

TEST REPORT

TEST REPORT SERIAL NUMBER

267116

DATE OF ISSUE

30/06/2016

Customer

Apollo Scaffold Services
428 Carlton Road
Carlton, Barnsley
South Yorkshire

Document Title

Testing Survey of Apollo Scaffold Services:
Loading Bay Arms & Gate.
Loading Bay Arms with Tube & Fitting Gate with Plastic Brick Guards.
Ladder Access 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 various loading bay gates
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 4e Cornish Way
Barbot Hall Industrial Estate
Parkgate
Rotherham
S62 6EG

3) Accreditation Reference

ISO 9001:2008

4) Date of Test

30/06/16

5) Clients Present

John Beck Apollo Scaffold Services
Kieron Ellison Apollo Scaffold Services

6) Description of Item Tested

Loading bay gate as per Drawing number SS0040
Gate support arms as per Drawing number SS0041
Loading bay gate Tube fitting as per Drawing number SS0043
Access Gate as per Drawing number SS0042

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. The gate was locked down with the pivot lock arm with an extra rail fitted above the top handrail to catch the locking arm.

8) Equipment & Calibration

Calibrated tensile load cell.

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 welded mesh panel.

A 300mm² pushing plate was installed at the geometric centre of the plastic brick guard, 1" x 1" mesh 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.

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. (test not covered in the BSEN 12811-1 publication.)

The attending witnesses requested a pendulum impact test to be applied to the fix mesh panel, Plastic Brick Guard, and the Fixed Weld Mesh Ladder Gate, to represent an object falling/rolling towards it.

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

The samples 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 samples 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 S England on behalf of Lloyds British Testing Ltd.

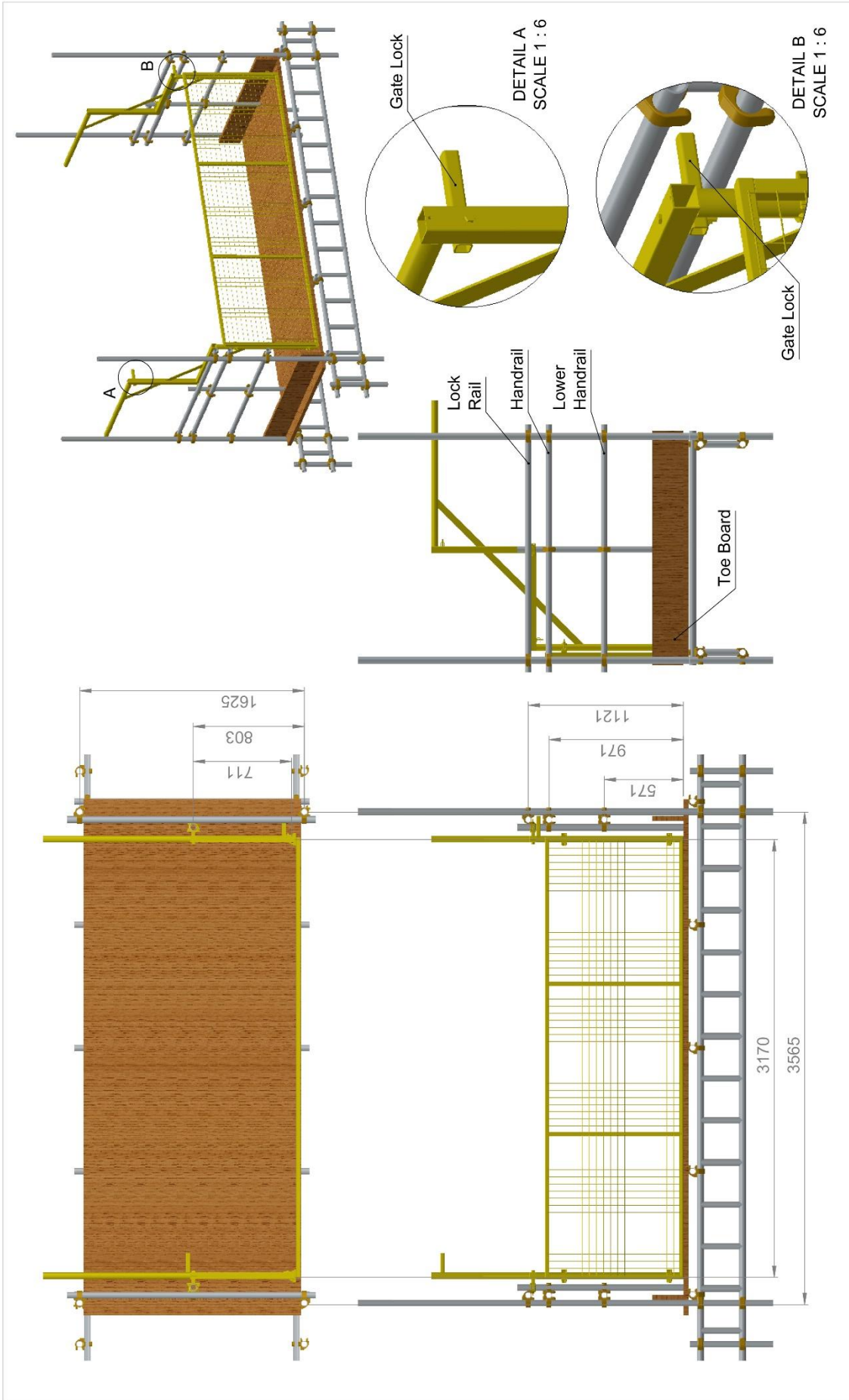
10) Digital images



Fixed Gate – Drawing Number: SS0041 & SS0040



Tube & Fitting Gate – Drawing Number: SS0041 & SS0043



Notes	Drawn By	N. White	Date	28/07/16	DO NOT SCALE DRAWING  Apollo Cradles Ltd. 428 Carlton Road Carlton Barnsley S71 3HK T: 01226 700 079 F: 01226 727 108 www.apollocradles.com	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN MILLIMETRES		Title	
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	Rev.		Date				Dwg No.	SS043	SCALE: 1:25
							SHEET 1 OF 1		A3



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Ladder Access Gate – Drawing Number: SS0042

Signed Mr. S Knight

Engineering Service Manager