

REDCOR™ weathering steel for bridges and other structural applications

REDCOR™ weathering steel

Product Brochure

BlueScope produces a range of REDCOR™ weathering steels for structural steel applications. When used in the appropriate environment and designed and detailed correctly¹, REDCOR™ weathering steels are likely to improve the service life, lower construction and ongoing maintenance costs for bridge and other structural applications compared to conventional structural steels, making it an attractive option for your project.

BlueScope REDCOR™ weathering steel

REDCOR™ weathering steel is a high strength steel that develops a stable oxide layer on the surface of the steel known as the “patina”. When used in the appropriate environment, the patina enhances the corrosion resistance of the steel compared to conventional structural steels effectively ‘weathering’ the steel in a natural way.

Weathering steel has been used since the 1930’s in railway coal wagons, bridges, facades and many architectural features such as sculptures and landscaping. When designed and detailed correctly, taking into account the environmental factors that governs its use, it has exhibited corrosion resistance.

Benefits of REDCOR™ weathering steel for bridge design

The enhanced corrosion resistance of REDCOR™ weathering steel means that these steels can be used without the need for expensive paint systems. Reducing the need for paint can significantly lower both the initial fabrication costs and the ongoing maintenance costs. Reducing the need for paint may significantly lower both the initial fabrication costs and the ongoing maintenance costs for bridges compared to painted bridges made from conventional structural steel. Therefore, the likely reduction in ongoing maintenance costs may lead to weathering steel bridges having a lower life cycle cost, making weathering steels the lower cost alternative for your project.

REDCOR™ weathering steel is also known for its distinctive natural and evolving appearance brought about by the patina that develops over time. Once fully formed and weathered (generally not less than 8 years) the appearance is usually dark brown to a purple colour that nicely blends with the environment.

Benefits of steel in bridge construction

In addition to the specific advantages of using REDCOR™ weathering steel for structural and architectural applications, steel as a building material offers a number of other advantages. Steel structures can be fabricated in the workshop, brought to site and erected in a short period of time. This reduces the need for a large on-site work force, which may reduce on-site construction time and lower site costs.

These advantages can also increase the speed of construction leading to a reduction in the time required to complete a project and hence an earlier occupation/use of the structure.

Steel as a construction material is also a standout in terms of sustainability. Weathering steels can contribute to improving the sustainability of a structure by avoiding the need to paint (and repaint) structures. This reduces the use of chemicals and the energy needed to apply the paint systems. Reduce, reuse and recycle are core principles that apply to all stages of steel production and

use. Steel can offer considerable strength to weight improvement opportunities allowing the designer to reduce the overall amount of material used in a project. Steel structures can often be easily modified as the requirements for the structure change over the structures life span. Finally, although steel is a very durable product with a long product life, at the end of a structures life, steel components can be reclaimed and are recyclable.



Weathering steels can contribute to improving the sustainability of a structure by avoiding the need to paint (and repaint) structures.



The likely reduction in ongoing maintenance costs may lead to weathering steel structures having a lower life cycle cost than painted structures made from conventional structural steel.



Using BlueScope REDCOR™ weathering steel for Bridge Design

REDCOR™ weathering steel is a high strength structural steel with enhanced corrosion resistance when used in the appropriate environment. The use of weathering resistant steels requires careful detailing and there are a number of considerations in design and fabrication. Guidance in relation to these issues is provided in BlueScope's Technical Bulletin 26 and Technical Note on the welding of weathering steel, and in the Weathering Steel Design Guide for Bridges in Australia (developed by the Heavy Engineering Research Association).

The Weathering Steel Design Guide for Bridges in Australia

The topics covered in the Weathering Steel Design Guide for Bridges in Australia include:

1. Guidance on the assessment of the suitability of the climatic and environmental conditions

Given the vast rural regions away from the coast and industrial sites are characterised by low humidity and wet and dry periods, that is required to develop the 'patina' layer, a very large proportion of Australia is suitable for the application of weathering steel. This section provides guidance on assessing the corrosivity rating and the suitability of specific sites in Australia for the application of weathering steel for bridges including the coastal regions (marine and near marine) industrial environments and distance above waterways.

WEATHERING STEEL PRODUCT AVAILABILITY						
Product	Australian Standard	Grade	Thickness (mm)	Width* (m)	Length (m)	Impact Testing Option Availability
REDCOR™ weathering steel	AS/NZS 1594	HW350	3-10	1155 - 1250	2.4-12	N/A
	AS/NZS 3678	WR350(A)	8-12	1800 - 3000	4-18	LO, L20
	AS/NZS 3678	WR350(B)	10-80	1800 - 3000	4-18	LO, L20

*Not all thickness and width combinations are available.

2. Design and detailing

Covers the calculation of the corrosion loss to be taken into account, fatigue considerations, welded and bolted connections, contact with dissimilar materials interface protection and general structural detailing for drainage, crevices, expansion joints, avoidance of debris build up and water retention. In addition, guidance is provided for water run-off control to avoid potential staining of abutments, piers, footpaths and other components, from run-off water containing iron picked up from the weathering steel.

3. Fabrication and construction

Covers storage, handling and erection, hot and cold forming, cutting and welding, surface preparation, piers and abutment protection, guard rails and light poles, etc.

4. In-service inspection

Covers the requirements for inspecting weathering steel bridges, for both routine and condition assessment inspections, surface appearance, measurement of steel thickness and detecting fatigue cracks, etc.

5. Maintenance and rehabilitation

Covers maintenance procedures, removal of soil and debris build up, sealing crevices, graffiti removal, use of protective coating, etc.

Product Availability

When you buy REDCOR™ weathering steel from BlueScope you are buying more than an innovative building solution for your bridge, you are buying:

- Assurance that the product will perform consistently as specified via a supplier who is ISO 9001, ISO 14001, ACRS and ATTIC Scheme 10 accredited.
- Peace of mind that all material supplied is fully compliant with relevant Australian Standards.
- The flexibility and short lead times via a wide distribution network.

steel.com.au
To learn more about weathering steel

1800 800 789
For more information

