

# Steel Plates for Bridge Use and Their Application Technologies<sup>†</sup>

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## Abstract:

Essential steel plates for bridge use of JFE Steel are reviewed together with relevant key-technologies. Owing to Super-OLAC Q00 ture and a national asset. Therefore, bridge construc

tion economy and reduction of life cycle cost (LCC) are increasingly important considerations. In responding to these needs, JFE Steel installed the Super-OLAC, a rev-

greatly reduce bridge LCC, together with new rust stabilization treatment technologies which extract the maximum performance from such steels. Other recently developed products include longitudinally profiled (LP) steel plates, in which the thickness continuously varies in the longitudinal direction by applying a rolling profile control technology, and the special welding consumables and technologies of using them which significantly improve the fatigue strength of the welded joint. Thus, JFE Steel has a comprehensive development program for steel plates for bridge use and related technologies and is continuing to expand product line in this field.

Among these efforts, this report describes 570 N/mm<sup>2</sup> class high performance, high strength steel with excellent weldability, which makes the maximum use of the functions of Super-OLAC, and two grades of Ni-added high corrosion resistance weathering steels, which can be used in the environment with airborne salt concentration exceeding 0.05 mdd (mg-NaCl/day/100 cm<sup>2</sup>) such as on shore and in coastal areas where conventional JIS

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Type 1 and Type 2 steels showed corrosive thickness loss smaller than JIS SMA and JIS SM, demonstrating that these new steels have excellent atmospheric corrosion resistance.

A general guideline for use without painting is “the corrosive thickness loss of 0.5 mm or less in 100 years.”<sup>5)</sup> Judging from the results of simulated exposure test conducted in bridge environments at various sites in Japan,<sup>6)</sup> and the above guideline, it is conservatively possible to use JFE-ACL Series without painting in the environment with salt levels of 0.4–0.6 mdd. More accurate fit-to-environmental judgement is expected to make these steels in use in areas with higher amount of airborne salt.

### **2.3 New Rust Stabilization Treatments**

JFE Steel has developed and commercialized 2 types



