

TEST REPORT



TEST REPORT SERIAL NUMBER

257092

DATE OF ISSUE

02/11/2015

Customer

VR Access Solutions Ltd
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Charles Edward Road
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Document Title

Testing survey of VR Access Solution extendable loading gate
Applied loads in accordance with BSEN 12811-1 and guidance
from BSEN 13374: 2013
Additional testing as per witness instruction.



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1) Test Objective.

The client requested a load survey upon free issue aluminium loading extendable gate. Loads were applied as per witness instruction, loads adopted from BSEN 12811-1:2003 (E) section 6.2.5.1 & 6.2.5.2, deflection criteria obtained from section 6.3.2 & 6.3.3. Partial safety factors obtained from section 10.3.2.1 & 10.3.2.2.
 $\gamma_F = 1.5$ & $\gamma_M = 1.1$. Additional applications applied with guidance from BSEN 13374:2013 and witness instructions.

2) Name of Test house

Lloyds British Testing Ltd
Unit 1 Kings Hill Business Park
Darlaston Road
Wednesbury
WS10 7SH

3) Accreditation Reference

ISO 9001:2008

4) Date of Test:

02/11/2015

5) Witness Details.

Mr D McGrath VR Access Solutions Ltd,
Mr I Hale S-Mech Ltd

6) Description of Item Tested.

VR Access Solutions Aluminium extendable loading gate.
Gates erected to simulate use as intended at overall span of 3700mm to supports. Extension set at 1400mm from fully closed position, fixed gate side consists of approximately 2100mm aluminium fabrication with 2 number vertical intermediates welded at 700mm centres to upper and lower rail to form 3 infill bays. Extension fabricated from tubular section inserted into the upper, lower and intermediate fixed rails with mesh infill secured by cable ties manufactured by Hellermann Tyton; part number T120IPRN.F0999 once extended into position. Mesh infill construction 50x50mm.

7) Test Type

Upper hand rail deflection test. Mesh infill deflection test. Accidental downward force test, partial safety factored test in accordance with the relevant sections of BSEN12811-1:2003 (E).
load and displacement using BSEN 13374:2103 temporary edge protection for guidance.



Additional pendulum impact test as per witness instruction. Ultimate failure test to mesh infill and upper rail. Note: the system was fixed from pivoting throughout testing.

8) Equipment & Calibration

- Calibrated tensile load cell.
- Calibrated 1000mm rule.
- Calibrated test mass.
- Scaffold structure to suit the requirements of the free issue loading gate.
- 50kgs sand bag approx. 400mm in diameter.

9) Test data.

Test 9.1.1

Displacement test applied to extension infill.

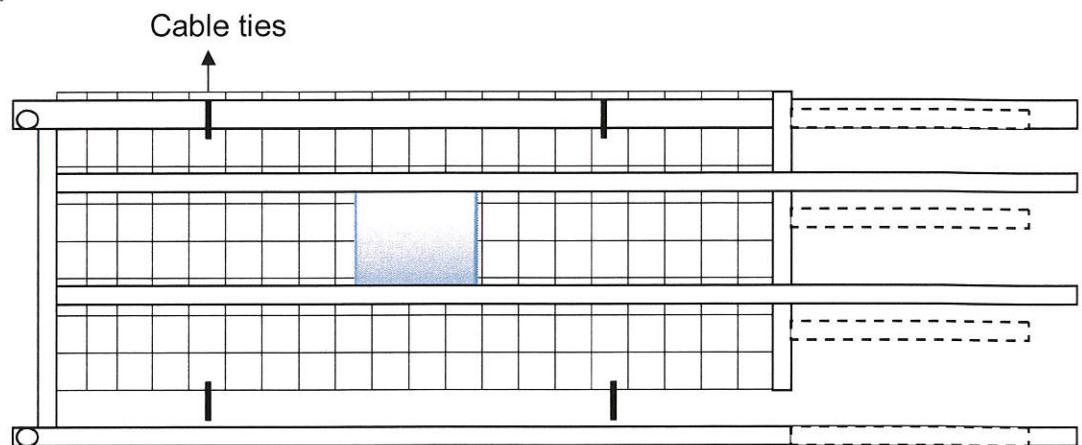
A 300mm² pushing plate was installed at the geometric centre of the 50x50mm infill panel to give the most onerous displacement readings.

BSEN 12811-1 section 6.3.3 states a maximum displacement value of 100mm when a horizontal load is applied to the grid or fencing structure with reference to its supports.

Load application taken from section 6.2.5.2 horizontal loading.

All components of the protection shall be designed to resist a horizontal point load of 0.3kN distributed over a maximum area of 300mm x 300mm.

Figure 1.



Δ^1 displacement at geometric centre with a 0.3kN load = 7.55mm

The recorded displacement was less than the maximum value stated in section 6.3.3.

For record interest the load was increased incrementally up to but not exceeding

1.78kn but still did not exceed the maximum allowable deflection stated in section 6.3.3 of 100mm and had not left permanent deformation.



Test 9.1.2:

Principal upper guard rail deflection test.

A point load of 0.3kN was applied to the upper guard rail at the centre of the span to give the most onerous deflection result.

Section 6.3.2. of BSEN12811-1:2003 gives an elastic deflection limit of 35mm not to be exceeded when subject to the 0.3kN force.

The recorded deflection at the centre of the principal guard rail at a force of 0.3kN was 13mm. The top rail was increased in load until the maximum permissible deflection was achieved. 35mm was set at 0.68kN and once the load was released, no visible or permanent deformation was visible.

Test 9.1.3.

Downward loading.

Section 6.2.5.1 BSEN12811-1

Any principal guard rail shall be capable of resisting a point load of 1.25kN applied at the most unfavourable position in a downward direction within a sector of $\pm 10^\circ$ from the vertical.

The principal guard rail sustained the downward force applied without any evidence of visual failure to any system component.

Test 9.1.4.

Lower rail deflection test.

The lower rail was subject to a horizontal force of 0.2kN at the centre span to give the most onerous deflections.

The recorded deflection at the centre of the lower guard rail at a force of 0.2kN was 14mm.

The 0.2kN required force was then increased by a 1.1 and 1.5 factor to give a 0.33kN force.

The deflection recorded at 0.33kN was 27mm with no visual evidence of any part of the system showing post load defects.



Test 9.1.5

Additional requested pendulum impact test. (not covered in the BSEN 12811-1 publication.)

The attending witnesses requested a pendulum impact test to be applied to the extendable mesh infill panel to represent an object falling/rolling towards it.

The impact area was applied approximately 100mm below the geometric centre of the infill panel.



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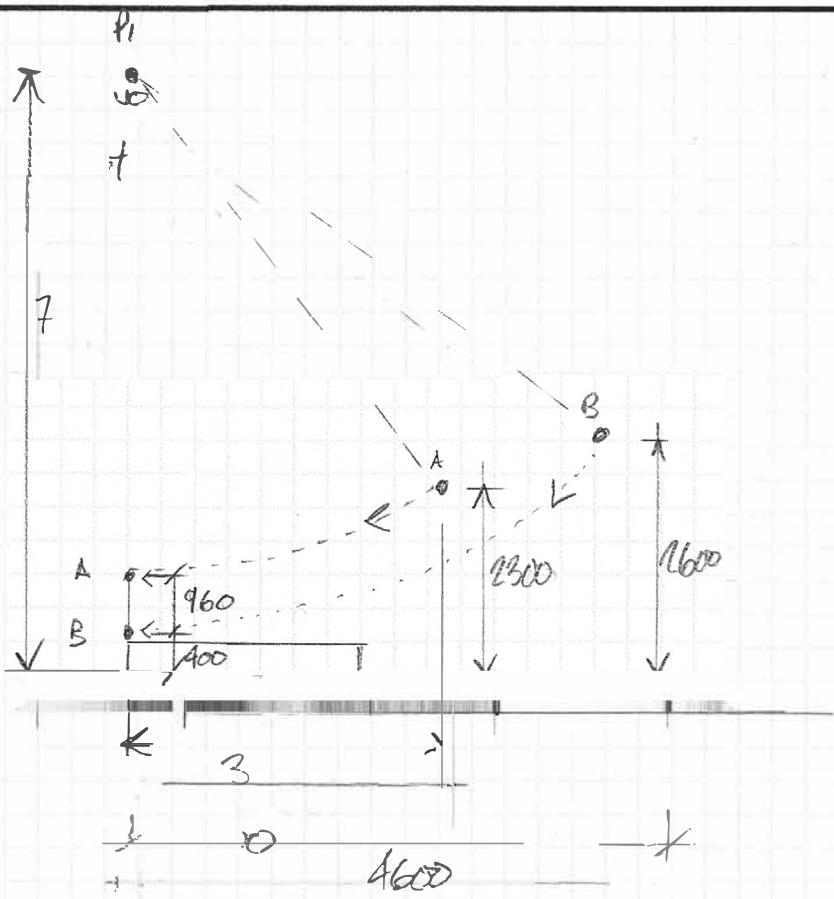
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S-Mech
Ltd.

Sheet 1/1



FALL GEOMETRY (SECTION)

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The sample withstood the impact without ultimate failure occurring, arresting the test mass at impact point.

The samples subject to testing in accordance with the sections stated from BSEN12811-1 satisfied the load and deflection criteria.

No visual evidence of system failure was recorded.

The sample subject to the additional requested pendulum test sustained and arrested the impact mass of 50kgs.

The sections applicable in BSEN 13374:2013 cross referenced for additional guidance allows a deflection of 55mm at a horizontal static force of 0.3kN (300N) for principal rails and intermediates. Toe boards shall be subject to a 0.2kN (200N) force.

Class A temporary edge protection provides resistance to static loads only, based upon the requirements to.

- Support a person leaning on the protection or provide a handhold when walking beside it; and
- Collectively stop a person who is walking or falling towards the protection

The inclination of edge protection for Class A shall not deviate from the perpendicular to the working surface by more than 15° outwards or inwards.

The advice published in Annex A recommends that Class A may be used if the angle of the working surface is less than 10°.

However the standard states that it does not apply to side protection on scaffolds according to BSEN 12811-1.

In accordance with BSEN13374:2013 analysis of actual test results conducted would require calculated verification if the system were to comply with the code.

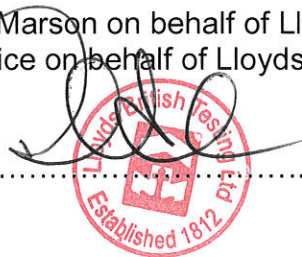
The references stated are only consulted for test guidance.

All test conducted as per client requests.

All data collated to be reviewed in accordance with relative and applicable additional standards and calculations.

Testing conducted by Mr D P Marson on behalf of Lloyds British Testing Ltd
Mr T Price on behalf of Lloyds British Testing Ltd

Signed Mr R G McFarlane Site Service Manager



DIFFUSION
Safety & Rescue Awareness

CLASS #1
N74
05/16

