Centre	1100mm from Centre	1200mm from Centre
15mm Rail	2.04	2.08	2.01	1.13								
20mm Rail	2.02		2.03	1.98								
50mm Rail			2.10	1.54	1.43	1.40	1.28					
75mm Rail			2.26	2.03	2.01	1.97	1.90	1.88	1.78	1.28		
100mm Rail			2.02	2.05	2.05	2.05	2.05	2.02	2.00	2.05	2.02	1.90

Appendix C Snapshot

TEST RESULTS:

Product	Bearing Span (mm)	Load Achieved at 5mm Deflection (kN)
75mm Rail	1300	2.75

Increasing Structural Integrity through Noggins cont'd

Analysis Two : 100mm I-Plus Rail

The 100mm I-Plus Rail, when tested as a single rail, supported a load of 2.02kN at a 5mm deflection with a pedestal spacing of 2,200mm (See Appendix A).

Tested with the addition of noggins spaced at 1200mm intervals, with a greatly increased pedestal spacing of 3,100mm, the test recorded a load of 2.07kN to a 5mm deflection (See Appendix D).

This demonstrates the substantial improvement in structural performance provided by noggins, allowing for greater flexibility in design while maintaining strength and safety.

Appendix A Snapshot

TEST RESULTS:

Test Product	Load Achieved (kN)											
	100mm from Centre	200mm from Centre	300mm from Centre	400mm from Centre	500mm from Centre	600mm from Centre	700mm from Centre	800mm from Centre	900mm from Centre	1000mm from Centre	1100mm from Centre	1200mm from Centre
15mm Rail	2.04	2.08	2.01	1.13								
20mm Rail	2.02		2.03	1.98								
50mm Rail			2.10	1.54	1.43	1.40	1.28					
75mm Rail			2.26	2.03	2.01	1.97	1.90	1.88	1.78	1.28		
100mm Rail			2.02	2.05	2.05	2.05	2.05	2.02	2.00	2.05	2.02	1.90

Appendix D Snapshot

TEST RESULTS:

Tests	Load (kN) at 2700mm	Load (kN) at 3100mm	Classification
1	2.69	2.07	Pass

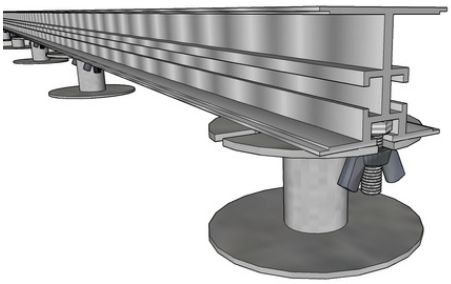
Wallbarn - Technical Datasheet

Compatible Pedestals & Components

[Mega Balance Non-Fire Rated Pedestal]

[Class A Joist Holder]

[Class A MetalPad Ex Pedestal]



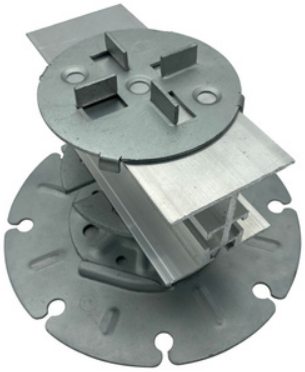
Connecting Brackets

[Stainless Steel Straight Brackets]

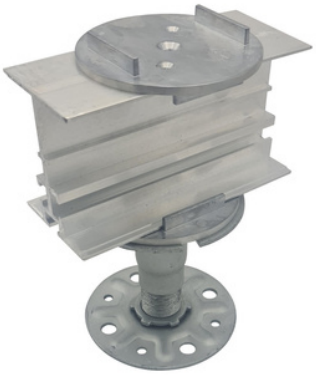
[Stainless Steel Right Angle Brackets]

Headpieces

[Paving Headpiece]



[Rail to Rail Headpiece]



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Appendix A

TEST CERTIFICATE

LOAD TESTING IN ACCORDANCE WITH BS 8579:2020

On Wallbarn Limited,
3 Hagley Court North, The Waterfront, Dudley, West Midlands, DY5 1XF

PROOF LOAD TESTING
STS LABORATORY

TEST DESCRIPTION: A weight tolerance test was conducted on various aluminium rails fitted to steel pedestals, increasing in 100mm spans from the centre of the rail. Testing was completed using a jack to apply a vertical compressive load centre to the product, to confirm structural performance. Loading results obtained were recorded at the limit of 5mm deflection. All testing was carried out in accordance with the client's specification.

REF NO.:	DR-5744	**DATE TESTED:**	15th May 2024
JOB NO.:	P10259	**CERTIFICATE DATE:**	24th May 2024
CERTIFICATE NO.:	IC11716	**SUPPLIER/SOURCE:**	Client

TEST DETAILS:

Product Tested:	Aluminium Rail with Steel Pedestal	Item Condition:	New
Target Loads:	5mm Deflection	Ambient Temperature:	18°C
Test Location:	STS Laboratory	Procedure or Method:	BS 8527:2020

TEST RESULTS:

Test Product	Load Achieved (kN)											
	100mm from Centre	200mm from Centre	300mm from Centre	400mm from Centre	500mm from Centre	600mm from Centre	700mm from Centre	800mm from Centre	900mm from Centre	1000mm from Centre	1100mm from Centre	1200mm from Centre
15mm Rail	2.04	2.08	2.01	1.13								
20mm Rail	2.02		2.03	1.98								
50mm Rail			2.10	1.54	1.43	1.40	1.28					
75mm Rail			2.26	2.03	2.01	1.97	1.90	1.88	1.78	1.28		
100mm Rail			2.02	2.05	2.05	2.05	2.05	2.02	2.00	2.05	2.02	1.90

ANALYSIS:
Testing was completed with each individual rail obtaining various loads before reaching 5mm deflection. The 15mm & 20mm rail reached a 400mm span before the maximum deflection was obtained, with the 100mm rail reaching a span of 1200mm from the centre, before obtaining maximum permissible deflection. All testing was completed within the BS 8572:2020.

For Specialist Technical Services (U.K) Limited			The results found on this Certificate relate only to the product[s] tested as described above This Test Certificate shall not be reproduced except in full
Approved By:	Andrew Gore		
Position:	Technical Director		
	Signature:		QC: TC001 – Test Certificate – v4.0 | Page 1 of 1

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Offices Located at: Chester | Ellesmere Port
Website: https://www.sts-group.co.uk

Appendix B

TEST CERTIFICATE

LOAD TESTING IN ACCORDANCE WITH THE CLIENT'S SPECIFICATION

On Wallbarn Limited,
3 Hagley Court North, The Waterfront, Dudley, West Midlands, DY5 1XF

PROOF LOAD TESTING
STS LABORATORY

TEST DESCRIPTION: A weight tolerance test was conducted on various aluminium rails to determine the destructive load obtainable. Testing was completed using a jack to apply a vertical compressive load centre to the product, to confirm structural performance and determine load failure limit. All testing was carried out in accordance with the client's specification.

REF NO.:	DR-5744	**DATE TESTED:**	15th May 2024
JOB NO.:	P10259	**CERTIFICATE DATE:**	24th May 2024
CERTIFICATE NO.:	IC11717	**SUPPLIER/SOURCE:**	Client

TEST DETAILS:

Product Tested:	Aluminium Rail	Item Condition:	New
Target Loads:	Failure	Ambient Temperature:	18°C
Test Location:	STS Laboratory	Procedure or Method:	Client's Specification

TEST RESULTS:

Test Product	Load Obtained (kN)	Maximum Displacement (mm)
15mm Rail	1.05	68.77
20mm Rail	1.06	65.87
25mm Rail	1.58	64.63
50mm Rail	4.08	44.96
75mm Rail	6.58	32.65
100mm Rail	8.10	27.86

ANALYSIS:
Testing was completed with each individual rail obtaining various loads before reaching failure. The 15mm rail obtained the lowest load (1.05kN) along with the highest displacement (68.77mm), with the 100mm obtaining the highest loading (8.10kN) along with the lowest recorded displacement (27.86mm). All testing was completed within the client's specification.

For Specialist Technical Services (U.K) Limited			The results found on this Certificate relate only to the product[s] tested as described above This Test Certificate shall not be reproduced except in full
Approved By:	Andrew Gore		
Position:	Technical Director		
	Signature:		QC: TC001 – Test Certificate – v4.0 | Page 1 of 1

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APPENDIX C:

TEST CERTIFICATE

LOAD TESTING IN ACCORDANCE WITH BS 8579:2020

On Wallbarn Limited,
3 Hagley Court North, The Waterfront, Dudley, West Midlands, DY5 1XF

PROOF LOAD TESTING
STS LABORATORY

TEST DESCRIPTION: A weight tolerance test was conducted on duel 75mm aluminium rails at 1300mm overall span. Testing was completed using a jack to apply a vertical compressive load centre to the product, to confirm structural performance. Loading results obtained were recorded at the limit of 5mm deflection. All testing was carried out in accordance with the client's specification.

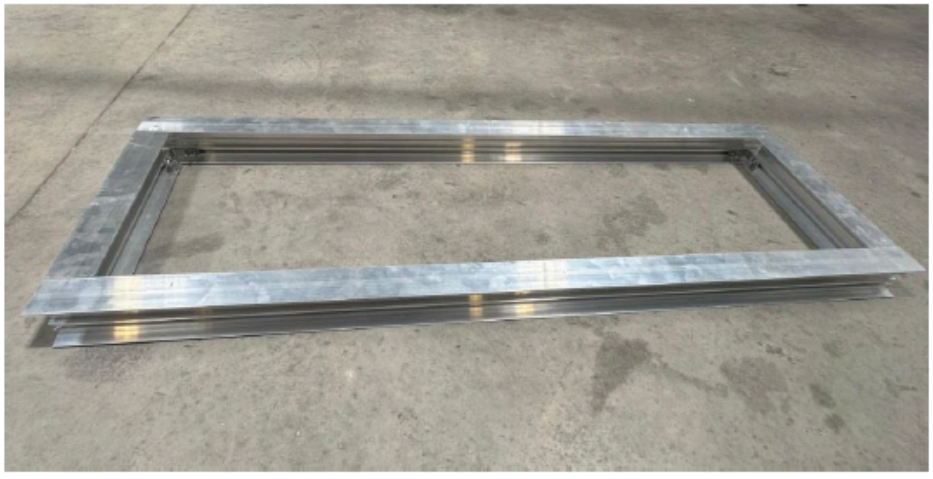
REF NO.:	DR-5744	**DATE TESTED:**	18th July 2024
JOB NO.:	P10259	**CERTIFICATE DATE:**	23rd July 2024
CERTIFICATE NO.:	IC11786	**SUPPLIER/SOURCE:**	Client

TEST DETAILS:

Product Tested:	Duel 75mm Aluminium Rail	Item Condition:	New
Target Loads:	5mm Deflection	Ambient Temperature:	19°C
Test Location:	STS Laboratory	Procedure or Method:	BS 8527:2020

TEST RESULTS:

Product	Bearing Span (mm)	Load Achieved at 5mm Deflection (kN)
75mm Rail	1300	2.75



ANALYSIS:
Testing was completed with the dual rail obtaining a load of 2.75kN per rail at a deflection of 5mm. All testing was completed within the BS 8572:2020.

For Specialist Technical Services (U.K) Limited			The results found on this Certificate relate only to the product[s] tested as described above This Test Certificate shall not be reproduced except in full
Approved By:	Andrew Gore		
Position:	Technical Director		
	Signature:		QC: TC001 – Test Certificate – v4.0 | Page 1 of 1

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APPENDIX D:

TEST CERTIFICATE

LOAD TESTING IN ACCORDANCE WITH BS 8579:2020

On Wallbarn Limited,
3 Hagley Court North, The Waterfront, Dudley, West Midlands, DY5 1XF

PROOF LOAD TESTING
STS LABORATORY

TEST DESCRIPTION: A weight tolerance test was conducted on an aluminium rail with steel pedestals at two different lengths apart one was 2700mm and the other 3100mm.Testing was completed using a jack to apply a vertical compressive load centre to the product, to confirm structural performance. Loading results obtained were recorded at the limit of 5mm deflection. All testing was carried out in accordance with the client's specification.

REF NO.:	DR-5838	**DATE TESTED:**	30th October 2024
JOB NO.:	P10305	**CERTIFICATE DATE:**	31st October 2024
CERTIFICATE NO.:	IC11898	**SUPPLIER/SOURCE:**	Client

TEST DETAILS:

Product Tested:	100mm Aluminium Rails with Steel Pedestal	Item Condition:	New
Target Loads:	5mm Deflection	Ambient Temperature:	18°C
Test Location:	STS Laboratory	Procedure or Method:	BS 8579:2020

TEST RESULTS:

Tests	Load (kN) at 2700mm	Load (kN) at 3100mm	Classification
1	2.69	2.07	Pass

ANALYSIS:
Testing was completed with both lengths achieving a deflection of 5mm while having a permanent deflection of 0.12mm for 2700mm and 0.46mm for 3100mm. All testing was completed within the BS 8579:2020.

For Specialist Technical Services (U.K) Limited			The results found on this Certificate relate only to the product[s] tested as described above This Test Certificate shall not be reproduced except in full
Approved By:	Andrew Gore		
Position:	Technical Director		
	Signature:		QC: TC001 – Test Certificate – v4.0 | Page 1 of 1

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