Discussion Paper

Implementation for the New High Strength Structural Bolt Standard, AS/NZS 1252-2016, for New Zealand

By

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Synopsis

The new revised Australian and New Zealand Standard AS/NZS1252-2016 ‘High-strength steel bolts with associated nuts and washers for structural engineering’ was released on 23rd December 2016. The major technical change incorporated in the new edition relate to updated testing and conformity requirements, the inclusion of the nominated European standard 8.8 HR bolt as a “Deemed to satisfy” alternative and an additional European high tensile grade 10.9 HR.

The new standard will allow a greater range of bolt assemblies engineers can specify. This is likely to be problematic for local bolt importers in a small market. Industry stakeholder engagement is planned to ensure an orderly adoption of the new standard. In particular, this is to agree on the range of bolt assemblies that will be supplied to the market and the time frame for their supply. This paper is intended to be a briefing document to inform this engagement process.

Introduction

The revision to the 20-year-old AS/NZS 1252:1996 was made for the following desired outcomes:

- Manufacture of high strength structural bolts in Australia has more or less ceased and almost all high strength bolts are now supplied from other countries. As a consequence of the smaller market size in Australia and New Zealand, it is more difficult to maintain a unique fastener Standard especially without the support of a local manufacturing industry. It was therefore considered highly desirable to move towards a bolt specification that was aligned with a significant global supply.
- Accepted practice is difficult to change and a staged process is required to move towards internationally aligned supply to allow all stakeholders time to make the necessary changes.
- Any changes needed to be consistent with the fundamental principles of the Steel Structures Standards, NZS 3404 and AS 4100, whilst allowing for desired outcomes from future revisions to NZS 3404 and AS4100 in due course.
- In today’s procurement environment the compliance and product conformity requirements needed to be strengthened. The lack of normative compliance in the 1996 standard has allowed instances where substandard bolts have entered the market.

One of the important changes has been the addition of the k-class definition and testing requirements, which defines the torque tension relationship during tightening of the bolt assemblies. This is designed to facilitate the use of torque as a tightening method if written into future revision of the Steel Structures Standard, NZS 3404.
AS/NZS 1252.1 – Alternative assembly type to EN 14399-3 System HR

It is the documented intention of the Standards Committee for AS/NZS 1252 that high strength bolt supply for Australia and New Zealand moves towards international alignment. After extensive review and evaluation of alignment options, the committee chose alignment with Euronorm Standards, and in particular EN 14399-3 as appropriate for the Australian and New Zealand market, with bolts closely aligned in terms of performance characteristics with our existing AS/NZS 1252 product.

Consequently, AS/NZS 1252.1 has nominated high strength structural bolt assemblies for preloading that are manufactured in accordance with EN 14399-3, System HR, Property Class 8.8 as the only ‘alternative assembly type’ that is deemed to satisfy the requirements of AS/NZS 1252.1. In effect, bolts to EN 14399-3 System HR may be supplied as equivalent where reference is made to bolt assemblies conforming to AS/NZS 1252.1.

AS/NZS 1252.1 – Additional assembly type

AS/NZS 1252:1996 defined only one strength grade of bolt assembly, being Property Class 8.8. Currently there is limited use of higher grade 10.9 bolt assemblies in both the Australian and New Zealand markets. In New Zealand 10.9 bolt assemblies have been used where an increase in the structural capacity of the connections was required. In the Australian marketplace, certain informed procurers have utilised 10.9 bolt assemblies due to the improved quality of supply which provides greater surety of compliance outcomes.

The committee for AS/NZS 1252-2016 made the decision to incorporate EN 14399-3 System HR Property Class 10.9 bolt assemblies as an additional assembly type in AS/NZS 1252.1. They may be utilised where reference is made to Property Class 10.9 fasteners conforming to AS/NZS 1252.1.

NZS 3404 currently does not specifically include Property Class 10.9 bolt assemblies, however 10.9 are not precluded either and are mentioned in the commentary to NZS 3404.

New AS/NZS 1252.2 ‘Verification testing for bolt assemblies’

A significant change to AS/NZS 1252 has been the creation of a new Part 2, title ‘Verification testing for bolt assemblies’. This represents a restricted form of third party conformity assessment, to provide confidence in the product conformity with AS/NZS 1252.1. It is important to note that Part 2 is not called up or mentioned in Part 1, but rather must be separately and optionally called up by the procurer/specifier to ensure that bolt assemblies are verified.

AS/NZS 1252.2 defines a formalised testing regime to be undertaken before the product is first put on the market in New Zealand. The testing regime would be managed by the bolt importers using accredited laboratories.

Supply of Bolt Assemblies to AS/NZS 1252-2016 in the New Zealand Marketplace As discussed above it is the documented intention of the committee for AS/NZS 1252 that high strength bolt move towards international supply. To ensure an orderly transition, stakeholder engagement will be undertaken. This will be initially with bolt importers and then engineers.