

ASTM A325/M

Weathering Steel

Structural Assemblies

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Weathering Steel is a group of steel alloys that exhibit improved atmospheric corrosion resistance without the need for specialised coating systems such as galvanising or painting. When exposed to a suitable atmosphere the steel develops an oxide layer (patina) that protects the underlying steel from further corrosion.

Weathering steel is most commonly associated with its trademark names including Red-core® or Cor-ten® and has been used in steel structures in North America, Europe and Japan since the 1960's. There are material specification for weathering steel plate from all major standards organisations ASTM, EN, ISO however despite this there is little guidance on the specification of weathering steel for structural bolting assemblies.

The Eurocode EN 1090, which Australia and New Zealand's steel fabrication and erection standard AS/NZS 5131 is heavily based off, specifies ASTM A325 Type 3 as the preferred weathering steel structural bolt. This is echoed in AS/NZS 5131 and the HERA design guide for weathering steel bridges.

ASTM A325/M is the standard specification for high strength bolt 120ksi [inch series] or 830MPa [metric] in both steel (Type 1) and alloy steel (Type 3). For all intents and purposes, it is equivalent to AS/NZS 1252 and EN 14399-3. This standard has now been consolidated into ASTM F3125/M which includes specification previously covered by ASTM; A325/M, A490/M, F1852 and F2280. It covers the chemical, physical and mechanical requirements for high strength structural bolting.

Currently, all weathering steel fasteners imported into Australia are sourced from North America and are inch series. This has caused issue with designs, local steel structure codes AS 4100 and NZS 3401, and bridge design code AS/NZS 5100.6. Hobson Engineering will be providing Metric PC 8.8 ASTM A325/M Type 3 structural assemblies in common bridge diameters [M24/M30].

In keeping with the intent of Australia and New Zealand's current structural bolting standard, Hobson Engineering will complete **Rotational Capacity Testing** of all weathering steel structural assemblies. This is the ASTM sister test to the AS/NZS 1252 appendix D - Assembly Test. The purpose of the testing is to verify the behaviour of the fastener assembly so as to ensure the required tension can be reliably obtained by the tightening methods specified in AS/NZS 5131.

All factory test certificate and verification testing will be performed at ILAC MRA accredited laboratories. **ILAC MRA** accredited laboratories are equivalent to Australian NATA accredited laboratories and must have strict Quality Management Systems [QMS] in place to ensure true and reliable test reporting.

Traceability of all weathering steel structural assemblies is guaranteed with the unique 3-character trace code that is on all Hobson Engineering structural bolts. The trace code can be used to retrieve all quality documentation even if bolts have been installed and original packaging has been disposed of.

	AS/NZS 1252.1	ASTM A325	HEC A325M
Thread	Metric	Imperial	Metric
Weathering Steel	✗	✓	✓
Assembly Test	✓	✗	✓
Traceability on Bolt	✓	✗	✓
ILAC MRA test certificate	✓	✗	✓