

ITEM 11564.40nnnn M - HIGH PERFORMANCE STEEL, HPS GRADE 485W / Kg

DESCRIPTION

Under this work, the Contractor shall furnish and erect structural steel in accordance with this specification and the Contract Plans.

The provisions of Subsection 564 of the Standard Specifications and the Steel Construction Manual shall apply, except as modified on the plans or in this specification.

MATERIALS

All steel furnished under this item shall be ASTM A709M Grade HPS485W unless noted.

HPS485W steel must comply with supplementary requirement S83 for Non-Fracture Critical, Zone 3, impact test requirements. The requirement of A709 Section 5 Heat Treatment is hereby modified to permit the use of non-heat treated (TMCP) material.

All non-High Performance Steel elements shall meet the requirements of ASTM A709M Grade 345W.

CONSTRUCTION DETAIL

All structural steel work, including but not limited to shop drawings, fabrication, inspection and transportation shall be done in accordance with the provisions of the NYS Steel Construction Manual, as modified by the Contract documents.

Welding

Welding shall be in accordance with ANSI/AASHTO/AWS D1.5-96 Bridge Welding code and the Guide Specifications for Highway Bridge Fabrication with HPS 70W Steel as modified herein.:

Filler metal shall meet the requirement of Table 4.1, Matching Filler Metal Requirements for WPS's Qualified in Accordance with 5.12.

Filler metals used in attaching stiffeners and connection plates to HPS 485W web and flanges shall conform to AWS D1.5-96, Table 4.1 for Grade 345W or 485W base metal. Filler metal for all complete penetration groove welds and web to flange welds shall conform to AWS D1.5-96, Table 4.1 for Grade 485W base metal.

Preheats according to Table 4.4 of AWS D1.5-96 should be considered minimum. Certain processes may require higher preheats not exceeding those listed in Table 12.4 for Fracture Critical Members.

Electrodes for shielded metal arc welding shall conform to the requirements of AWS D1.5-96, Appendix VIII 6.2.2.1, H4 Extra Low Hydrogen Electrodes.

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The Fabricator is advised that all primary welds must be made with the submerged arc welding process, and that the flux must conform to Lincolnweld MIL800HPNi specifications. The flux must be furnished in hermetically sealed containers. Flux handling procedures must strictly conform to the manufactures recommendations. No other flux will be allowed. SAW electrode shall be Lincoln LA85 for matching HPS485W.

The welding procedure must be qualified in accordance with D1.5 Section 5, Qualification. In general, the provisions of Article 5.12 shall apply. Qualification tests shall measure tensile strength, yield strength, ductility and toughness, with results evaluated in accordance with Article 5.19.

Welding procedure specifications shall be submitted to the Metals Engineering Unit for determination of welding procedure qualification tests to be performed.

Welding procedure qualification tests must be witnessed by a representative of the Department.

Results of the welding procedure qualification tests and final welding procedure specifications shall be submitted to the Metals Engineering Unit for review and approval.

Heat input requirements for HPS: 40Kj/in. Min. / 90Kj/in. Max.

In general, post weld heat treatment shall not be required. The use of such post weld heat treatment shall require additional qualification testing.

Welders and welding operators must be qualified by radiographic test only.

The Contractor is advised that HPS 485W steel plates may be limited to a 15.24 meters maximum delivery length from the mill.

The fillet welds shall be magnetic (MP) tested in accordance with Section 6.7.2 of AWS D1.5-96. MP tests shall be done as described in Section 18 of the NYS Steel Construction Manual using the yoke technique, modified to test in the AC output mode only.

100% of all complete penetration groove welds in tension and stress reversal areas of the plate girders shall be evaluated by and conform to both radiographic and ultrasonic tests as described in Sections 16 and 17 of the NYS Steel Construction Manual. Testing must be completed before repairs are made to the weld.

Restrictions

Application of heat for any reason must be done by procedures approved by the Deputy Chief Engineer Structures. In addition, heating is limited to 480°C maximum, unless otherwise approved by the DCES.

METHOD OF MEASUREMENT

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Measurement will be made per kilogram.

BASIS OF PAYMENT

The provisions of Subsection 564-5 shall apply.