DOCUMENT

PERFORMANCE EVALUATION REPORT

REFERENCE

450 SERIES TRUSS (450HD)

STRICTLY CONFIDENTIAL

OVERVIEW

DOCUMENT TITLE	PERFORMANCE EVALUATION REPORT
REFERENCE	450 SERIES TRUSS (450HD)
ISSUE DATE	20/02/2026

PURPOSE

This internal validation test was conducted to observe the structural behaviour of a 4-metre truss under controlled central loading conditions.

The objective was to:

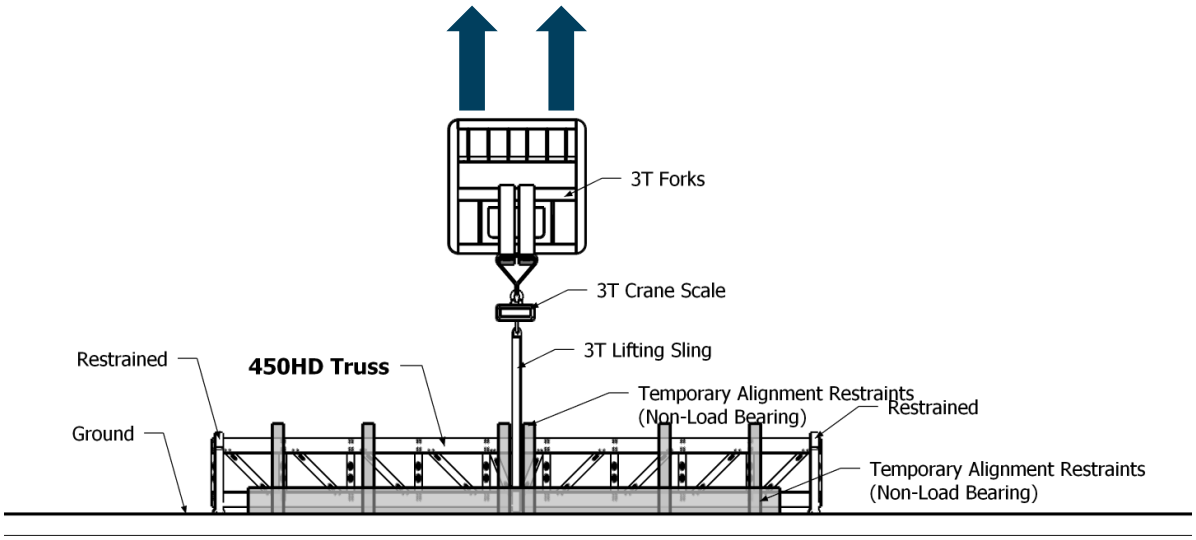
- Validate calculated structural performance
- Assess mid-span deflection response under incremental load
- Observe connection integrity during bending
- Evaluate overall structural stability under simulated service loading

This assessment complements engineering calculations and provides physical behaviour reference under controlled workshop conditions.

TEST CONFIGURATION SUMMARY

PARAMETER	DESCRIPTION
Span	4000mm
Support Condition	Both ends restrained to ground using 3T rated slings
Load Application	Central sling looped around mid-span of truss
Load Measurement	3T rated inline scale
Load Source	3T capacity forklift
Load Direction	Upward force at mid-span (inverted central point-load simulation)
Environment	Indoor workshop setting
Test Date	16/02/2026

TEST SETUP DIAGRAM



1. The truss specimen was secured at both ends using 3-tonne rated slings anchored to fixed ground points.
2. A separate sling was looped around the mid-span of the truss body. This sling was connected to a calibrated 3-tonne rated load scale. The load scale was positioned inline between the truss and a 3-tonne capacity forklift.
3. The forklift applied upward force at mid-span through the scale assembly.
4. This upward force induced bending behaviour equivalent to a central downward point load under typical simply supported structural conditions.

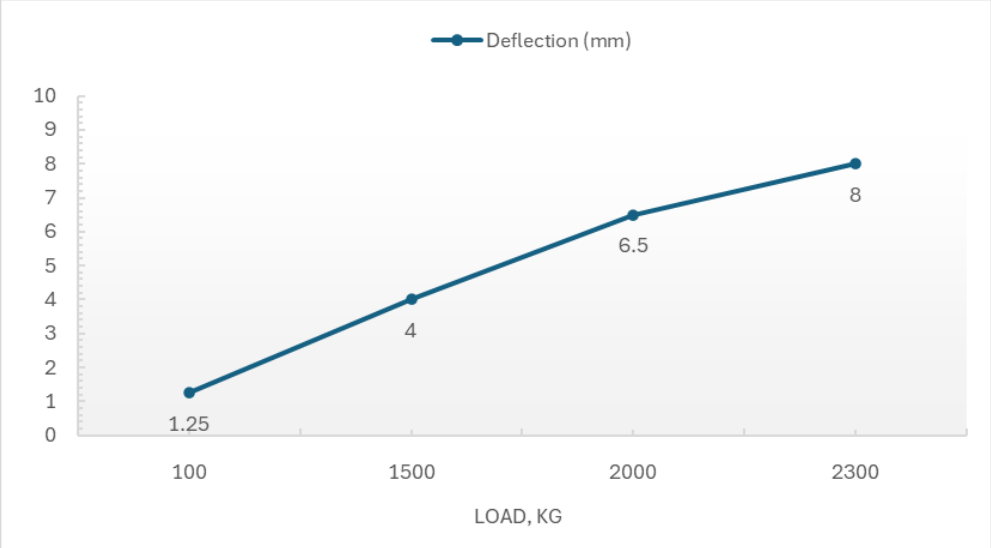
LOADING PROCEDURE

Load was applied incrementally at mid-span. At each load stage, the following were observed and recorded:

- Applied point load (kg)
- Mid-span deflection (mm)
- Visible structural behaviour
- Connection response
- Any localised deformation
- Elastic behaviour

Loading was increased progressively until the predetermined test limit was reached.

LOAD VS DEFLECTION RESULTS



OBSERVATIONS

Under incremental central loading up to a maximum of 2300 kg, the truss specimen exhibited a predominantly linear load–deflection response consistent with elastic structural behaviour. Regression analysis confirmed strong proportionality between applied load and mid-span deflection ($R^2 \approx 0.985$).

The measured deflections satisfied the serviceability requirements of AS/NZS 1170.0:2002 – Structural Design Actions (General Principles), in conjunction with the relevant structural material standard, complying with the commonly accepted span/300 deflection limit for members under service loading.

The truss demonstrated satisfactory stiffness and serviceability performance with no significant loss of structural integrity at the maximum test load.

SUMMARY

The 4-meter truss (450HD) specimen demonstrated stable and predictable structural behaviour under controlled central loading.

The internal validation test supports calculated structural modelling and confirms functional performance of the riveted truss system within the tested load range.

DISCLAIMER

This internal performance validation was conducted on a prototype specimen as part of ongoing research and development activities.

The test was performed under controlled workshop conditions and represents only the behaviour of the specific configuration tested.

This document:

- Does not constitute third-party certification
- Does not replace project-specific structural engineering design
- Does not represent compliance approval
- Should not be relied upon as a sole basis for structural specification

Actual performance may vary depending on span, installation method, support conditions, loading configuration, and site-specific factors.

All applications must be verified by a qualified structural engineer in accordance with relevant standards and project requirements.

WALLS AND SPACES accepts no liability for use of this document outside its intended indicative reference purpose.

APPENDIX A – TEST PHOTOGRAPHS

PHOTO A Temporary Alignment Restraints (Non-Load Bearing)	PHOTO B Initial Test Setup at 78kg reference
PHOTO C Applied Load at ~2,000kgs	**PHOTO D** Post Loading State