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IN CONFIDENCE TO THE CLIENT

REPORT NO: MT-13/037-E

GUARDRAIL TESTING OF CORONET KWICK-STAGE MODULAR SCAFFOLDS

CLIENT: CORONET SCAFFOLD GROUP SUZHOU CO., LTD
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DATE OF TEST: JUNE 7TH 2013

DATE OF REPORT: JUNE 18TH TO 20TH 2013

TEST SYNOPSIS:

A Coronet modular scaffold assembly was to be tested by MTS to determine the load performance and serviceability attributes of scaffolding guardrails, midrails, toeboards and guardrail posts. All testing was conducted in accordance with AS/NZS 1576.1-2010 SCAFFOLDING – PART 1: GENERAL REQUIREMENTS. Furthermore, load testing of the V-locating lug to V-pressing Coronet scaffolding connector was conducted to test the adequacy of the connection between scaffolding components.

Identification details and dimensional attributes of the scaffolding components are provided in MTS report no. MT-13/037-B.

TEST PREPARATION:

A test scaffold was assembled to provide a single 2.4m long bay, 1.2m wide & single lift high test assembly (see Fig.1). A working platform was assembled at the first lift using 2.4m steel battens supplied by the client. An additional steel batten was erected as a toeboard in accordance with the client's installation instructions using the supplied toe board brackets.

Ledgers were installed at 0.5m (nom.) intervals to act as a scaffold guardrailing system in accordance with the following definitions as provided in AS/NZS 1576.1:

- Guardrail: 'The highest rail (ledger) in guardrailing fixed parallel to the platform'
- Midrail: 'Rails (ledgers) fitted equidistant between guardrailing and the platform'



FIG.1
TEST ASSEMBLY

LOAD TESTING OF THE V-LOCATING LUG CONNECTION

Load testing of the V-locating lug was conducted in accordance with AS/NZS 1576.1-CLAUSE 2.5.3.2 (C) to test the adequacy of the connection between scaffolding components. Prior to testing, the V-locating wedge was knocked into the V-pressing using a hammer in accordance with the client’s installation instructions.

A concentrated upward load of 300N \approx 30.6kg was progressively applied to the guardrail adjacent to the V-locating lug connection point (see Fig.2). The test load was maintained for a period of 15 minutes.

After a period of 15 minutes, no signs of failure or dislodgement of the connection was visually evident. Upon removal of the test load no sign of residual deformation or slip between the connected components was evident.

LOAD PERFORMANCE TESTING OF TOEBOARDS

Load testing of toeboards was conducted in accordance with AS/NZS 1576.1-CLAUSE 2.5.3.2 (E) in conjunction with the serviceability criteria specified by CLAUSE 2.7.4 (E). In accordance with the client’s installation instructions, a 2.4m steel batten was installed on the scaffold test assembly to provide a toeboard and or kick plate on a working platform. The toe board was held vertically captive using toeboard brackets supplied by the client. The toe board brackets were clamped to the standards at each end of the scaffold test assembly.

A concentrated load of 150N \approx 15.3kg was progressively applied to the centre of the batten at the midspan position (see Fig.3). Calibrated MTS laser displacement devices were utilized to capture the outward displacement at the midspan of the toeboard and the adjoining standards. The test load was maintained for a period of 15 minutes. The net deflection of the toe board relative to the adjoining standard is provided as follows:

- Net rail deflection recorded $\delta = 15\text{mm} < \delta_{\text{max}} 45\text{mm}$ **PASS**

Upon removal of the test force, the toeboard and adjoining standards were observed to elastically rebound to the original position.

LOAD PERFORMANCE TESTING OF GUARDRAILS, MIDRAILS & GUARDRAIL POSTS

Load testing of guardrails, midrails and guardrail posts was conducted in accordance with AS/NZS 1576.1-CLAUSE 2.5.3.2 (C), (D) and (F) respectively. The serviceability criteria of the guardrails, midrails and guardrail posts was governed by AS/NZS 1576.1-CLAUSE 2.7.4 (A) and (D) respectively. Load testing of guardrails and midrails was conducted by applying concentrated loads at the midspan of the test items (see Fig.4). Calibrated MTS laser displacement devices were utilized to capture the outward displacement at the midspan of the guardrail and midrail; as well as the adjoining standards. The test load was maintained for a period of 15 minutes.

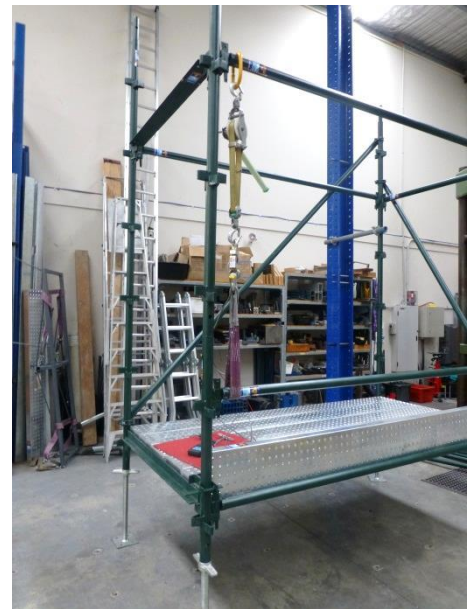


FIG.2
LOAD TEST OF V-LOCATING LUG CONNECTION



FIG.3
LOAD TEST OF TOEBOARDS

The test data is provided as follows:

Static Guardrail Test Data

Mid-span of Guardrail outward to $330\text{N.m}^{-1} \approx 792\text{N}$

Guardrail Deflection: 27mm

Post Deflection: $6\text{mm} < \delta_{\text{max}} 35\text{mm}$ **PASS**

Guardrail-to-Post Deflection: $\delta = 21\text{mm} < \delta_{\text{max}} 35\text{mm}$ **PASS**

Residual Guardrail-to-Post Deflection $\delta = 2\text{mm}$

Static Midrail Test Data

Mid-span of Midrail outward to $175\text{N.m}^{-1} \approx 420\text{N}$

Midrail Deflection: 13mm

Post Deflection: $4\text{mm} < \delta_{\text{max}} 35\text{mm}$ **PASS**

Midrail-to-Post Deflection: $\delta = 9\text{mm} < \delta_{\text{max}} 35\text{mm}$ **PASS**

Residual Guardrail-to-Post Deflection $\delta = 1\text{mm}$

SUMMARY:

In all cases, the tests conducted on the Coronet scaffold guardrailing system confirm that the components can support the test loads and meet the serviceability requirements as specified in AS/NZS 1576.1 – Clause 2.5.3.2 [(c), (d) & (e)] and Clause 2.7.4 [(a), (d) & (e)] respectively.



FIG.3
LOAD TEST OF MIDRAIL

Notes:

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2. It remains the responsibility of the client to ensure that the samples tested are representative of the entire product batch.
3. MTS shall take no responsibility for the procurement and authenticity of the test product as described herein.
4. This report is specific to the test items in their state at the time of testing. It should not be taken as a statement that all products in all states of repair, would also perform in the same manner.
5. MTS shall take no responsibility for the interpretation or misinterpretation of the procedures or calculation methods as provided herein or for the appropriateness or validity of the test procedures for the test items described and reported herein.
6. MTS shall take no responsibility for the installation procedures used for the test items as described herein.
7. The scaffold guardrailing tests as described and reported herein are specific to the requirements of AS/NZS 1576.1:2010 – Clause 2.5.3.2 [(c), (d) & (e)] and Clause 2.7.4 [(a), (d) & (e)].

ROD WILKIE
AUTHORISED SIGNATORY
DATE: 18/06/2013

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