

ITEM 441

STEEL STRUCTURES

441.1 Description. These specifications shall provide for the fabrication and erection of structural steels and other metals, except reinforcing steel, which are used for steel structures or steel portions of structures.

441.2 Materials. The metal used for the various portions of the structures shall be as specified and shall conform to the requirements of the Item 442 "Metals for Structures".

Electrodes for welding shall conform to the following:

- A. For manual shielded metal arc welding, AWS A5.1 or AWS A5.5.
- B. For gas metal arc welding, AWS A5.18 or AWS A5.20.

441.3 Submittals. Unless otherwise provided on the plans, the Contractor shall prepare and submit detailed shop drawings for each detail of the general plans requiring the use of structural steel. Camber and erection drawings will also be required.

Preparation and submission of drawings may be either on full or half size sheets. However, drawings must be completely clear and legible.

Six copies of shop drawings and six copies of erection drawings will be required. The drawings shall reflect the use of submerged arc welding, gas metal arc welding or cored arc welding.

Erection drawings shall show the sequence of erection, the location of falsework and the location of ground and air splices, with the proposed method of support, to determine any overstress caused by the erection procedure.

Contractor shall furnish the following information for members fabricated by welding or bolting.

- A. Fabricating procedures.
- B. Calculated stresses.
- C. List of equipment used for fabrication.
- D. Sequence of assembly.
- E. Details of connections.
- F. Special processes such as planing, facing, etc.

Contractor shall submit certified copies of mill certificates of compliance with requirements herein specified for structural steel and other metals. Mill certificates are not required for miscellaneous hardware, bolts, nuts, washers, screws, etc.

Contractor shall submit certified copies of shop welding tests in compliance with requirements herein specified.

- 441.4 Welding. Welding shall be in accordance with the Item, "Structural Welding". Qualifications of welders may be required. If no welded splices of main stress carrying members are involved, the tests will consist of the performance of a few samples welds by the welder and the fracture and visual inspection thereof by the Engineer. If splices of main carrying members are involved, qualification procedures shall conform to the latest Specifications for Welded Highway & Railway Bridges, published by the American Welding Society. The expense of qualification shall be borne by the contractor.
- 441.5 Fabrication Procedures. When structural members with calculated stress, are fabricated by welding or bolting, a fabrication procedure may be required to be submitted. A fabrication procedure shall include a list of equipment to be used, sequence of assembly, sequence and detail of connections made, special processes such as planing, facing, etc., detail of heat treating procedures, where applicable and any other information concerning fabrication, as may be required by the Engineer.
- 441.6 Field Erection. Spot welding for the purpose of eliminating field erection bolts or for holding steel parts together, while bolting, will not be permitted. All beams and girders over roadways or railroads shall be securely supported, with special care taken to protect the traffic below from falling objects during construction.
- The contractor shall provide the falsework and all tools, machinery and appliances, including drift pins and fitting up bolts, necessary for the expeditious handling of the work. Drift pins sufficient to fill at least one-fourth of the field holes, for main connections, shall be provided.
- 441.7 Paint & Painting. Shop painting shall conform to the requirements of the "American Institute of Steel Construction", except that steel shall be cleaned by buffing. Paint shall be applied at the minimum rate of one gallon to 450 square feet. Shop painting shall only be done if specified on the plans.

Field painting shall be in accordance with the Item, "Painting and Protective Coating".

441.8 Measurement & Payment. No direct compensation will be made for "Steel Structures". Measurement and payment for same shall be in accordance with the contract price bid, for work of which this is a component part.

There are line code(s), description(s), and unit(s) for this item.

END OF ITEM 441

SUMMARY SHEET

ITEM 441 - STEEL STRUCTURES

Other Specifications Required

Item 442 - Metals for Structures

Item 445 - Structural Bolting

Item 448 - Structural Welding

Item 447 - Painting & Protective Coating

Reference Standards

1. AWS

a. A5.1

b. A5.5

c. A5.18

d. A5.20

e. Specifications for Welded Highway & Railway Bridges

2. ASTM A153

3. AISC

Description:

Describes the methods of fabrication and erection of structural steel and other metals.

Payment:

None

DO NOT INCLUDE THIS SHEET IN THE CONTRACT SPECIFICATIONS.