

ORIGINATION FORM

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Specification: 415-5.13.3

Subject: Plastic Chairs and Bolsters

Origination date: 11/13/2009

Originator: Mario A. Paredes

Office/Phone: 352-955-6690

Problem statement: There is no specification covering plastic rebar spacers. There is also no specification covering plastic rebar support products for drill shaft applications.

Proposed solution: Add requirements for the plastic rebar products

Information source: Larry Jones, Assistant State Structures Design Engineer & State Geotechnical Engineer

Recommended Usage Note:

Estimated fiscal impact, if implemented:

Implementation of these changes, if and when approved, will begin with the July 2010 letting.



Florida Department of Transportation

CHARLIE CRIST
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

STEPHANIE KOPELOUSOS
SECRETARY

MEMORANDUM

DATE: December 14, 2009

TO: Specification Review Distribution List

FROM: Rudy Powell, Jr., P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **4150513 Reinforcing Steel – Bar Supports**

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

This change was proposed by Mario Paredes of the State Materials Office to add plastic rebar spacers for typical applications and plastic rebar supports and spacers for drilled shaft applications.

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 to my attention via e-mail at ST986RP or rudy.powell@dot.state.fl.us. Comments received after **January 11, 2010** may not be considered. Your input is encouraged.

RP/jf
Attachment

REINFORCING STEEL—BAR SUPPORTS.

(11-24-09)

SUBARTICLE 415-5.13(Pages 438-439) is deleted and the following substituted

415-5.13 ~~Chairs and Bolsters~~Bar Supports:

415-5.13.1 General: Provide reinforcing steel bar supports manufactured in accordance with all requirements of the CRSI Manual of Standard Practice. Use ~~chairs and bolsters~~*bar supports* of adequate strength to withstand a 300 pound concentrated load without permanent deformation or breakage, with the deformation under a 300 pound load being less than 5% of the support height.

Ensure that no more than 5% of the reinforcing steel bar supports exhibit unsatisfactory performance, breakage, or permanent deformation during rebar tying and/or concrete placement operations. If a bar support does not achieve this level of performance, reduce the average spacing between bar supports by 15%, or remove that product from use on the job.

Ensure that bar supports, ~~both chair and bolster~~, do not move during concrete placing operations. To prevent movement, tie supports to the reinforcing steel.

When using bar supports on corrugated metal stay-in-place forms, use supports specifically designed for the form being used.

For structural elements located in extremely aggressive environments, do not use metal ~~chairs and bolsters~~*bar supports* in contact with forms or floor surfaces to support reinforcing steel.

415-5.13.2 Metal ~~Chairs and Bolsters~~Bar Supports: For metal bar supports in contact with steel stay-in-place forms and metal bar supports in contact with boundary surfaces of concrete to be cast, provide supports constructed with molded plastic legs or plastic protected steel legs. Do not allow any portion of the bar support other than the molded plastic leg or plastic protected portion of the steel leg to be closer than 1/2 inch from the boundary surface of concrete to be cast.

Certify that all metal bar supports meet the following requirements:

(1) That they are manufactured from cold drawn steel wire in accordance with the wire sizes and geometrical dimensions shown in the CRSI Manual of Standard Practice, Chapter 3, Table II.

(2) That the plastic used for protection of the steel legs has a thickness of 3/32 inch or greater at points of contact with the form work.

Provide plastic protection by a dipping operation, by adding premolded plastic tips to the legs of the support or by molding plastic to the top wire of the support. Ensure that the plastic material used for protection of steel legs does not chip, crack, deform, or peel under ordinary job conditions. Provide molded plastic legs that have sufficient strength to carry the weight of the supported reinforcing steel in its required position without deformation and relaxation under job conditions.

415-5.13.3 Plastic ~~Chairs and Bolsters~~,Bar Supports and Spacers: Use ~~chairs, and bolsters~~*bar supports and spacers* comprised of either reinforced or non-reinforced virgin or recycled plastic. ~~Chairs and bolsters~~*Bar supports shall be* able to meet the concentrated load requirements of 415-5.13.1 within a working temperature range of 20 to 150°F. *Spacers shall be able to withstand a 50 pound concentrated load without bar slippage, permanent deformation or*

breakage within a working temperature range of 20 to 150°F with the deformation under a 50 pound load being less than 5% of the support height.- Slip-on spacers should be tested with the load applied towards the insertion opening.

All plastic rebar supports shall ~~and~~ have a maximum water absorption rate of 0.5% at 14 days, as per ASTM D 570.

Protect plastic rebar ~~chairs~~*supports* from exposure to sunlight until placed in the form. Mold plastic rebar supports in a configuration which does not restrict concrete flow and consolidation around and under the rebar support. Do not use continuous legs or rails on concrete surfaces.

Due to the wide range of applications and heights, ensure that the manufacturer additionally certifies all plastic ~~chair and/or bolster systems~~*bar supports* for 2 inch, 3 inch, 4 inch and 4 1/2 inch heights.

Provide each individual bar support with an identification number unique to the particular model permanently marked on the surface as included in the Qualified Products List.

415-5.13.4 Plastic Bar Supports and Wheel Spacers for Drilled Shafts

Applications: *Wheel spacers shall be able to withstand a 500 pound concentrated load without bar slippage, permanent deformation or breakage at room temperature with the deformation under a 500 pound load being less than 5% of the support height. -Slip-on wheel spacers shall be tested with the load applied towards the insertion opening. The perimeter surface of the wheel spacer shall be smooth. Bottom bolsters shall be able to withstand a 1000 pound concentrated load without permanent deformation or breakage at room temperature with the deformation under a 1000 pound load being less than 5% of the support height.*

415-5.13.54 Qualified Products List: Use plastic ~~chair and bolster~~*bar supports and spacers* products listed on the Department's Qualified Products List. Manufacturers seeking evaluation of products for inclusion on the Qualified Products List must submit an application in accordance with 6-1 and include certified test reports from an independent laboratory showing that the plastic ~~chair and bolster products~~*bar supports and spacers* meet all the requirements specified herein. Plastic ~~chair and bolster products~~*bar supports and spacers* made of recycled plastic products must meet the additional requirements of Section 972.