

Design Verification Certificate of Compliance

Project	Design verification of Prefabricated Scaffold Plank Assembly (2m Span Type Web Deck)	Author	Ryan McNamara
Client	Fast Access Australia Pty Ltd	Date	14 August 2023
Project No.	FAA001	Revision	0

Scope

As requested by Fast Access Australia Pty Ltd, Practical Engineering Australia has performed a design verification of a prefabricated scaffold plank (2 m x 600 mm span Web Deck plank) to the following design data and relevant sections of the listed Australian Standards.

Design Data

The following design data has been provided by Fast Access Australia Pty Ltd / WEB Systems™ International and used to assess the single prefabricated 2 m scaffold plank assembly:

- Email “*FW: FAA001 - Quotation transmittal*” from Tom Whittleton to Ryan McNamara on Fri 23/06/2023 at 8:42 AM and containing the following documents:
 - PDF File WSI-5004-2 OPF MK4 Load and Functionality Testing.pdf
 - PDF File Deck Drawings.zip
 - PDF File WEB Truss.pdf
- Email “*RE: FAA001 - RFQ*” from Fraser Sinclair to Ryan McNamara on Mon 3/07/2023 at 6:21 PM and containing the following documents:
 - RAR File WEB Deck MKVI-Lastest.rar
 - RAR File WEB Deck with Toe board & handrail.rar
- Email “*RE: FAA001 - web deck wind rating*” from Fraser Sinclair to Ryan McNamara on Wed 5/07/2023 at 1:11 AM
- Email “*RE: FAA001 - Structural performance of Web Deck Planks - Non-conforming elements revision feedback*” from Fraser Sinclair to Ryan McNamara on Wed 2/08/2023 at 6:19 PM and containing the following documents:
 - PDF File WEB Deck 2Mtr. Drwings_R01.pdf
 - PDF File WEB Deck 3Mtr. Drwings_R01.pdf

Applicable Drawings

The following drawings have been provided by Fast Access Australia Pty Ltd / WEB Systems™ International and apply for a single prefabricated 2 m scaffold plank assembly:

- WEB/000012 (SHTS 1 to 18) Ver: 01 WEB DECK PLATFORM 2 MTR.

Applicable Standards

The relevant sections of the following Australian Standards were used to assess the prefabricated scaffold plank assembly:

AS 5100.2-2004	Bridge design, Part 2 - Design Loads (<i>applicable loadings only</i>)
AS/NZS 1170.0:2002	Structural loadings standard – Part 0: General principles
AS/NZS 1170.2:2021	Structural design actions, Part 2 – Wind actions
AS/NZS 1576.1:2019	Scaffolding, Part 1: General requirements
AS/NZS 1576.4:2013	Scaffolding, Part 4: Suspended scaffolding
AS/NZS 1577:2018	Scaffold decking components
AS/NZS 1664.1-1997	Aluminium structures, Part 1 -Limit state design
AS/NZS 4673:2001	Cold-formed stainless-steel structures

Operational Limits

The operational limits have been summarised in the following below:

- The following loading conditions as prescribed in Australian scaffold Standards apply:
 - Total dead weight of scaffold plank assembly: less than or equal to 35 kg approximately (as calculated from provided 3D model)
 - Load rating of scaffold tower assembly is 'Medium Rating' type as prescribed in both AS/NZS 1576.1 and AS/NZS 1576.3 scaffolding Standards
 - A maximum total load of 4.4 kN can be applied to walking surfaces
 - The total vertical live load permitted on the platform surface shall consist of a 2.9 kN UDL pressure load and a 1.5 kN point load applied to a 100 mm x 100 mm application area of the elevated platform surface.
 - Maximum recommended operational occupied use in-service design wind speed when scaffold plank assembly is used outdoors: 16 m/s (57.6 km/hr).
 - Maximum recommended out-of-service design wind speed when scaffold plank assembly is used outdoors: 65 m/s (234 km/hr). Derivation of applicable design wind speed for a particular installation geographical location and height shall be in accordance with AS/NZS 1170.2 requirements. Plank is permitted only to have a maximum live load of 1.1kN uniformly distributed on platform surfaces when out of service.

Certification Requirements

The certification requirements are:

- Scaffold plank assembly built to the design covered by this design verification shall only be used within the design operational conditions listed in the above operational conditions section. Assembly of scaffold plank shall be as per referenced drawing "WEB/000012 Rev 01" above;
- Scaffold plank shall be suspended from a supporting structure with suspension system in accordance with requirements of AS/NZS 1576.1 and AS/NZS 1576.4 scaffolding Standards. Max ultimate limit state (ULS) loadings onto supporting wire ropes at each attachment hook positions - 3.6kN ULS Max downward or 0.5kN ULS Max upwards. Suspension system shall be sufficiently rigid, so scaffold plank assembly does not experience any adverse dynamic effects during loading from wind effects;
- As the Australia scaffolding Standard AS/NZS 1567.1 requires a minimum bay width of 675mm for a medium duty rated scaffold the scaffold plank shall not be installed as a single width scaffold system as

its width is only 600 mm. In all cases the walking width in either direction of the scaffold system that the plank or planks are part of shall exceed 675 mm;

- Scaffold plank assembly shall be supported on all four provided corner attachment hooks when installed as part of a scaffolding system. Each hook shall be attached to scaffold plank stile beams by a minimum of three M12 A4-70 stainless steel bolts. Suspension system(s) that support scaffold plank assembly shall meet all applicable requirements in AS/NZS 1576.4 suspended scaffolding Standard. Maximum gap between adjacent planks is 10mm to stop objects greater than a 15mm sphere falling through scaffold floor surface;
- Installed scaffold plank assembly shall be single level and level;
- Materials of construction of scaffold plank shall be as per referenced drawings above. 5mm Deck Plates shall be made from Al Alloy 3004-H-34 (Alclad Aluminium is not permitted). All mild steel components shall be grade 250 or equivalent;
- Scaffold plank shall only be used as part of a scaffold system that includes appropriate perimeter protection shall as hand railing or fall arrest systems if a person on the scaffold could fall a distance greater than 2m. Hand railing shall be in accordance with requirements of AS/NZS 1576.1 scaffolding Standard. Any fall arrest system shall be in accordance with the requirements of the AS 1891 Industrial fall-arrest systems and devices Standards;
- The scaffold plank shall only be assembled and installed by suitably trained personnel. The scaffold plank shall be assembled as per referenced drawings above with a single elevated platform surface permitted. Suspending structures or scaffolding below scaffold plank assembly is not permitted;
- The components of any scaffold plank assembly shall be inspected prior to installation as part as a complete assembly for excessive bending in components, cracking at connections, and surface corrosion. Any surface deformation in scaffold members shall not exceed 4 mm. Any out of straight displacement of tubular members shall not exceed the length of the member in question divided by 300. Tubular components that are lightly bent (less than 15 mm/m length) shall be either straightened or scrapped. Tubular components that are severely bent (greater than 15 mm/m length) shall be scrapped. Any damage repair should be inspected by a competent person, manufacturer/manufacturer's representative or engineer before use of scaffold plank assembly as part of a complete scaffold assembly.

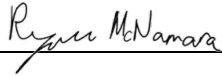
Exclusions

The following items have been excluded from this certification:

- Consideration of ancillary attached structures such as handrails nor fall arrest systems;
- Consideration of dynamic effects from dynamics of suspension rope system on wind actions;
- Consideration of environmental actions such as wind actions for a particular geographical location. Certification of scaffold plank assembly is only for loads within the operational limits stated above;
- Consideration of supporting structures such as bridge structures;
- Consideration of suspension systems such as rope systems; and
- Certification, inspection or testing of as-built equipment.

Design Verification Approval

I, Ryan McNamara, verified that the prefabricated scaffold plank assembly referenced above has been designed or tested in accordance with relevant sections of the listed Australian Standards subject to the limitations, requirements, and exclusions listed in this certificate. I have performed design verification of the design of the scaffold plank components in accordance with the requirements for a design verifier under the Work Health and Safety Act 2011.



Ryan McNamara

RPEQ Mechanical Engineer

BEng (Hons) (Mech), MIEAust, CPEng, NER, RPEQ (Mechanical, Pressure Equipment Design Verifier)

For and on behalf of Practical Engineering Australia.