TESMEC
Independent Testing & Engineering Services Ltd

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Sedgley Road West, Tipton, West midlands
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TESMEC LTD

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Load survey of: Fabricated aluminium scaffold stair case

TEST REPORT NUMBER TES000251TR-1

VR Access solutions Ltd | Load study of aluminium stair case| April 26, 2017

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Load survey of: Fabricated aluminium scaffold stair case

Document number: *TES000251TR-1*
Client: *VR Access Solutions*
1 Swan Court Yard
Charles Edwards Road
Birmingham
B26 1BU

Item description: 2 number fabricated aluminium scaffold stair cases comprising of 10 number treads bolted to 2 number aluminium extruded stringers, terminating at top and bottom of each stringer via profiled steel scaffold tube acceptance hooks with locking claw.
Tread size: 180mm x 740mm extruded aluminium secured to stringers via angle cleats and fixings
Stringer size: 80mm x 30mm extruded aluminium rectangular hollow section 2600mm long
.
Identification mark affixed to item: *None applicable.*

Quantity submitted for test: 2

Client submitted drawing numbers: *N/A*

Client design review Ref: *internal review of findings by client*

Testing Machine:
2000kg calibrated tensile load cell, 20kg hand weights
Transducer WS10, serial number WS1617498521, calibrated by AML UKAS traceable.

Client testing requirements: *Applied load displacement survey in accordance with client's instruction*

Number of pages in this report:

Test conducted at: *TESMEC Limited*
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The data collated and compiled in this document is solely for client design review or technical analysis by client or others and if/ where required has been collated in accordance with client or client representative's requests.

The testing and collated data herein does not mean that the product complies with the standards or associated accompanying standards as further testing or technical analysis may be required.

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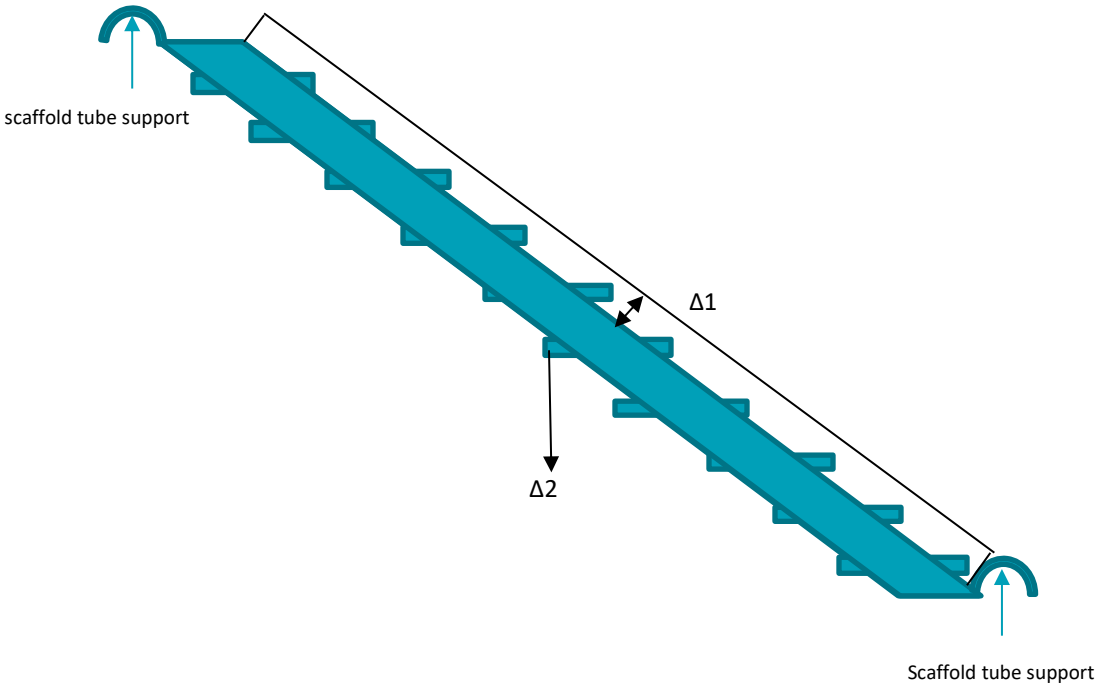
1.0. Introduction

1.1. The client VR requested a load ag Access solutions submitted 2 number aluminium scaffold stair cases for load displacement survey in accordance with their submitted requirements.

Sample 1: The client requested incremental load to each tread at 20kg increments through to a total tread load of 140kg, total applied load to stair case 1400kg. A holding time of 1 hour was adopted and displacements Δ1 & Δ2 (see schematic 1.2) reviewed and recorded. The test load was then removed and displacements checked for permanent set.
A bolt check was conducted post load to ensure the tread fixings were secure following load application.

Sample 2: Following the initial requested test application the second stair case was subject to the following load application.
first, middle and upper tread loaded at 20kg increments through to a total tread load of 220kg
total load applied 660kg.
A holding time of 1 hour was adopted and displacements Δ1 & Δ2 (see schematic 1.2.1) reviewed and recorded. The test load was then removed and displacements checked for permanent set.
A bolt check was conducted post load to ensure the tread fixings were secure following load application.

1.2. Sample 1 schematic



Δ1 monitoring stringer displacement, Δ2 monitoring geometric center vertical displacement

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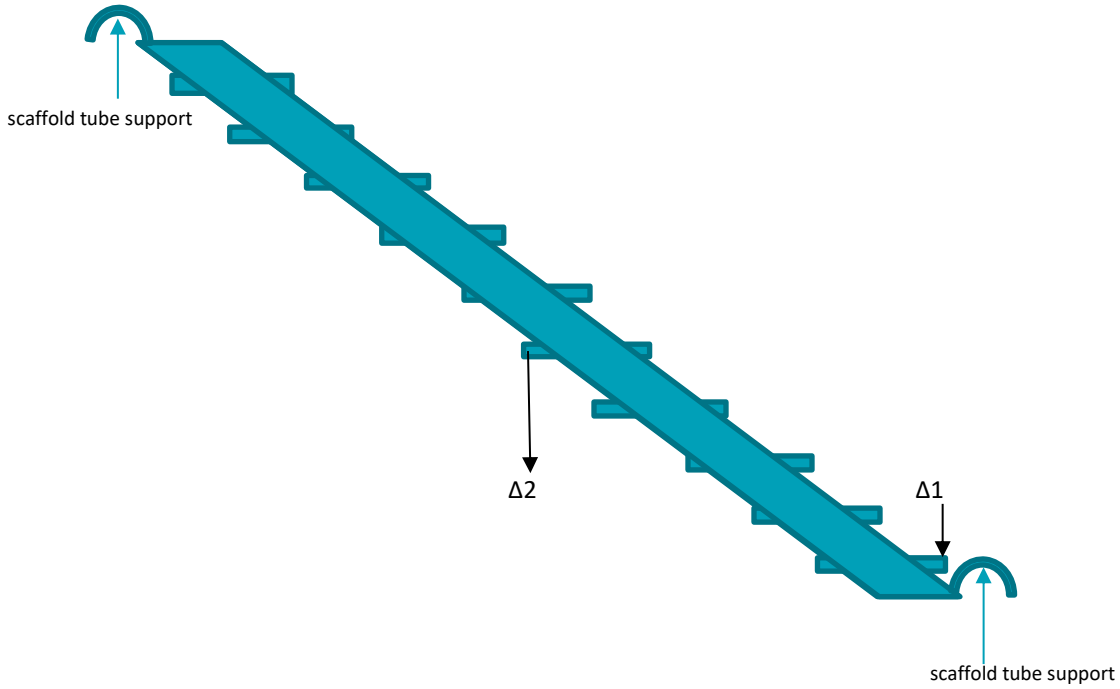
1.2.1 Sample 2 schematic



Δ1 monitoring central tread displacement, Δ2 monitoring geometric center vertical displacement

2.0. Sample 1 test data

2.1. load displacement table

Applied load per tread kg	Total stair case load kg	Displacement Δ1 mm	Displacement Δ2 mm
0	0	0	0
20	200	5.37	4.23
40	400	10.1	8.01
60	600	16.12	11.52
80	800	19.65	14.95
100	1000	22.48	18.15
120	1200	26.77	21.28
140	1400	32.12	24.8
140 post 1 hour	1400	32.51	24.98
0	0	1.06	1.26

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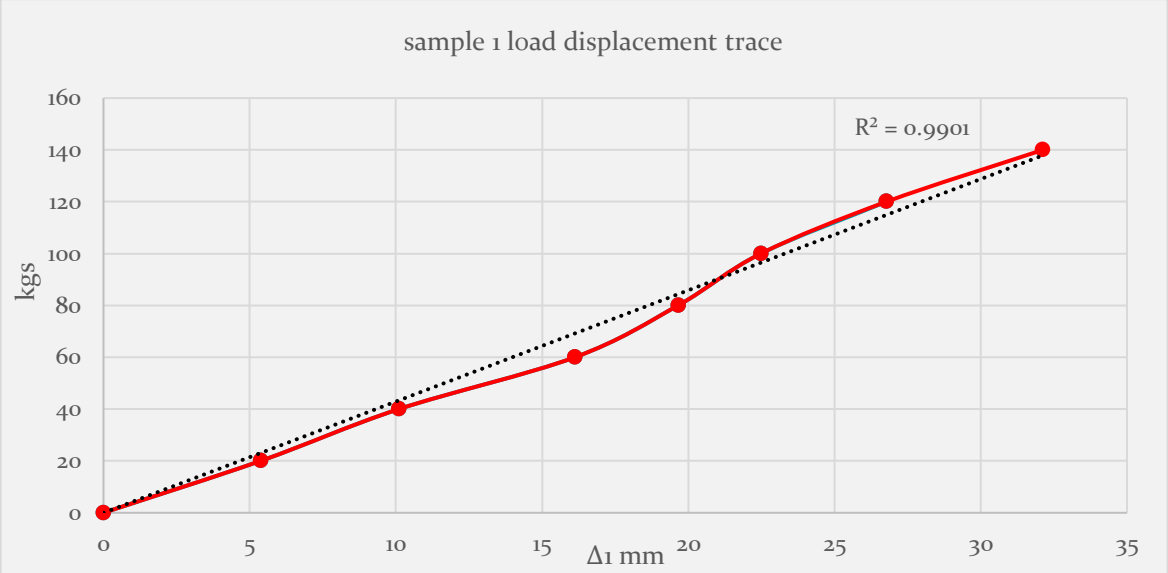
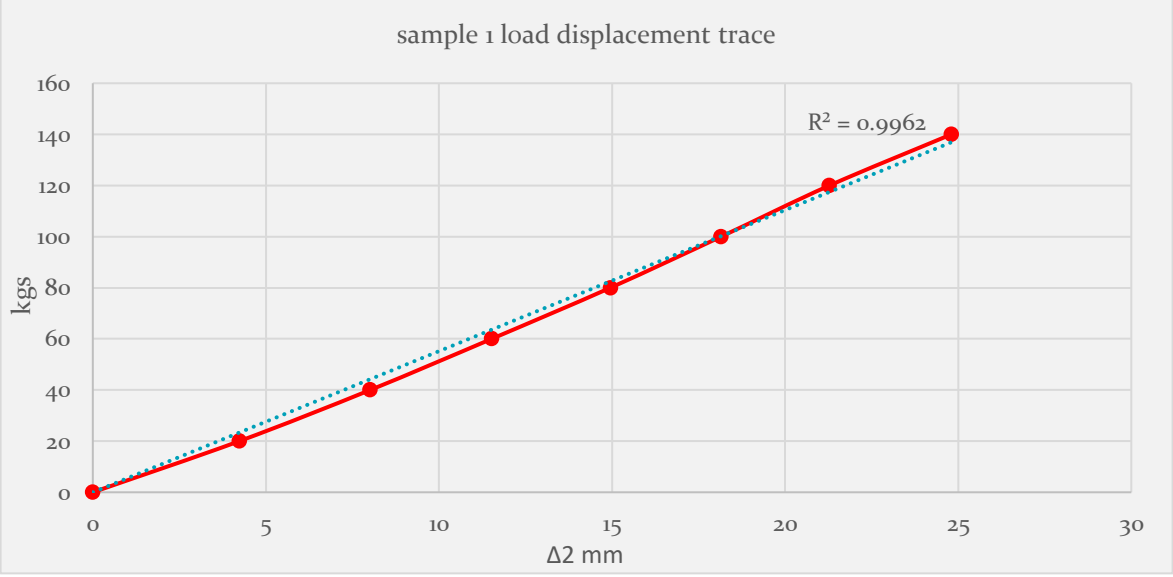
2.2. load displacement graph per tread

Sample graph shown at Δ1



Sample graph shown at Δ2



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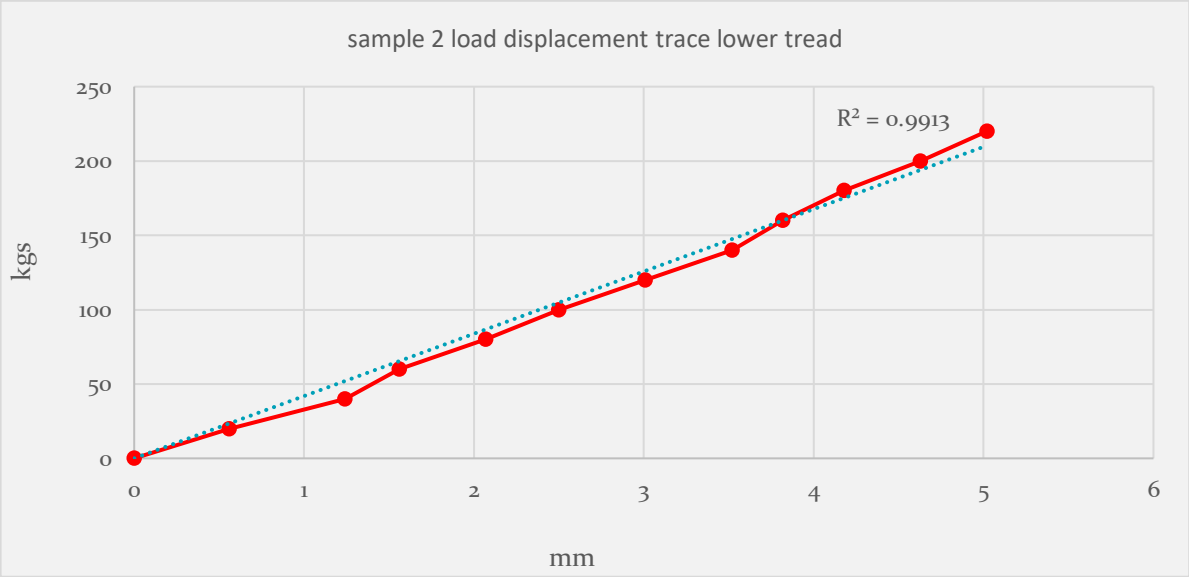
3.0. Sample 2 test data

3.1. load displacement table

Applied load per tread kg	Total stair case load kg	Displacement Δ1 mm	Displacement Δ2 mm
20	60	0.56	1.11
40	120	1.24	2.34
60	180	1.56	3.59
80	240	2.07	4.76
100	300	2.5	5.54
120	360	3.01	6.32
140	420	3.52	7.02
160	480	3.82	7.86
180	540	4.18	8.84
200	600	4.63	9.87
220	660	5.02	10.89
Post 1 hour	660	5.03	10.9
0	0	0.07	0.12

3.2. Bottom tread trace Δ1 total applied load on tread



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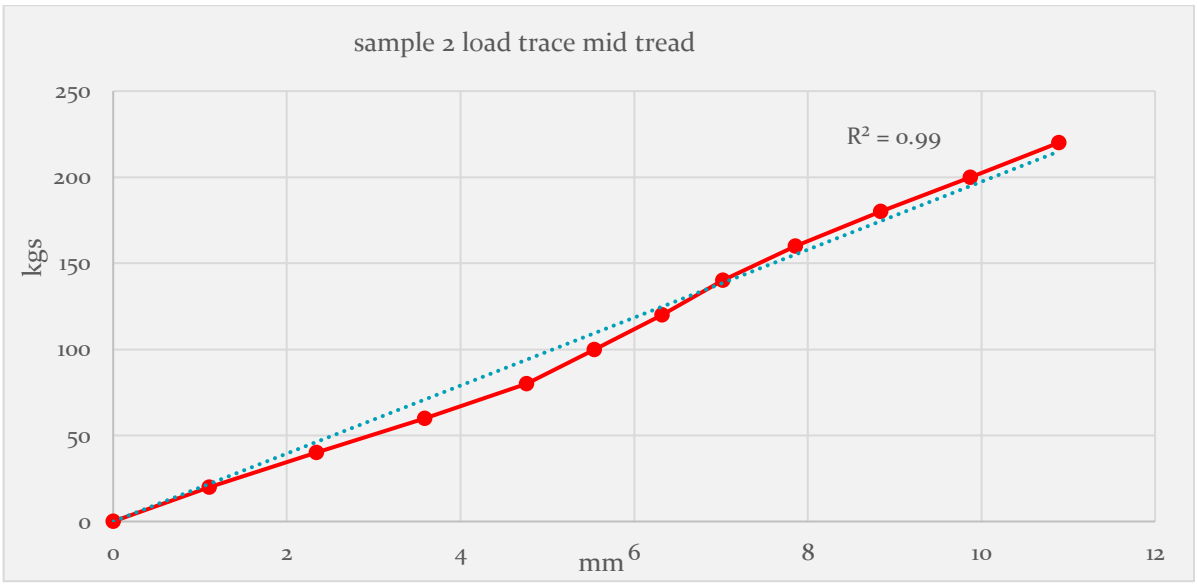
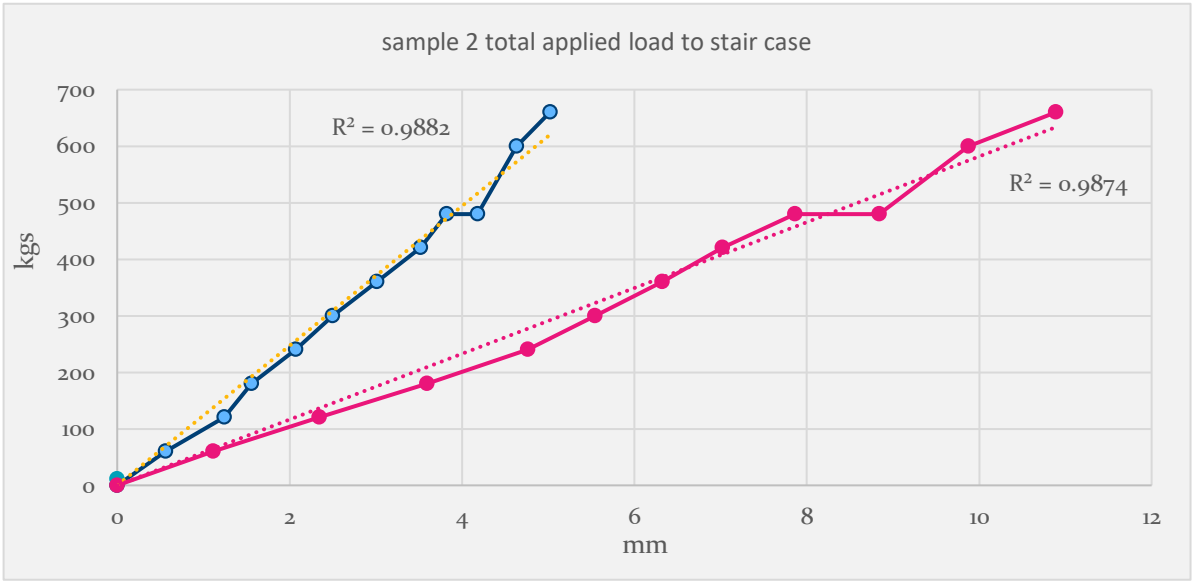
3.2.1. Central tread trace Δ2 total applied load on tread



Sample 2 total applied load trace: lower tread —— central tread ——



Post load visual examination

Following the requested load applications, no looseness of tread fixings was evident.

No failure, fracture or separation of any part of the assembly was evident post load application.

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APPENDIX A

END OF REPORT TES000251TR-1

Testing conducted by: Mr. S J Rogers & Mr. A Farmer

Report authorized by : Mr. S J Rogers On behalf of TESMEC Limited

Date of report: 26th April 2017

Testing conducted for VR Access solutions Ltd

Total number of pages in this report: 8 inclusive of appendix A

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