

Mechanical Testing

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IN CONFIDENCE TO THE CLIENT

REPORT NO: MT-15/392-A3

PERFORMANCE TESTING OF CORONET 2.4M MODULAR METAL SCAFFOLD PLANKS

CLIENT: **CORONET GROUP SUZHOU CO. LTD.**
SIFC SIP, SUZHOU CITY
JIANGSU PROVINCE, CHINA

DATE OF TESTING: SEPTEMBER 25TH TO OCTOBER 23RD 2015

DATE OF REPORT: NOVEMBER 20TH 2015

TEST SYNOPSIS:

Pressed metal modular scaffold planks, used for prefabricated scaffold systems with a nominal length of 2.4m, were delivered to the MTS laboratory for testing (see Fig.1). At the request of the client, testing was to be conducted to determine the 2.4m planks' conformity with the performance requirements of AS/NZS 1577-2013 SCAFFOLD DECKING COMPONENTS. Specifically, testing was to be conducted in accordance with the following procedures:

Clause 2.2.2 Stiffness Test

Clause 2.2.3 Strength Test

Clause 2.2.4 Sliding Test

Clause 2.2.5 Coefficient of Friction Test

In addition to the aforementioned performance tests, dimensional checks were conducted to determine the planks' geometrical properties.

GEOMETRICAL OBSERVATIONS:

Prior to load performance testing, the scaffold planks were examined for configuration requirements in accordance with the below referenced clauses of AS/NZS 1577. Dimensional and configurational details of the planks were recorded as follows:

- (*Clause 1.5*) The length of the planks was 2.4m (nom.) and the width, 230mm (nom.): **PASS**
- The planks' base metal thickness was measured to be 1.8mm (nom.).
- (*Clause 1.9*) The planks were stamped with the identification markings 'CORONET AS/NZS 1577:2013 WLL 250KG UDL': **PASS**
- (*Clause 6.4*) No end caps or folded edges were present for CORONET modular planks. Locating hooks were welded to the ends of the planks.
- (*Clause 6.5*) The surfaces of the planks were perforated with 6mm (nom.) circular openings. The perforation openings had a nominal area of 28.3mm²: **PASS**
- (*Clause 6.5*) All surfaces of the planks were free from burrs and sharp edges: **PASS**
- (*Clause 6.6*) The planks were fabricated from galvanised steel sheet to prevent corrosion: **PASS**



FIG.1
2.4M MODULAR SCAFFOLD PLANK

STIFFNESS TEST: (CLAUSE 2.2.2)

Stiffness testing was conducted in accordance with AS/NZS 1577 APPENDIX A on the 16th of October 2015 in an enclosed environment at the MTS laboratory. The plank was simply supported on two tubular rollers over the length of the test span. Each end of the plank was supported across its full load-bearing width. The test load was applied progressively using a 100x100x6mm rubber pad at 50mm from the plank edge at the centre-span. In accordance with CLAUSE 2.3 for heavy duty planks, a test load (F_t) of **2kN \approx 204kg** was progressively applied and retained for a period of 5 minutes. A total of three (3) stiffness tests were conducted. The mean corresponding mid-span deflection of the planks under load was recorded to be **13.2mm**, less than the maximum allowable deflection of span/100 \approx 24mm.

The planks did not show any sign of failure or permanent deformation at completion of the tests. Therefore, the planks have passed the requirements for stiffness testing.

STRENGTH TEST: (CLAUSE 2.2.3)

Strength testing was conducted in accordance with AS/NZS 1577 APPENDIX B on the 23rd of October 2015 in an enclosed environment at the MTS laboratory. The plank was simply supported on two tubular rollers over the length of the test span (see Fig.2). Each end of the plank was supported across its full load-bearing width. The test load was applied to the middle of the plank at the centre-span. As specified in CLAUSE 2.3 for heavy duty planks, a test load (F_t) of 2 x WLL of **5kN \approx 510kg** was progressively applied and maintained for a period of 5 minutes. The plank was then unloaded and the residual deflection recorded. Three (3) strength tests were performed and a mean deflection of **0.23mm** recorded, less than the maximum allowable of span/300 = 8mm for metal planks.

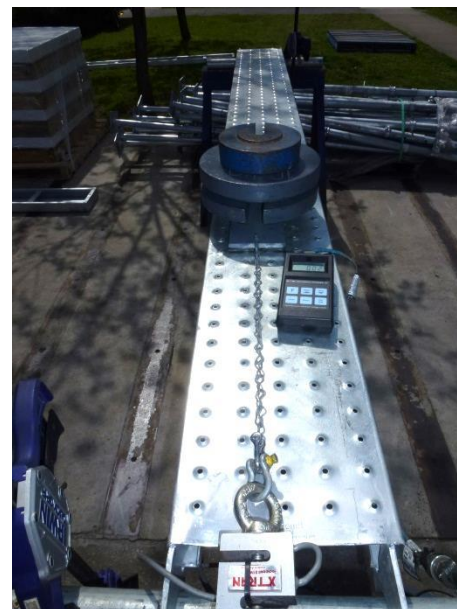
The planks were then reloaded until the peak load had been achieved and permanent deformation was visibly evident. The mean maximum load recorded at the point of failure was **8.4kN \approx 856kg**, greater than the minimum requirement of 2.2 x WLL of 5.5kN \approx 561kg. Therefore the planks passed the requirements for strength testing.

SLIDING TEST: (CLAUSE 2.2.4)

As per AS/NZS 1577 CLAUSE C1, modular planks incorporated in a prefabricated modular scaffold such as CORONET Ring Lock Scaffold system need not be tested for sliding performance.



**FIG.2
STRENGTH TESTING**



**FIG.3
COEFFICIENT OF FRICTION
TESTING**

COEFFICIENT OF FRICTION TEST: (CLAUSE 2.2.5)

Coefficient of friction testing was conducted in accordance with AS/NZS 1577 APPENDIX D at the MTS laboratory. A 300x100mm rubber backed slide-plate was positioned on top of the plank and loaded with a 25kg \approx 245N mass (see Fig.3). Frictional force was then applied to the slide-plate in the longitudinal direction until the slide-plate began to slip. A total of three (3) tests were conducted. The mean frictional force was recorded at **200N**. From this data, the mean coefficient of sliding friction (μ) was calculated to be **0.7**, equal to the minimum requirement of 0.7. The minimum recorded reading for all tests was **0.7**, greater than the minimum requirement of 0.6. Therefore, the planks have passed the requirements for slip testing, as specified in CLAUSE 2.2.5.

SUMMARY:

As described and reported herein, the CORONET pressed metal modular scaffold planks with a nominal length of 2.4m met the requirements for stiffness, strength and coefficient of friction load testing in accordance with the specific requirements of AS/NZS 1577-2013 APPENDIX A, B & D respectively.

Furthermore, the dimensional properties as reported herein, confirm that the scaffold plank met the specific geometrical and configurational requirements of AS/NZS 1577-2013 CLAUSES 1.5, 1.9, 6.4, 6.5 & 6.6.

Notes:

- 1) Melbourne Testing Services Pty Ltd shall not be liable for loss, cost, damages or expenses incurred by the client or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Melbourne Testing Services Pty Ltd be liable for consequential damages including, but not limited to, lost profit, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested.
- 2) This report only indicates compliance of the scaffold plank in its state at the time of testing. It should not be taken as a statement that all similar scaffold planks in all states of repair, would also be found to comply.
- 3) It remains the responsibility of the client to ensure that the samples tested are representative of the entire product batch.
- 4) This report only covers the dimensional attributes and structural integrity of the scaffold plank and not a complete scaffold assembly.
- 5) MTS shall take no responsibility for the procurement and authenticity of the test plank as described herein.
- 6) MTS shall take no responsibility for the installation procedures used for the scaffold plank as described herein.
- 7) MTS shall take no responsibility for the compliance of scaffold plank as described herein other than for the specific requirements as specified in AS/NZS 1577-2013 SECTION 2, APPENDIX A, APPENDIX B and APPENDIX D.



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