Origination Form

Specifications

Name:	Alexander Lewis	**Standard Specification Section:**	415
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Date:	2025-06-05T18:20:40Z	**Associated Specs:**	None

Summary:

-correct internal reference -change FRP UV exposure limit from a prescriptive day amount to manufacturer recommendation. -allow nonmetallic fasteners for both metal and FRP reinforcement, provided that they are an approved product.

Justification:

Referenced Spec section number in 932 changed. Due to limited guidance from governing industry standards such as ACI 440 risk of damage to FRP bars related to excessive UV exposure should be shifted to the producer & contractor. This will reduce confusion on projects. Lastly, it is unreasonable to restrict nonmetallic fasteners from use to tie FRP reinforcement. The intent is to open to alternative kinds without compromising quality. Thus an APL product category should be created as well. Additionally, APL office suggested adding the subsection of each material to the Materials section for document consistency.

Do the changes affect other types of specifications?

Neither

List Specifications Affected:

Other Affected Documents/Offices	Contacted	Yes/No
Other Standard Plans		No
Florida Design Manual		No
Structures Manual		No
Basis of Estimates Manual		No
Approved Product List		No
Construction Office		No
Maintenance Office		No
Materials Manual		No

Traffic Engineering Manual		No

Are changes in line with promoting and making progress on improving safety, enhancing mobility, inspiring innovation, and fostering talent; explain how?

The changes inspire innovation and foster talent by removing unnecessary restrictions to the creative endeavors of construction.

What financial impact does the change have; project costs, pay item structure, or consultant fees?

A new pay item may have to be created for fasteners. Project costs should be reduced based on our understanding from FRP manufacturers that their products can last for a greater time period when exposed to UV than the Specification currently allows.

What impact does the change have on production or construction schedules?

Proper execution of this change should speed up construction schedules.

How does this change improve efficiency or quality?

Allowing new products that are already proven to work and clearing up confusion about exposure should increase efficiency and quality of work.

Which FDOT offices does the change impact?

Materials, Design, Construction

What is the impact to districts with this change?

Enforcement of a new APL product. Project deliverable timelines should decrease.

Does the change shift risk and to who?

UV: risk shifted to the producer and contractor. nonmetallic fasteners: Department takes risk of specifying materials.

Provide summary and resolution of any outstanding comments from the districts or industry.

Comments and Responses are available on the Track the Status of Revisions hyperlink located on the Specifications landing page: https://www.fdot.gov/programmanagement/Specs.shtm

What is the communication plan?

Through the established specification revision process (e.g., Internal and Industry Review)

What is the schedule for implementation?

The Standard Specifications eBook and Workbook are effective July 1st every year.

REINFORCING FOR CONCRETE
(REV 6-5-25)

ARTICLE 415-1 is deleted and the following substituted:

415-1 Description.

Furnish and place steel ~~and~~ or fiber reinforced polymer (FRP) reinforcement~~ing~~ of the quality, type, size, and quantity designated. Obtain all ~~FRP~~ reinforcing ~~bars~~ from a producer on the Department's Production Facility Listing.

ARTICLE 415-2 is deleted and the following substituted:

415-2 Materials.

Meet the following requirements:

~~Steel Bar~~ Reinforcement Steel	931-1.1
~~Steel Welded~~ Wire Reinforcement	931-1.2
FRP Bar Reinforcement	932-4

ARTICLE 415-3 is deleted and the following substituted:

415-3 Protection of Material.

~~**415-3.1 Steel Reinforcing:**~~ Store ~~steel~~ reinforcement above the surface of the ground, upon platforms, skids, or other supports, and protect it from mechanical injury and surface deterioration. Ensure that the ~~steel~~ reinforcement is free from loose rust, scale, dirt, paint, oil, and other foreign material prior to incorporation into the work. Limit FRP UV exposure to 4 months and ambient temperature during storage to 120°F, or as directed by the FRP manufacturer.

~~**415-3.2 Fiber Reinforcing Polymer (FRP) Reinforcing:** Store FRP reinforcement above the surface of the ground, in boxes or upon platforms, skids, or other supports, and protect it from mechanical injury and direct exposure to UV light. Ensure that the FRP reinforcement is free from dirt, paint, oil, and other foreign material prior to incorporation into the work.~~

ARTICLE 415-4 is deleted and the following substituted:

415-4 Bending, Splicing, and Cutting.

415-4.1 Steel Reinforcement~~ing~~: Fabricate reinforcing bars as prescribed in the CRSI Manual of Standard Practice. Shop bend the reinforcement cold to the shapes indicated in the Plans. Do not bend the reinforcement to shape in the field. Minor bending adjustments may be performed in the field with the approval of the Engineer.

Do not hot bend or straighten, weld, or thermal cut reinforcing steel.

415-4.2 Fiber Reinforcing Polymer (FRP) Reinforcement~~ing~~: No field fabrication of FRP reinforcing bars is permitted except tying and field cutting per ACI 440.5. Do not bend or straighten, couple, thermal cut, or shear cut FRP reinforcing bars.

SUBARTICLE 415-5.3 is deleted and the following substituted:

415-5.3 Tying: Securely tie all reinforcement together without damage. Use ties of sufficient strength to maintain the reinforcement in its proper position. For stainless steel reinforcement, use stainless steel wire or non-metallic tying materials.

~~**415-5.3.1 Steel Reinforcing:** Tie steel reinforcing using pliable steel wire that readily bends and twists without breaking and that provides a tie of sufficient strength to hold the steel reinforcing in its proper position. Tie stainless reinforcing steel using plastic coated pliable steel wire; or stainless steel wire meeting the requirements of ASTM A276, UNS S31600.~~

~~Non-metallic fasteners for steel reinforcing may be used in precast concrete products upon approval by the appropriate District Materials Office (DMO).~~

~~**415-5.3.2 Fiber Reinforcing Polymer (FRP) Reinforcing:** Tie FRP reinforcing using self-locking plastic straps; or plastic coated pliable steel wire that readily bends and twists without breaking and that provides a tie of sufficient strength to hold the FRP reinforcing in its proper position.~~