

4150000 REINFORCING STEEL
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Cheryl Hudson
FDOT
State Design Office

Comments: (5-27-15)

This sentence needs clarification.

415-1 Description.

Furnish and place in concrete masonry reinforcing steel of the quality, type, size, and quantity designated.

Furnish and place in concrete or masonry, reinforcing steel of the quality, type, size, and quantity designated?

Response: Sentence changed to read, "Furnish and place reinforcing steel of the quality, type, size, and quantity designated"

Jeff Pouliotte

Comments: (5-28-15)

The only question I have is with the proposed changes to 4150000 "Reinforcing Steel" (subsection 415-4), the sentence "Do not bend the reinforcement in the field." Issues arise in the field that occasionally require reinforcing steel to be bent in the field, such as: when the camber sag for a prestressed concrete girder is so significant that stirrups are not tall enough to engage the bottom mat of the deck slab reinforcement. In this instance, past practice after engineering review was to slightly bend the ends of the stirrups upwards to engage the deck slab reinforcement. Will the bending reinforcement for such instances be strictly prohibited, or will it still be allowed on a case by case basis after engineering review?

Response: Added the sentence, "Minor bending adjustments may be performed in the field with the approval of the Engineer"

Pat McCann

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Comments: (6-1-15)

415-7.1: In the event the Engineer approves the use of WWF in lieu of planned rebars, is the intent of this spec to make a plan quantity adjustment or pay plan quantity? As written it sounds the Dept. would adjust the PQ.

Response: Added the sentence, "No additional payment will be made for substitutions of welded deformed wire reinforcement proposed by the Contractor."

Anonymous

Comments: (6-8-15)

This specification seems overly restrictive. As I read it, the specification allows for no field bending, no additional splices even if designed by a specialty engineer and no wet sticking rebar

in footings. Plans are often imperfect and this change takes away the ability of the Owner and Contractor to make appropriate field adjustments. I can imagine a scenario where the reinforcing steel does not work per plan and could be reasonably adjusted to continue the work. However, with this new spec, work may come to a halt while the EOR addresses the issue. The contractor would be forced to file a claim to recoup the down time.

Response: Added the sentence, "Minor bending adjustments may be performed in the field with the approval of the Engineer"

Chad Rucks (via Deborah Ihsan)
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Comments: (6-17-15)

Section 415-4 Bending, Splicing and Cutting: Suggest reworking this section in a way that shows what is allowable and not allowable. An example would be "Shop bending of the reinforcement cold to the shapes indicated in the Plans is the only acceptable method of bending. Bending the reinforcement in the field, use of hot bending or straightening, welding, or thermal cutting of the reinforcing steel is not acceptable."

Response: Added the sentence, "Minor bending adjustments may be performed in the field with the approval of the Engineer"

Jose Kandarappallil (via Deborah Ihsan)
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Comments: (6-17-15)

I present this write up to be considered by the higher management. I had noticed similar issues of corrosion on the (segmental box girder bridge) Ernest Lyons Bridge in A1A near Stuart, back in March 2014. This Bridge was completed and commissioned on 2007. Please see the attached photograph. In fact our concerns were sent to District PM associated with the bridge hand rail repair then. But the district considered the corrosion as a cosmetic issue.

I had a discussion about this scenario with Jeff LeClaire yesterday. He also has concerns with the early corrosion starting through the chairs supporting the reinforcement. Though there are many suggestions, to avoid the scenario, stringent Quality Control at the production yard is the most critical aspect of the solution. Most of the chairs used by the contractors have plastic coating at their tips. Due to wear and tear during handling right from their production units, (to storage yards, handling to project location or casting yards), wears out the plastic tips of these chairs. Besides the weight of the rebar and live loads during concrete pour cause them to penetrate (may be a micro millimeter) in to the supporting form work and would cause for easy access for moisture to react with the corroded tip of the chairs. Besides, plastic has poor bonding with concrete when compared with aggregate. (This is not a problem for stay in place concrete works); But is a problem for precast box girders which are produced in the casting yards. Suggestions:- By use of stainless steel chairs:-Instead of the normal ones with plastic coated tips.

Response: The use of coated chairs is not new technology and does not depend on the bonding of concrete to the plastic. No change.

Jeff LeClaire (via Deborah Ihsan)
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Comments: (6-17-15)

By use of concrete hog apples below the main bars. The concrete hog apples must be made from the same mix design used for the concrete structure. Avoiding Bolsters: - bolsters are usually made of plastic. These shall not be allowed to be used under the main rebars for obtaining concrete cover because plastic has low bonding with concrete .Use of plastic Bolsters should be restricted as spacers only, where sufficient concrete cover can be achieved.

Response: The use of plastic bolsters to support rebars is not new technology and does not depend on the bonding of concrete to the plastic. No change.

Jay Cooper
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Comments: (6-19-15)

We have concerns with the blanket restriction of field bending reinforcing steel in the proposed change to Article 415-4. If there is a specific targeted procedure being addressed by this change, such as in-situ bending and straightening (or straightening and re-bending) of reinforcing steel, it would be more appropriate to to limit field bending to certain bar sizes (e.g. using ACI 301 and/or ACI 318) and/or to initial bends of straight bars only (a lesser concern of CRSI as noted in their Engineering Data Report Number 54).

Response: Added the sentence, "Minor bending adjustments may be performed in the field with the approval of the Engineer"
