



ADOPTION OF THE NEW STUD WELDING STANDARD

Image courtesy of Metal Decks.

The welding of shear studs in steel-concrete composite construction is governed by standards that ensure the appropriate weld quality is achieved (SCNZ, 2020b). The primary stud welding standard, AS 1554.2, was revised in November 2021. This fact sheet presents the key changes to the standard and the time frame for its adoption by the New Zealand metal decking construction industry.

STANDARDS ADOPTION

SCNZ has taken an active role in managing the adoption of AS 1554.2 (Standards Australia, 2021) as there are no regulations to govern this process in New Zealand (SCNZ, 2020a). Changes to fabrication execution standards, such as the stud welding standard, take time to implement. In particular, time is required for stud importers to destock product manufactured to the old standard and for the stud welding industry to change work practices.

TIME FRAME

At a recent stud welding working group session, it was agreed to transition to the requirements of AS 1554.2 by the end of 2023. This includes supply of studs to AS/NZS ISO 13918:2020 *Welding – Studs and ceramic ferrules for arc stud welding* (Standards Australia / Standards NZ, 2020), and the implementation of new work practices.

KEY CHANGES

The differences between the 2021 edition of the standard and the previous edition are as follows:


- The 2021 edition has been published as Standards Australia (AS) only.
- Clause 1.1 includes references to ISO 14555:2017 *Welding – Arc stud welding of metallic materials* (ISO, 2017). This ISO standard may be used for stud welding methods and stud materials that fall outside the scope of AS/NZS 1554.2.
- Clause 1.6.1 requires the fabricator to ensure that all welding and related activities also conform to ISO 14555 and AS/NZS 5131 as required or specified.
- Stud materials and stud-base qualification has been removed from the standard and reference is now made to AS/NZS ISO 13918. Two stud types have been included: SD1 and SD2. AS/NZS ISO 13918 also replaces AS/NZS 1554:2.2003 Appendix C.

- e. Clause 2.3 includes stainless steel parent material that conforms to any one of the steel types listed in AS/NZS 1554.6.
- f. Clause 2.4 requires welding procedures to be qualified to ISO 14555 for other not-prequalified weldable steels that are not referenced in Clause 2.3.
- g. Appendix C has been added to cover welding of high-strength and abrasion-resistant steel.
- h. Clause 3 requires dimensions and tolerances of studs to conform to AS/NZS ISO 13918.
- i. Clause 4.2 (d) includes the option to qualify stud welding procedures to ISO 14555.
- j. Clause 4.8.2 requires the stud-welding operator qualification to comprise sufficient training and experience either to satisfy the conditions of ISO 14555 or clause 4.8.2.
- k. Clause 5.5 requires the welding conditions used for stud welding through sheet metal to be those recorded and qualified during the procedure qualification process. Air gaps between the metal decking and the parent material are not permitted.



Image courtesy of Metal Decks.

(Adapted from Karpenko et al., 2021, p3)



ABOUT AS 1554.2

This Standard specifies requirements for the stud welding of steel studs to steel elements; such steel studs being used for the attachment of members and connection devices to concrete (as concrete anchors as shear connectors in composite steel and concrete construction), and for the fastening of other members and appurtenances. This Standard also applies to the stud welding of steel studs through light-gauge steel sheet, either coated or not coated, and includes requirements for the stud material, the parent material, stud welding operators and procedures, and the workmanship and testing of the finished welds. (Standards Australia, 2021, p1).

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For further information about changes to the stud welding standard, refer to the *HERA Technical Guide* available from the HERA website (www.hera.org.nz/product/hera-technical-guide-no-4).

AS 1554.2:2021 may be purchased from Standards Australia's Standards Store or its authorised distributors via www.standards.org.au/access-standards/buy-standards.

Acknowledgement

SCNZ would like to thank the HERA Welding Centre for its assistance in preparing this fact sheet.

References

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