First Use Date: January 20, 2006

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SUPPLEMENTAL SPECIFICATION

Section 501—Steel Structures

Delete Subsection 501.1 and substitute the following:

501.1 General Description

This work includes furnishing and building with structural steel and miscellaneous metals to the lines, grades, and dimensions shown on the Plans or established by the Engineer.

The work does not include bearing devices for prestressed concrete bridge members, utility installation hardware, or any metal covered under another Pay Item.

501.1.01 Definitions

HTS Bolts: High Tensile-Strength bolts.

501.1.02 Related References

A. Standard Specifications

Section 109—Measurement and Payment

Section 500—Concrete Structures

Section 512—Shear Connectors

Section 535—Painting Structures

Section 851—Structural Steel

Section 852—Miscellaneous Steel Materials

Section 854—Castings and Forgings

Section 857—Bronze Bushings, Bearings, and Expansion Plates

Section 870—Paint

Section 881—Fabrics

Section 885—Elastomeric Bearing Pads

B. Referenced Documents

ANSI/AASHTO/AWS D 1.5

AISC Manual of Steel Construction

ANSI B1.13 Class 2A

ANSI 2.5, 3.2, 6.3, 12.5, 25, 46, 46.1 Part 1, 50

ASTM A 6/A 6M

ASTM A153/A 153M

ASTM A 325 (A 325M)

ASTM A 490 (A490M)

ASTM A 919

ASTM F 568M Class 4.6

501.1.03 Submittals

A. Pre-Inspection Documentation

Furnish documentation required by the latest ANSI/AASHTO/AWS D 1.5 under radiographic, ultrasonic, and magnetic particle testing and reporting to the State's inspector before the quality assurance inspection.

B. Shop Drawings

Prepare Shop Drawings for structural steel and other metal materials to be fabricated. Show the details necessary for shop fabrication and field erection.

1. **Description.** Use the standard sheet size of the Department's Bridge Office. Submit at least two complete sets of preliminary prints marked "NOT FOR FIELD USE" to the Department's Bridge and Structural Design Engineer (the Bridge Engineer) for review before fabricating materials.

   As an option, shop drawings may be submitted on plan sheet sizes of 12" x 18" (305 mm x 457 mm) or 11" x 17" (279 mm x 432 mm) for review and approval. Information contained on these sheets must be legible.

   After shop drawings have been approved, submit an electronic file that is compatible with Bentley Microstation J (Version 7) Cadd operating system, or an electronic file in Adobe Acrobat Portable Document Format (.pdf) to the Engineer. For bridges carrying railroads only, after shop drawings have been approved, submit one full size set of reproducible drawings to the Department.

2. **Review Process.** After the preliminary prints have been reviewed and revisions have been made, submit 5 or more complete sets of the final drawings to the Bridge Engineer. The Bridge Engineer will mark each drawing with a conditional approval stamp and return one stamped set to the fabricator. Furnish the Bridge Engineer with as many additional sets of final prints as required.

   The Bridge Engineer's review and conditional approval of Shop Drawings is a service for the Contractor. The Department assumes no responsibility for the accuracy of the drawings, and the Contractor will not be relieved of any responsibility for conforming to the Specifications and Plans.

3. **Railway Structures.** For structures carrying railway traffic and for other structures when specifically designated, furnish the Bridge Engineer a full set of permanent reproducibles of the final Shop Drawings.

4. **Welded Construction.** On Shop Drawings for welded construction, use the standard welding symbols of the American Welding Society. Explain special conditions in notes or details. Show the sequence and techniques for areas where shrinkage stress and distortion control is necessary.

5. **Changes and Substitutions.** Do not change a Shop Drawing after it has been conditionally approved unless the Bridge Engineer gives written consent. List and symbolize revisions on each drawing.

   Obtain written consent from the Bridge Engineer before substituting materials with dimensions and weights other than those shown on the Plans. Make changes associated with an approved substitution at no expense to the Department.

6. **Alternate Locations of Splices and Connections.** If splices or connections are desired at locations other than those shown on the Plans, submit a proposal and Shop Drawings to the Bridge Engineer to get written approval before proceeding.

7. **Steel Identification.** Upon request, furnish an affidavit certifying the identification of steel is maintained throughout fabrication.

   On the Shop Drawings, show the grade of steel to be used and identify each piece. Give pieces made of different types or grades of steel different assembly or erection marks.

   Maintain the identity of the mill test report number when assembly-marking individual pieces and when giving cutting instructions to the shop.

C. Fabrication Schedule

Ensure that the fabricator submits a proposed fabrication schedule to the State Materials and Research Engineer that includes the following:

- Correct project number, including county
- Bridge number
- Starting date
- Estimated completion date

D. Quality Control Program

Before fabrication begins, submit the fabricator's written Quality Control program to the Office of Materials and Research for approval. This program and its personnel will be subject to verification when the Department's Materials and Research Engineer deems necessary.

Even with a State inspection, continue to perform Quality Control (QC) on all nonfracture-critical and fracture-critical members and components.

E. Mill Orders and Shipping Statements

Furnish the number of copies of mill orders and shipping statements covering fabricated materials and related miscellaneous materials the Engineer directs. Show the weights of individual members on the statements.

F. Mill Test Reports

Furnish the Engineer two certified, legible copies of mill test reports that show the results of physical tests and complete ladle analyses for each heat and grade of steel ordered. Refer to the ASTM designation of tests used. Furnish mill test reports at no expense to the Department.

G. Welding Procedures

Before structural steel fabrication begins, submit welding procedures to the Engineer for review and approval.

H. Electrode Testing

Furnish a manufacturer's certification showing that the material requirements used for manufacturing the tested electrodes and furnished electrodes were the same for each lot of electrodes on the Project.

I. Falsework

If required, prepare and submit falsework plans for the Engineer's review. Continue to assume the responsibility to produce safe falsework. When erection is completed, remove falsework to the Engineer's satisfaction.

J. Camber Diagram

Furnish the Engineer a diagram showing the camber at each splice point for each girder. Base the diagram on measurements taken during shop assembly. In the case of partial shop assembly, base the camber diagram on theoretical calculated values.