

# **LOAD TESTING FOR SCAFEAST PROPS**

**FOR**

**SCAFEAST INTERNATIONAL PTY LTD  
Qing Dao Jing Cheng Hui Machinery and Technology Co. Ltd**

**MARCH 2016**

**BY**

**BUILDING CONSTRUCTION TEST LABORATORY**

## 1. Introduction

At the request of Mr. Jason Qi of Scafeast International Pty Ltd, we attended during 26 to 27 March 2016 testing sessions for Scafeast Props with a view to confirming their vertical working load capacity. Two sizes of props were tested, which were for general use for formworks and shoring in building construction. The tests were carried out at 6 Gatwood Close, Padstow, NSW. The test load and method of testing evolved from consideration of the Australian Standard AS 3610: 1995, Appendix A, and AS 3610 Supplement 2: 1996, Appendix CA.

## 2. Test Apparatus

The test was carried out using a test loading frames with Hydraulic system (30T), digital reading, and a 20 T capacity load cells which has been calibrated by Precise Calibration Services (PCS), a NATA accredited organisation, and is valid for accuracy estimation until 23 March 2017.

Accessories include:

- loading bars and couplers,
- Lift truck,
- Rule, laser measures, and
- Levers

## 3. Specimen

The two sizes of the test samples are shown in Photo A. They are Number 2 and Number 3. The samples are marked with "SCF" permanent stamp on base plate. The range of height for the two sizes is set in Table 1 below.

Size	Closed Height (mm)	Full Open Height (mm)	Est. Weight (kg)	Other Measures mm
No.2	1980	2995	19	60X4 (outer tube) 46X3.2 (Inner tube) 150X150X 8(Plates)
No.3	2690	3875	22	

Table 1: Specification of Scafeast Props

Both samples were tested for close and open status.

We are advised that the props were designed by Scafeas International, and manufactured in China for commercial purpose in Australia.

## 4. Test Method

Destructive test method is adopted in accordance to AS3610: 1995.

The props were supported between test frames, under Hydraulic cylinder and load cells, with the specified eccentricities 20mm from the centre of the top plate and to the centre of the cylinder. See Photo B. The steel plate base of the props is sat on a shaped steel block with slope of 1:40. There is eccentricity of 20mm from the centre of axis of the prop to the top of the shaped steel plate.

Test load applied to the samples with a reasonable speed until they fail. It is considered that at this point the sample is unable to carry the applied load or has exhibited unacceptable deformation. The load data were recorded and then used for calculation of strength limit state load capacity, and convert to working load capacity.

## 5. Test, Results and Observations

The testing results and observations are set in Table 2 below.

Sample	Status	Test Force (KN)	Observation when Ultimate Load Applied
No. 2	Close	75.8	The maximum distortion at mid height level is 32mm. No failure, collapse or separation of component was observed.
	Open To Max	45.2	Buckling at middle of inner tube. No collapse or separation of component was observed.
No. 3	Close	69.2	Unacceptable deformation at the location between top plate and inner tube, and the outer tube under the pin. No collapse or separation of component was observed.
	Open To Max	49.1	The maximum distortion at mid height level is 39mm. No failure, collapse or separation of component was observed.

Table 2: Testing Results and Observations

## 6. Working Load Capacity Conversion

The test method selected is destructive testing to Appendix A, AS3610-1995. Sample size is one.

Based on Table A1 and A2, and A.4.4.3 of AS 3610:1995, we select value of modification factor as 0.15. Further, we select value of sampling factor as 1.9.

The strength limit state load capacity can be obtained from the equation  $R_u = X (\text{test data}) / 1.9$ .

Based on Table 4.5.1 of the same standard, the working load capacity may be converted as:

$$L = 0.8 * R_u = 0.8 * \text{test data} / 1.9.$$



Using the test data in Table 2 and the equations above, the working load capacity for Scafeast props is converted in Table 3.

Sample	Status	Modification Factor	Sampling Factor	Working Load Capacity (KN)
No. 2	Close	0.15	1.9	33.9
	Open To Max			19.0
No. 3	Close			29.1
	Open To Max			22.0

*Table 3: Working Load Capacity of Scafeast Props*

#### 4. Conclusion

Based on the results of single sample, destructive test method as specified in AS 3610: 1995, the working load capacities for Scafeast props are estimated through destructive testing by this laboratory as specified in Table 3 of this report.

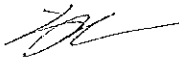
The limitation of the small sampling in this test indicates that the results may not represent working load capacity for all prop products in the 2 sizes. More reliable information in regards the capacity should be obtained from tests with a reasonable large sampling process.

The test is supervised by

Dr. Lida Song

B.E., M.E. PhD (Civil Eng), M.I.E. Aust. C.P.Eng (659737), NPER, RPEQ (14348)

Signature:



Technician:

Linye Zhai (B. Scien)

Signature:



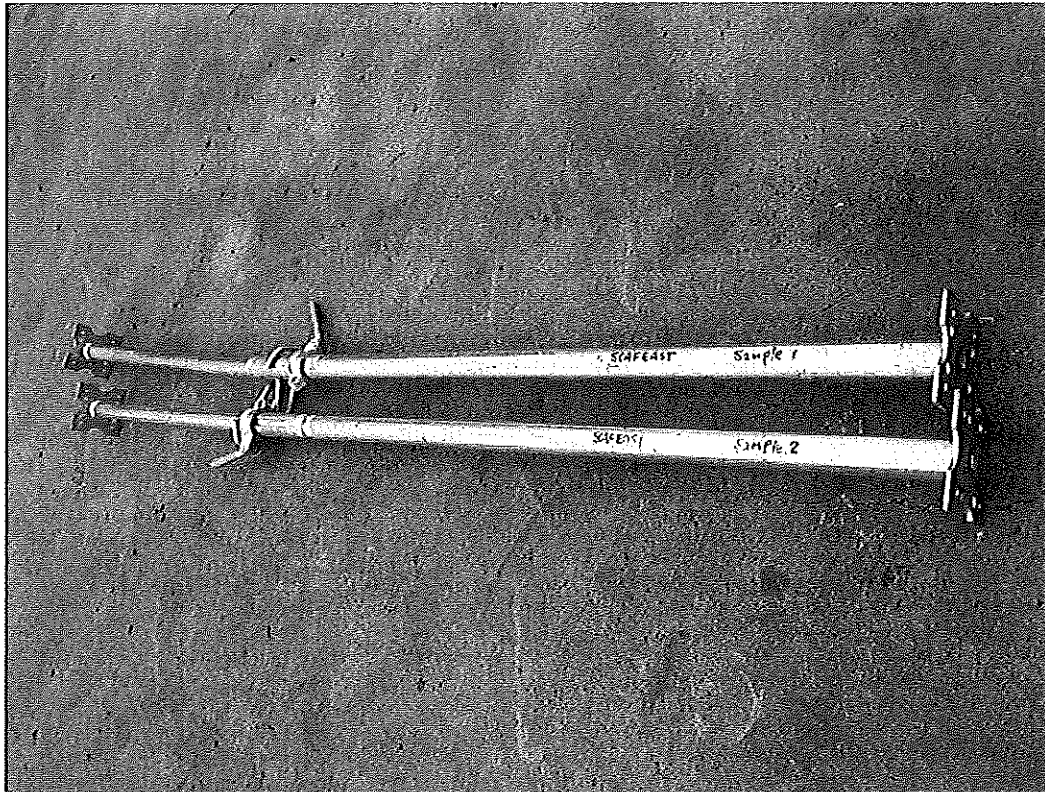


Photo A: Samples after test

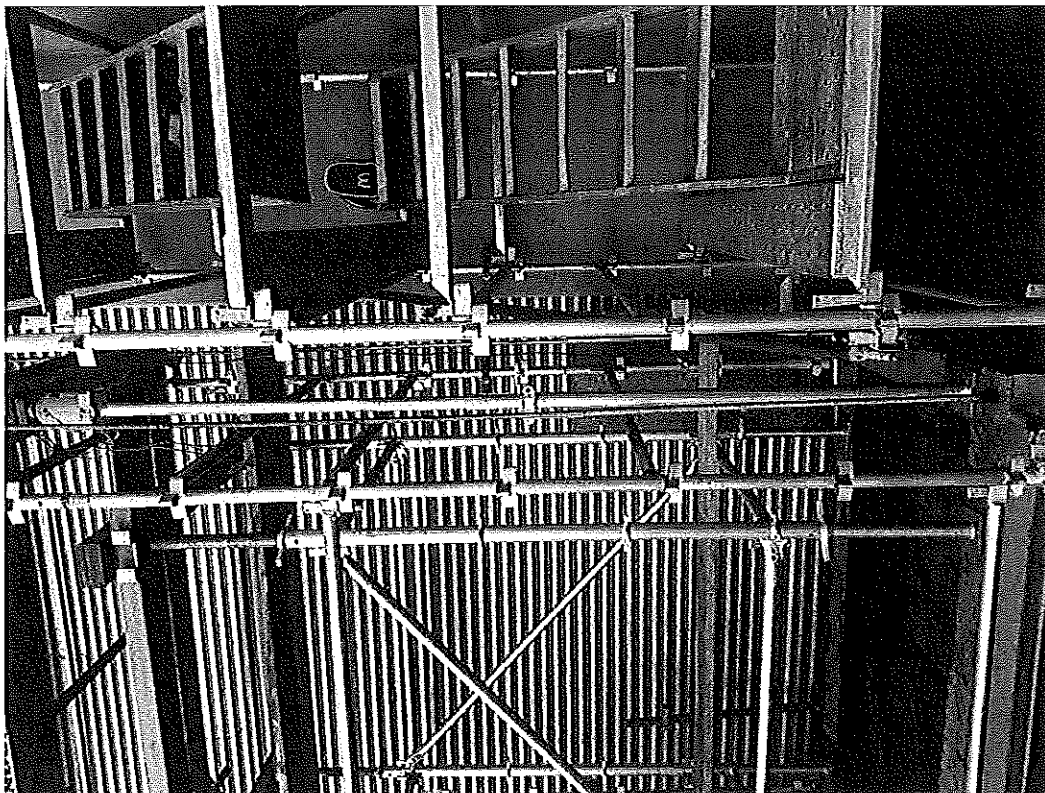


Photo B: Test Setup

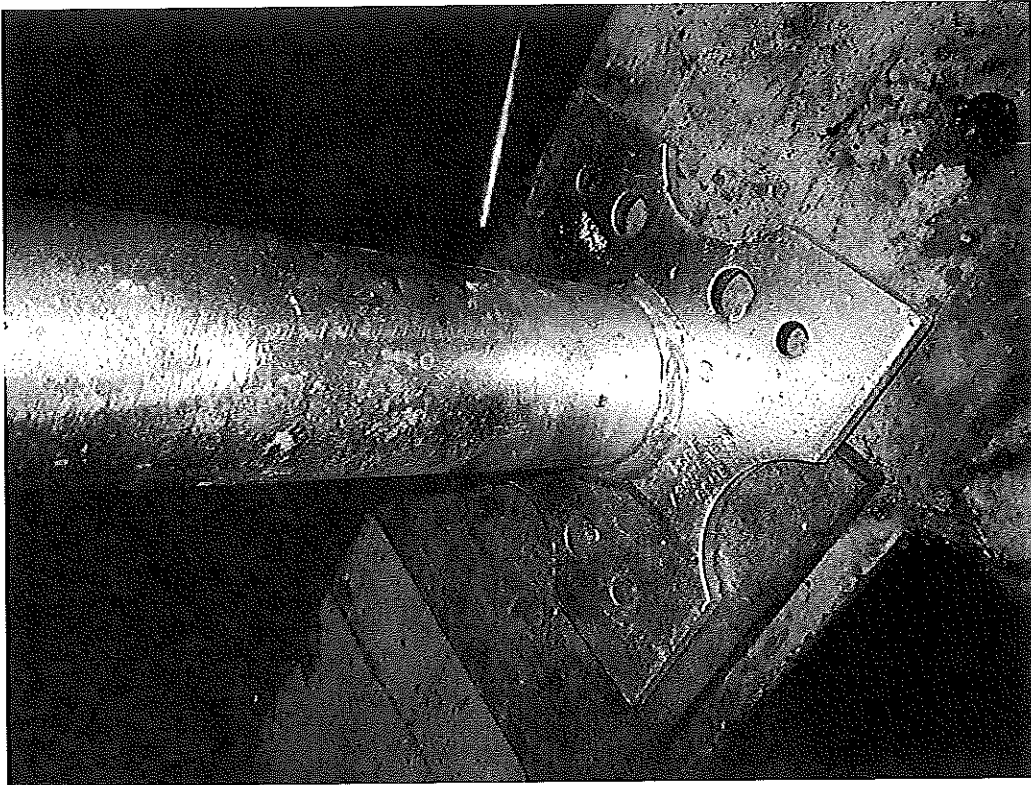


Photo C: Base Eccentricity Setup at Slope Plate

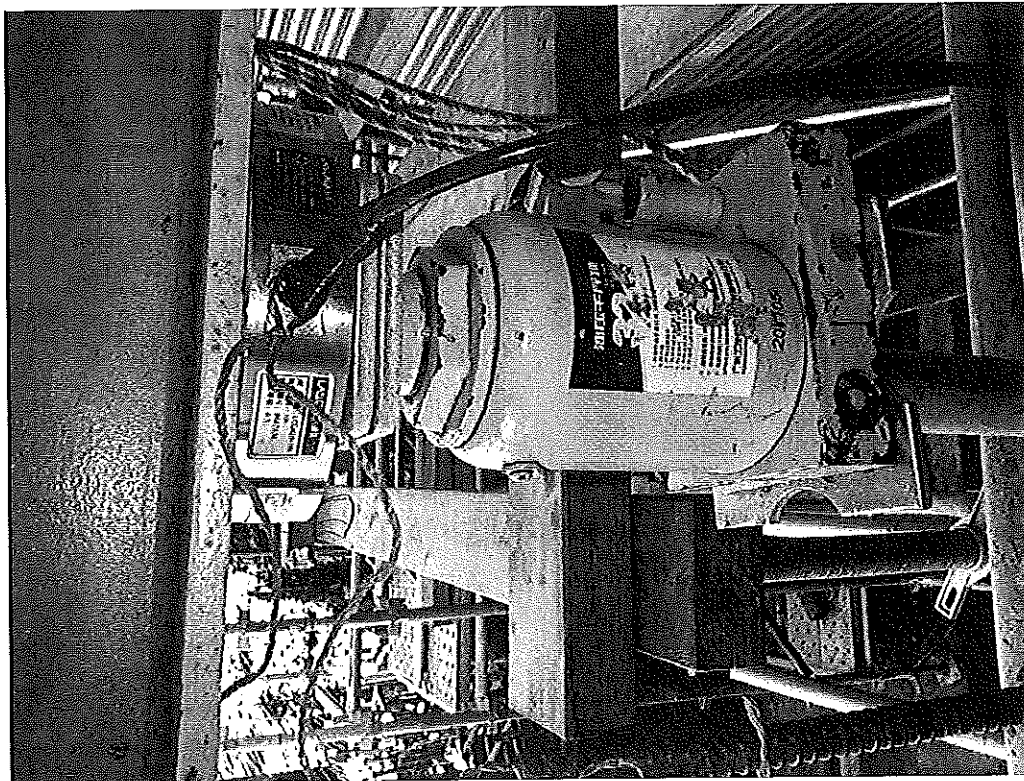


Photo D: Eccentricity Setup at Top of Props

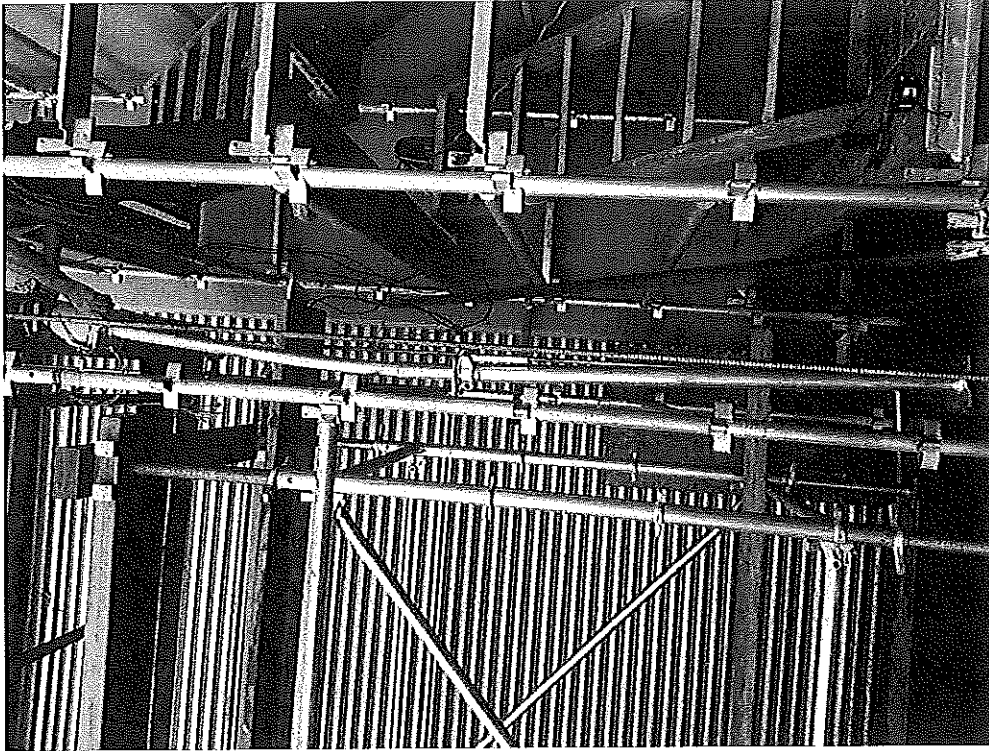


Photo E: Test Sample under Ultimate Test Load