



# CASCADIA METALS

## WEATHERING STEEL

Cascadia Metals offers an extensive selection of metal products. One of the more unique products offered is Weathering Steel. Weathering Steel is high-strength, low-alloy steel that under normal atmospheric conditions gives an enhanced resistance to rusting compared with that of other carbon steels. The generic product reference is Weathering Steel, although there are several trademarked names for the same product including Corten®.

In the presence of moisture and air, low-alloy steels have a tendency to rust, the rate of which depends on the access of oxygen, moisture and atmospheric contaminants to the metal surface. As the process progresses, the rust layer forms a barrier to the ingress of oxygen, moisture and contaminants, and the rate of rusting slows down. The rust layers formed on most ordinary structural steels are porous. This porosity leads to the rust detaching from the metal surface after a certain time, causing the corrosion cycle to commence again. Hence, the rusting process repeats over and over without a protective layer remaining on the steel at the end of each process.

With Weathering Steel, the rusting process is initiated in the same way, but the specific alloying elements in the steel produce a stable rust layer that adheres to the base metal and is much less porous. This rust 'patina' develops under conditions of alternate wetting and drying to produce a protective barrier that impedes further access of oxygen, moisture, and pollutants. The result is a much lower corrosion rate than would be found on other structural steels. The mechanical properties and rate of weathering are dependent upon which alloys are found in the steel, the concentration of those alloys, and how thick the steel substrate is.

### Weathering Steel Benefits

Weathering Steel offers unique benefits as compared to other construction products. These benefits include...

**Low Maintenance** – periodic inspection and cleaning should be the only maintenance required to ensure Weathering Steel continues to perform to expectation.

**Safety** – because of the low on-going maintenance requirements of Weathering Steel, it is the ideal product for applications where regular project access would prove difficult and/or dangerous.



## Benefits continued...

**Cost Benefits** – although Weathering Steel may be slightly more expensive than other steel products, in many cases the elimination of painting saves money in both the initial cost as well as on-going maintenance costs that may come with repainting and/or upkeep. This also means less future disruption to project tenants and surroundings.

**Sustainability** – Weathering Steel is 100% recyclable (can be melted back down for reuse) at the end of life which means less construction product going in landfills.

**Attractive Appearance** – Weathering Steel provides an aesthetic that is hard to match with other steel products.

**Performance** - Weathering Steel has a proven track record for long-term performance.



## ASTM Specifications

ASTM Designation A606 outlines the standard specification for high-strength, low-alloy, hot-rolled and cold-rolled steel with improved atmospheric corrosion resistance.

## End-Use Applications

Weathering Steel products are found in a wide variety of applications where a specific aesthetic is desired and corrosion resistance is required. End-use applications well suited for Weathering Steel include bridges, pilings, marine transportation (containers), wall panel applications, sculptures, and other architectural applications.

## Product Cautions

Using Weathering Steel in construction may present several challenges. Weathering Steel is not rustproof in itself (i.e. if water is allowed to accumulate in pockets, those areas will experience higher corrosion rates). Weathering Steel is sensitive to humid subtropical climates and environments laden with sea salt. In such environments, it is possible that the protective patina may not stabilize but instead continue to corrode. Weathering Steel's normal surface weathering can also lead to rust stains on nearby surfaces, also known as "bleeding" or "runoff". Staining can be prevented if the structure can be designed so that water does not drain from the steel onto concrete or other building surfaces where stains would be visible.

To learn more about Weathering Steel or for information regarding the full Cascadia Metals product offer, contact your Cascadia Metals Sales Representative today.