25.10.18

Building Act 1993
Section 238(1)(a)
Building Regulations 2018
Regulation 126

CERTIFICATE OF COMPLIANCE FOR PROPOSED BUILDING WORK

This certificate is issued to Victorian Building Authority

Postal address 733 Bourke St, Docklands VIC

Postcode 3008

Email customerservice@vba.vic.gov.au

This certificate is issued in relation to the proposed building work at:

Address Unit H72, 63 - 85 Turner Street, Port Melbourne VIC

Postcode 3207

Nature of proposed building work

Design certification for 2.4m(W) x 1.2m(D) x 1m(H) aluminium *Global Truss Stage 12 Platform* unit.

Building classification

Part of building:	BCA Classification:
N/A	10(b)

Prescribed class of building work for which this certificate is issued:

- Structural design relating to stage loading capacity;
- Review of Structural Design Certificate, Issued By: Scott Tech Consulting (December 2009);
- Review of University of Sydney loading test report (December 2009).

Documents setting out the design that is certified by this certificate

Document no.	Document date	Type of document (e.g. drawings, computations, specifications, calculations etc.)	Number of pages	Prepared by
1	Dec 2009	Structural Design Certificate	3	Scott Tech Consulting
2	Dec 2009	Test Report	20	University of Sydney

EVENT ENGINEERING
17-19 O'Connor St Chippendale
NSW 2008 Australia
02 9690 1734

JOB NO.: EE18 511 **REV.:** A

25.10.18

Design Limitations & Requirements

1. **Maximum Loading:** 5kPa Working load (or 7.5kPa Ultimate);
2. **Minimum Ballast:** To be assessed if used externally;
3. **Catenary Loading:** No catenaries to be fixed to stage;
4. **Bearing Capacity:** Minimum bearing capacity shall be 100kPa;
5. **Spreader Plates:** To be provided beneath all structural support struts;
6. **Workshop Drawings:** Shall be submitted for engineer's written approval prior to any additional fabrication or further modifications.

The design certified by this certificate complies with the following provisions of Building Act 1993, Building Regulations 2018 or National Construction Code

Act, Regulation or NCC	Section, Regulation, Part, Performance Requirement or other provision
ABCB:2015	Temporary Structures Standard
AS1170.0:2002	General principles
AS1170.1:2002	Permanent, imposed and other actions
AS1664.1:1997	Aluminium structures
AS4100:1998	Steel structures
IStructE:2017	Temporary demountable structures.

I certify that the design set out in the documents listed above complies with the provisions set out above.

I believe that I hold the required skills, experience and knowledge to issue this certificate and can demonstrate this if requested to do so.

Engineer

Name: Morgan Sheehy
Address: 17-19 O'Connor St, Chippendale NSW 2008
Email: morgan@eventengineering.com.au
Building practitioner registration category and class: EC
Building practitioner registration no.: 41049
Date of issue of certificate: 25.10.18

Signature

Morgan Sheehy
MEng (Hons I) Tech Cert Eng (Civil)
MIEAust CPEng NER APEC Engineer IntPE(Aus)
RPEQ RBP Victoria EC 41049 (Civil Engineer)
SENIOR ENGINEER

EVENT ENGINEERING
17-19 O'Connor St Chippendale
NSW 2008 Australia
02 9690 1734

JOB NO.: EE18 511 **REV.:** A

SCOTT TECH CONSULTING
CONSULTING STRUCTURAL AND CIVIL ENGINEERS

16 December 2009
Ref: ST0511

Design Quintessence
Attention: Ian Wood
Unit 25
7-9 Percy Street
AUBURN NSW 2144

RE: LOADING CAPACITY FOR GLOBAL TRUSS STAGE12 PLATFORM

We have previously assessed the above platform and certified the platform to have a capacity of 5.0kPa UDL. Since this certificate was issued, Design Quintessence has had the platform tested by the University of Sydney and the results recorded in report No T673.

Under Section 8 Testing in AS1664.1:1997 a prototype can be tested and certified provided the prototype conforms to

a) Acceptance for strength
b) Acceptance for Serviceability.

In the unit tested by the University of Sydney, a set of point loads were applied to the timber decking to simulate an uniform distributed load over the decking. The load was applied at a stroke rate of 1mm per minute.

See Design Quintessence Drawing No 407-145 for testing, typical graphics and stage geometry.

Strength

Under AS1664.1:1997, the structure must be able to hold the ultimate load for 5 minutes without failure.

Based on the results presented, the maximum test load that the structure maintained for 5 minutes without failure was 32kN. After applying the factors of safety and taking into account the area of the platform, this load is equivalent to a UDL of 7.5kPa.

Serviceability

AS1664.1:1997 requires that the structure conform to serviceability requirements for this type of structure under the maximum load.
After applying the factors of safety (from AS1664.1) and applying the long term load factors from AS1170, the expected deflections based on the test results would provide a span / deflection ratio greater than 250.

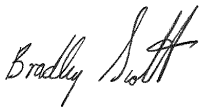
This certification relates to the platform as tested by the University of Sydney. The platform was tested with 1.05m high legs.

Summary

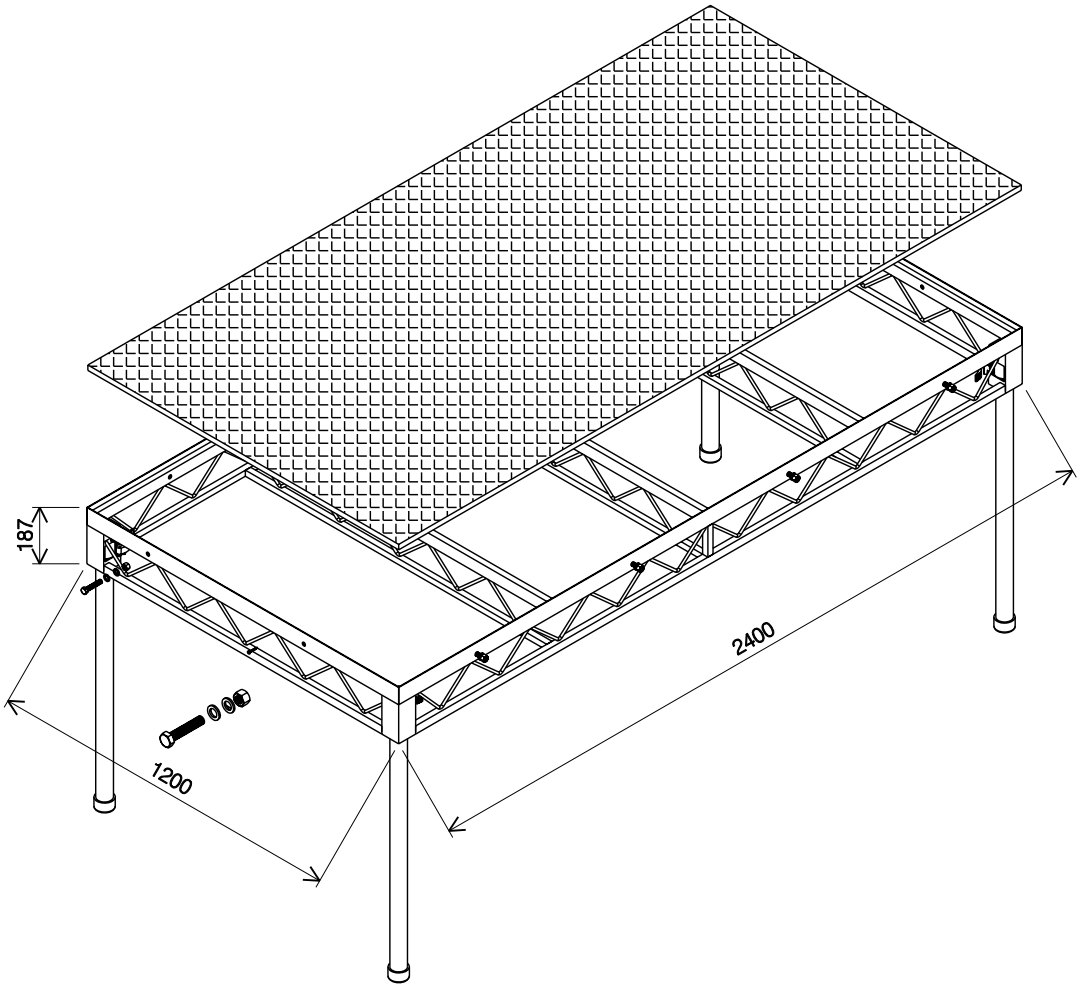
The platform as tested by the University of Sydney, with a leg height of 1.05m and a platform dimension of 1.2m x 2.4m, with the decking as tested can withstand an ultimate load of 7.5kPa.

The platform should not have any horizontal loads applied to it unless it is adequately braced for sway and should be placed on an even surface to ensure all legs have adequate bearing.

Yours faithfully



Bradley Scott
BE(Hons) MIE(Aust) CPEng NPER



ISOMETRIC DRAWING OF PERFORMER STAGE AS TESTED BY THE SCHOOL OF CIVIL ENGINEERING, UNIVERSITY OF SYDNEY - TEST No. T673

FIGURE 6. TEST ARRANGEMENT FOR GLOBAL TRUSS PERFORMER STAGE

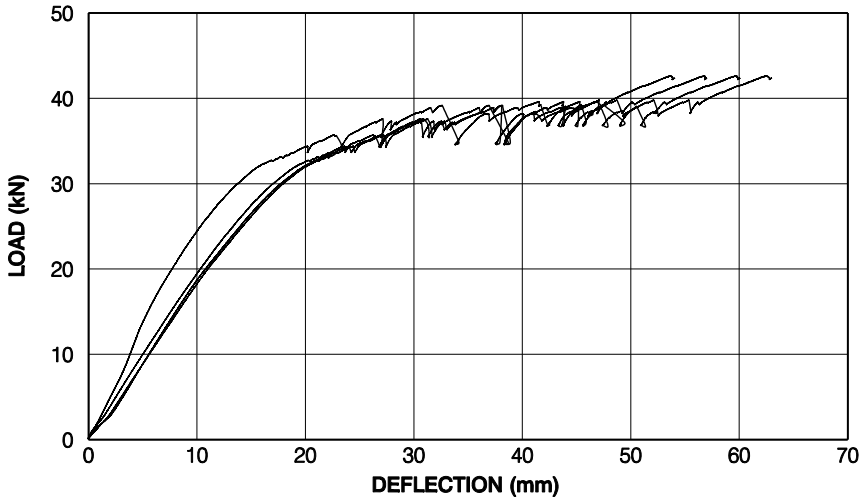


FIGURE 17. TOTAL LOAD-DEFLECTION CURVES FOR GLOBAL TRUSS PERFORMER STAGE

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DESIGN QUINTESSENCE PTY LTD
UNIT 25, 7-9 PERCY STREET
AUBURN NSW 2144
TEL (02) 9649 2266
FAX (02) 9649 2200

CLIENT: -

DRAWING: **PERFORMER STAGE TEST**

SCALE N/A

DRAWN: 12/12/07

DRAWING No.: **407/145**

DRAFT

University of Sydney

School of Civil Engineering

Centre for Advanced Structural Engineering

TESTING OF TRUSS AND TWO STAGES UNDER UNIFORM AND POINT LOADS

Test Record No T673

December 2009

1 INTRODUCTION

A request was made by Design Quintessence Pty Ltd to load test a truss and two stages. The tests were performed in the Laboratory for Structures and Materials Testing in the School of Civil Engineering at the University of Sydney. The work described in this report was performed under job number CASEy09j032.

2 TEST SPECIMENS

All test specimens were supplied by Design Quintessence Pty Ltd.

The first specimen tested is known as a Global Truss F34 Square Truss and this is shown in Figure 1. The specimen supplied had dimensions 240 mm × 240 mm and a length of 4.5 m.

The second specimen tested is known as a Concertina Stage and this is shown in Figure 2. The specimen supplied had dimensions 1 m × 1 m and a height of 600 mm.

The third specimen tested is known as a Global Truss Performer Stage and this is shown in Figure 3. The specimen supplied had dimensions 2.4 m × 1.2 m and a height of 1,050 mm.

3 TEST ARRANGEMENT

All specimens were subjected to a number of vertical point loads. One test was performed on each specimen.

The Global Truss F34 Square Truss is shown in Figure 4. Eight equally spaced point loads @ 500 mm were applied on the truss to simulate a uniformaly distributed load. The span length of the truss between the supports was 4.34 m.

The Concertina Stage is shown in Figure 5. Four point loads were applied on the top of the stage at a distance of 260 mm from each corner.

The Global Truss Performer Stage is shown in Figure 6. Two rows of four equally spaced point loads @ 600 mm were applied on the top of the stage at a distance of 300 mm from each edge.

4 TEST PROCEDURE

The load was applied at a stroke rate of 1 mm per minute. The total load applied by the point loads and deflection at determined points on the specimens was recorded until failure occurred.

The Global Truss F34 Square Truss during testing is shown in Figure 7.

The Concertina Stage during testing is shown in Figure 8.

The Global Truss Performer Stage during testing is shown in Figure 9.

5 FAILURE MODES

The Global Truss F34 Square Truss failed by local bearing failure of the top chord and member buckling, as shown in Figures 10 and 11. No failure was observed in the welds between the large tubes and small tubes.

The Concertina Stage failed in two modes, as shown in Figure 12. The first mode, which occurred first, involved member buckling of the tubular legs. The second mode involved failure of the timber platform at the edges.

The Global Truss Performer Stage had three modes of failure, as shown in Figures 13 and 14. The first two modes involved failure of the welds beneath the platform and at the corners, as shown in Figure 13. The third mode involved failure of the timber platform, as shown in Figure 14. No failure was observed in the four tubular legs.

6 ULTIMATE LOADS

For the Global Truss F34 Square Truss, Figure 15 shows the total load-deflection curve at midspan. The ultimate total applied load recorded during the test was 58.5 kN.

For the Concertina Stage, Figure 16 shows the total load-deflection curve under the location of each point load. Although the ultimate total applied load recorded during the test was 26.9 kN, member buckling of one tubular leg was observed at 12.7 kN.

For the Global Truss Performer Stage, Figure 17 shows the total load-deflection curve at the location between each pair of point loads. Although the ultimate load recorded during the test was 42.6 kN, failure of the welds started to occur at 35.0 kN.

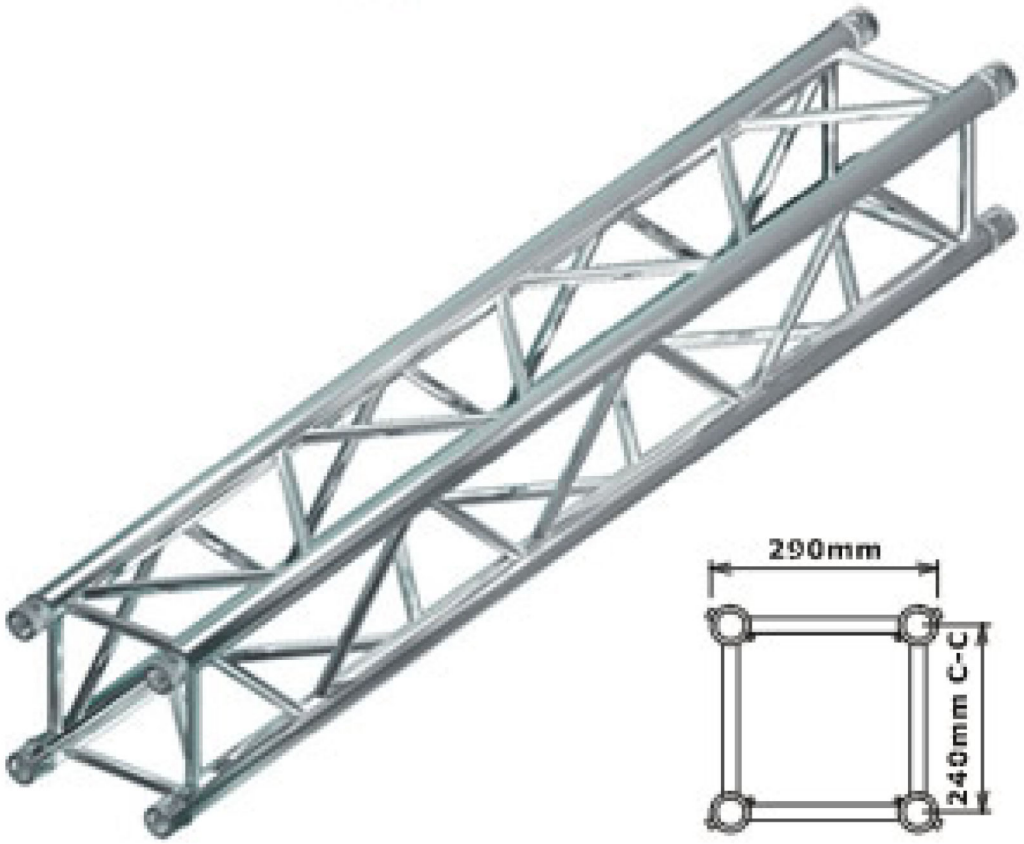


Figure 1 Global Truss F34 Square Truss

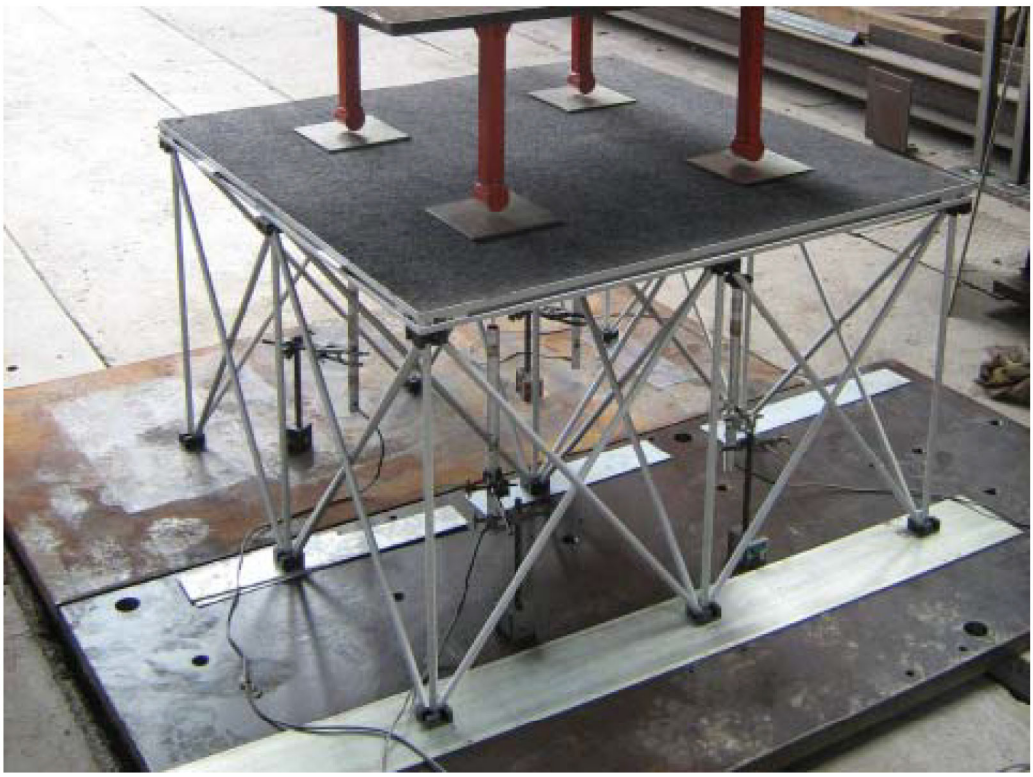


Figure 2 Concertina Stage

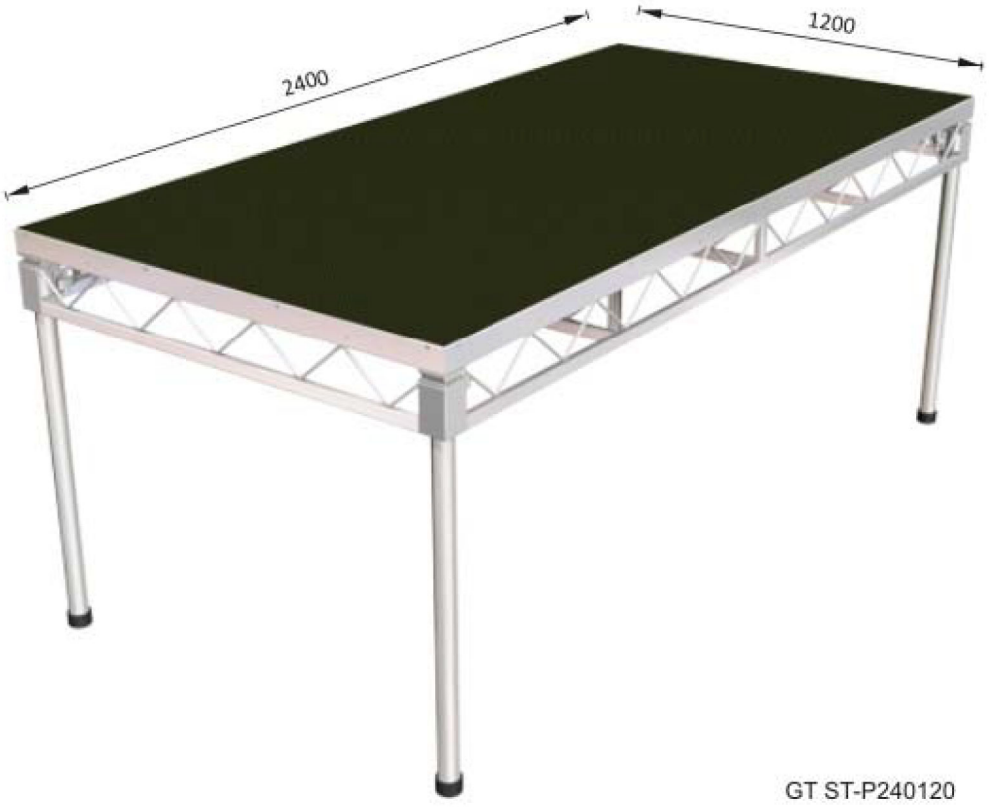


Figure 3 Global Truss Performer Stage

Figure 4 Test Arrangement for Global Truss F34 Square Truss

Figure 5 Test Arrangement for Concertina Stage

Figure 6 Test Arrangement for Global Truss Performer Stage

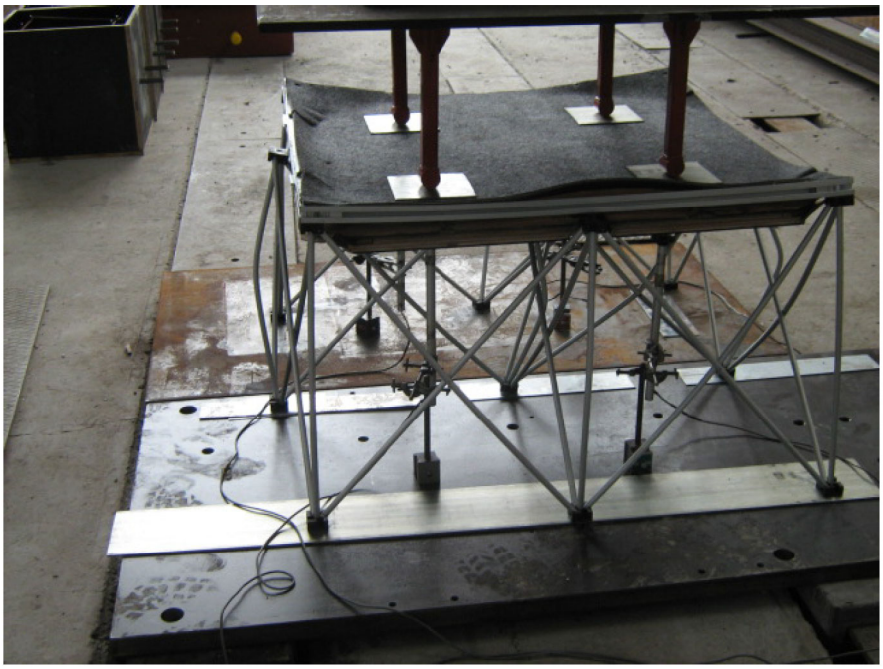
Figure 7 Global Truss F34 Square Truss During Testing

Figure 8 Concertina Stage During Testing

Figure 9 Global Truss Performer Stage During Testing

Figure 10 Local Bearing Failure of Chord of Global Truss F34 Square Truss

Figure 11 Member Buckling Failure of Global Truss F34 Square Truss



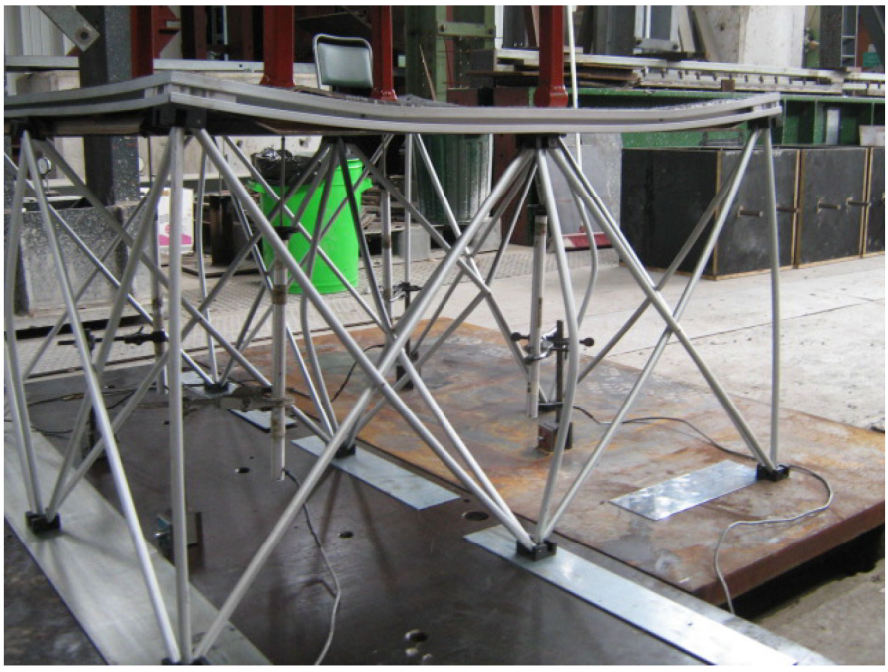


Figure 12 Buckling of Legs and Failure of Timber Platform of Concertina Stage

Figure 13 Failure of Welds of Global Truss Performer Stage

Figure 14 Failure of Timber Platform of Global Truss Performer Stage

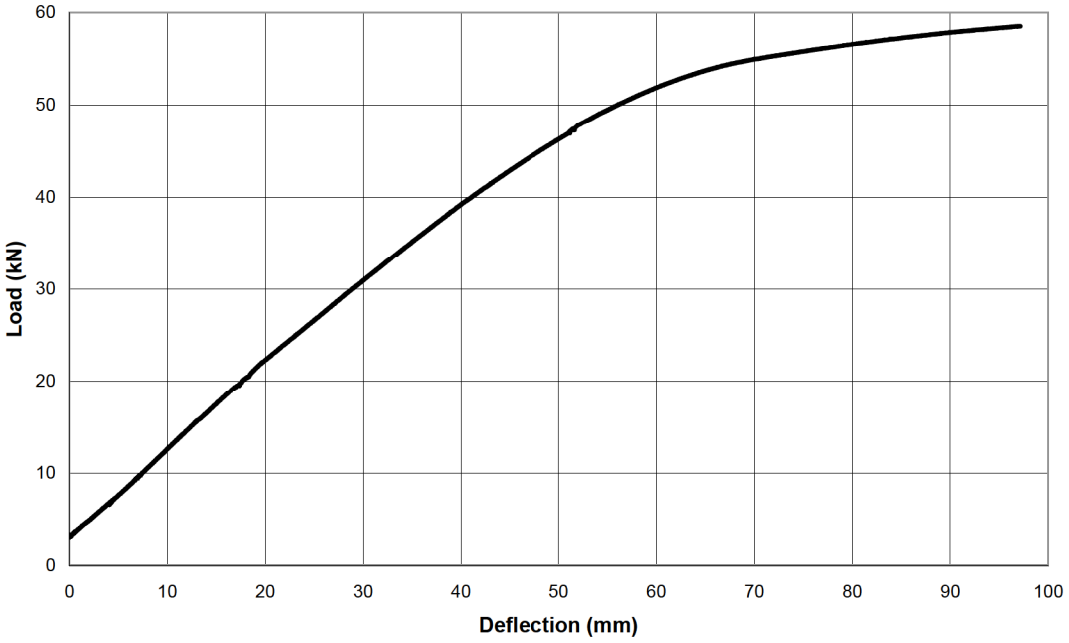


Figure 15 Total Load-Deflection Curve for Global Truss F34 Square Truss

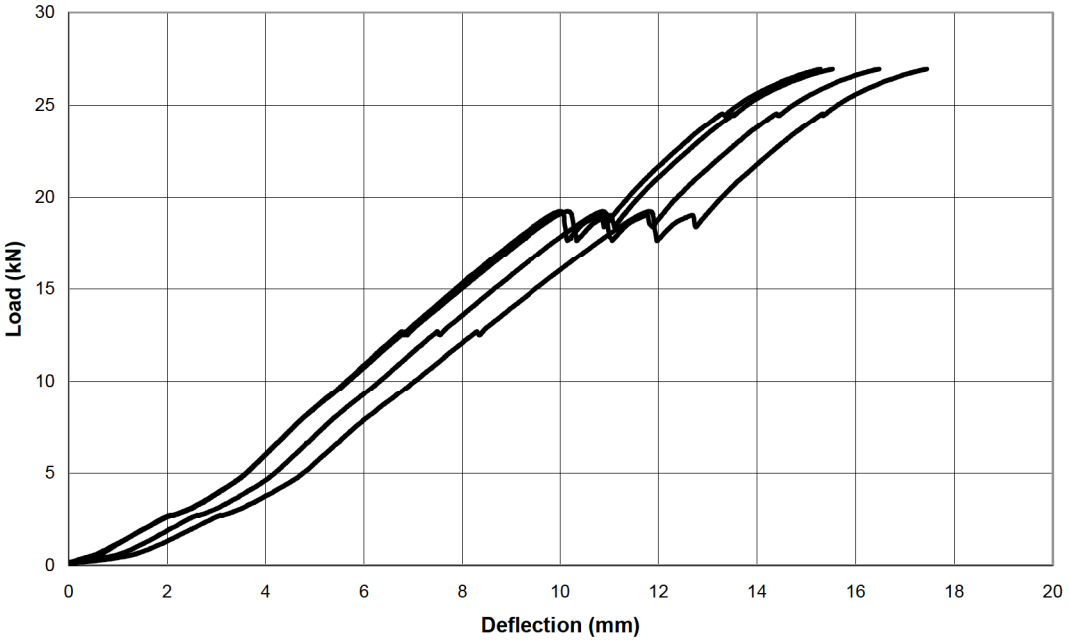


Figure 16 Total Load-Deflection Curves for Concertina Stage

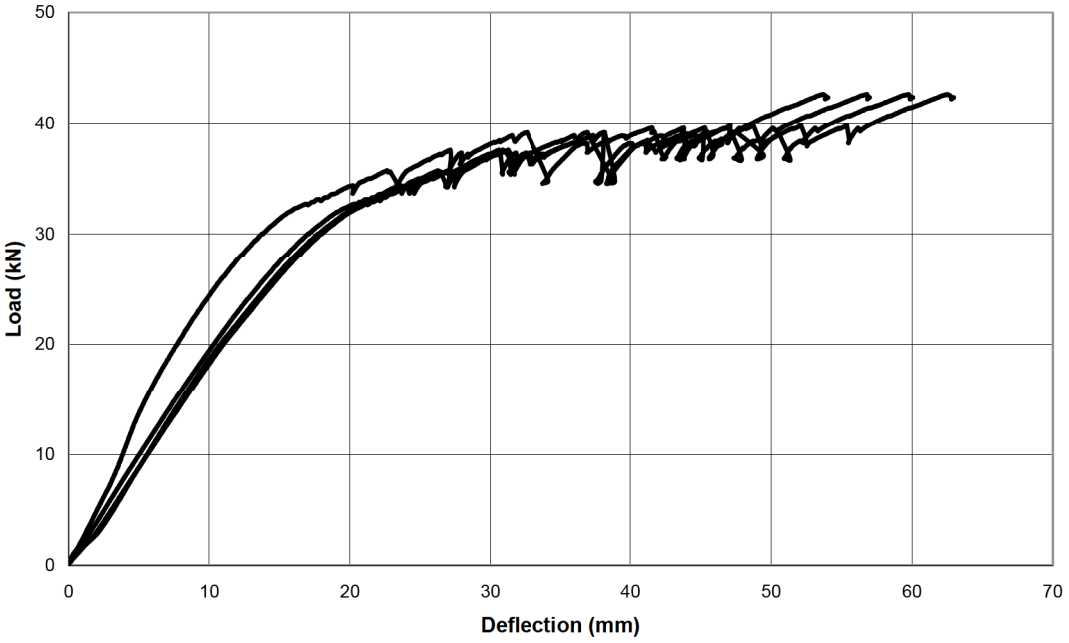


Figure 17 Total Load-Deflection Curves for Global Truss Performer Stage