ORIGINATION FORM
Proposed Revisions to the Specifications
(Please provide all information - incomplete forms will be returned)

Date: 05/01/2019

Office: *State Materials Office*

Originator: Tim McCullough

Specification Section: 460

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Article/Subarticle: 460-1.1; Table 460-1; 460-4.2.2

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Will the proposed revision require changes to:

Publication	Yes	No	Office Staff Contacted
Standard Plans Index	○	◉	
Traffic Engineering Manual	○	◉	
FDOT Design Manual	○	◉	
Construction Project Administration Manual	○	◉	
Basis of Estimate/Pay Items	○	◉	
Structures Design Guidelines	○	◉	
Approved Product List	○	◉	
Materials Manual	◉	○	Materials Manual Ch. 11.1 Vol. II

Will this revision necessitate any of the following:

Design Bulletin ☐ **Construction Bulletin** ☐ **Estimates Bulletin** ☐ **Materials Bulletin** ☐

Are all references to external publications current? **Yes** ◉ **No** ○

If not, what references need to be updated? (Please include changes in the redline document.)

Why does the existing language need to be changed?

Structures design changed the classification of overhead sign structures to be included in main or primary load carrying. Metal components under miscellaneous should reflect current metal types. Facility accreditation Intermediate lacked important action items to remain a applicable bridge category. Implementation of plasma etching research.

Summary of the changes:

1. Addition of sign structures to the section of main or primary load carrying members.
2. Identified more relevant materials for the miscellaneous metal components, consistent with metals production facility list.
3. Re-organized facility accreditations: removed Intermediate due to deficiencies; separated metal components into 2 groups.
4. Add language and constraints to surface marking of steel.

Are these changes applicable to all Department jobs? **Yes** ◉ **No** ○

If not, what are the restrictions?

Contact the State Specifications Office for assistance in completing this form.
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M E M O R A N D U M

DATE: May 2, 2019

TO: Specification Review Distribution List

FROM: Dan Hurtado, P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **4600100 Structural Steel and Miscellaneous Metals.**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

This change was proposed by Thomas Frank of the State Materials Office (SMO) to modify the language.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or online at http://www2.dot.state.fl.us/ProgramManagement/Development/IndustryReview.aspx . Comments received after **June 13, 2019,** may not be considered. Your input is encouraged.

DH/dt
Attachment

STRUCTURAL STEEL AND MISCELLANEOUS METALS
(REV 5-2-19)

ARTICLE 460-1 is deleted and the following substituted:

460-1 Description.

460-1.1 General: Prepare, fabricate, assemble, erect, and perform all nondestructive testing for structural steel or miscellaneous metal structures, or portions thereof in accordance with the Contract Documents.

Obtain Structural Steel and Miscellaneous Metals from a fabricator that is currently on the Department's Production Facility Listing. Fabricators seeking inclusion on the list shall meet the requirements of Section 105.

As used in this specification, the following terms shall apply:

Main or primary load-carrying member or component: This designation refers to the following;

1. Longitudinal or transverse rolled beams or fabricated girders (I or box, curved or straight)
2. All truss members not designated as cross frames
3. Cross frames, diaphragms and connection plates of horizontally curved beams or girders
4. Rib members of steel arches
5. Bracing members subjected to and specifically designed for traffic live load and/or other loads
6. Cross frames or diaphragms at pier and abutment supports of tub or box girders (trapezoidal members) and their connection plates
7. Attachments and components of the above such as splice, cover, cross frame and diaphragm connection and gusset plates, but not transverse and bearing stiffeners (unless acting as a cross frame or diaphragm)
8. Cables, moment release pins and links, and hangers
9. All steel substructure members except those designated as secondary in the Contract Documents
10. Overhead cantilevers, trusses, spans and gantries
11. Other members as may be identified in the Contract Documents

Miscellaneous components - This designation refers to, but is not limited to, the following:

1. ~~Ladders~~Steel modular joints
2. ~~Platforms~~Load plates
3. ~~Bearings~~Stay in place forms
4. ~~Railings~~Laminated bearing pads
5. ~~End Wall Grates~~Aluminum J-arms
6. Roadway Gratings, inlets, and frames
7. ~~Metal Drainage Components~~
8. ~~Steel Expansion Joint and Components~~Steel and aluminum railing
9. Forgings and castings to be used in bridge machinery

460-1.2 Fabrication Categories: As a prerequisite for being on the Department's Production Facility Listing, fabricators must currently be accredited in accordance with one of the programs in Table 460-1, by fabrication category/categories of the products that they are producing.

Fabricators are required to submit their proposed fabrication Quality Control (QC) Plan for review by the Department.

Table 460-1
Fabrication Categories

Structure Type	Accepted Accreditation Program
~~Advanced Bridge: Tub or trapezoidal box girders, closed boxed girders, large or non-preassembled truss bridges, arches, cable supported bridges, moveable bridges, and bridges with curved radii tighter than defined for intermediate bridge.~~ Simple Bridge: Pedestrian bridge (standard design), bridge grid decking	~~AISC Advanced Bridge~~ AISC Simple Bridge
~~Intermediate Bridge: A rolled beam bridge with field or shop slices, either straight or with a radius over 500 feet: a built-up I-shaped plate girder bridge with constant web depth (except for dapped ends), with or without splices, either straight or with a radius over 500 feet: a build-up I-shaped plate girder with variable web depth (e.g. haunched) either straight or with a radius over 1000 feet; a truss bridge with a length of 200 feet or less that is entirely or substantially preassembled at the certified facility and shipped in no more than three subassemblies.~~ Steel Bridge: Vehicular bridge, Pedestrian bridge (proprietary design)	~~AISC Intermediate Bridge~~ AISC Advanced Bridge Fracture Critical Endorsement
~~Simple Bridge: Unspliced rolled sections and pedestrian bridges~~ Structural Highway Metal Components, Group I: bridge machinery, bridge bearings, modular joints, load plates, laminated bearing pads, cantilever, truss/span, monotube, gantry, mast arms, steel light poles, aluminum light poles, aluminum j-arms, drainage (welded gratings, frames, inlets)	~~AISC Simple Bridge~~ AISC Components Manufacturer or AWS Welding Fabricator
~~Highway Metal Components, including Aluminum: Fence materials, guardrails, handrails, reinforcing steel (rebar), casing pipes, metal drainage items, stay-in-place forms, light poles, high mast poles, metal buildings, steel strain poles, bridge rail, stairs, walkways, grid decks, scuppers, expansion joints, bearings, ballast plates, complex expansion joints, high load multi-rotational bearings, bracing not designed for primary loads (diaphragms, cross frames, and lateral bracing), moveable bridge machinery and sign or signal structures erected partially or completely over the traveled roadway or mounted on bridges.~~ Structural Highway Metal Components, Group II: bridge forgings, bridge castings, steel railing, aluminum railing, castings (manhole, grating, inlet, frame), guardrail, coated steel fence, elastomeric bearing pads, stay in-place forms	~~AISC Highway Metal Components ISO 9001 AWS CWF~~ ISO 9001

NOTES:
An AISC fracture critical (FC) endorsement is required for all FC work.

Other accreditations programs may be submitted to the FDOT State Materials Office for review and consideration in addition to the programs listed in the table above.

SUBARTICLE 460-4.2.2 is deleted and the following substituted:

460-4.2.2 Match Marking of Members and Assemblies: Match mark all connecting members or parts that have been reamed or drilled while assembled. The fabricator shall submit a diagram showing all marks and clearly indicate the location of all the marks on the shop drawings.

Use painted marks, attached metal tags, other durable methods which do not degrade the finish of the piece, including plasma etching or low-stress type steel die stamps to identify and match mark pieces. If steel die stamps are used, they must be blunt nosed or interrupted dot dies, manufactured to produce impressions that are rounded at the bottom of the impression. Re-mark coated type markings as necessary to maintain continuity in traceability. Plasma etching using robotic equipment may be used to mark the surface of a steel plate when done at 10- amps and at 150- inches per minute. Plasma etching outside of these parameters requires Engineer approval.

Mark splice plates and girders so that upon erection, the mark on the splice plate is located opposite a matching mark on the girder. Place the mark on web splice plates, midway down the long side of the plate, on either the right or left side, to correspond with the girder to which the splice plate will be temporarily attached for shipping to the erection site. Make a matching stamp on the girder web opposite the mark on the splice plate.

Place the mark on top or bottom flange splice plates, on the right or left end of the plate, corresponding to the girder to which the plate will be attached for shipment to the erection site. Place a corresponding mark on the girder flange opposite the mark in the splice plate.

As an alternate location for tub girder bottom flange splice plates, place the mark midway down the long side of the plate, on either the right or left side, to correspond with the girder to which the splice plate will be temporarily attached for shipping to the erection site. Make a matching mark on the girder flange opposite the mark on the splice plate.

Mark girders and beams on the left end, according to the orientation shown in the shop drawings, near the top flange. Mark diaphragms in the middle upper portion of the web. Mark cross-frames in the middle of the top or bottom horizontal member.

When heat numbers and other identification marking are applied by die stamping to fracture critical members, low stress dies shall be used.

Low-stress die stamp markings applied to fracture critical members shall be placed in locations or zones shown or described in the approved shop drawings. Low-stress or compression areas are preferred.

Ensure that during fabrication, the heat number is maintained on each primary load-carrying component by paint until the component is permanently joined into a piece marked member or assembly.