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AASHTO

Guide Specifications for the Design of Concrete Bridge Beams Prestressed with Carbon Fiber-Reinforced Polymer (CFRP) Systems

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SECTION 1:

GUIDE SPECIFICATIONS FOR THE DESIGN OF CONCRETE BRIDGE BEAMS PRESTRESSED WITH CARBON FIBER-REINFORCED POLYMER (CFRP) SYSTEMS

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SECTION 1:

GUIDE SPECIFICATIONS FOR THE DESIGN OF CONCRETE BRIDGE BEAMS PRESTRESSED WITH CARBON FIBER-REINFORCED POLYMER (CFRP) SYSTEMS

1.1—SCOPE AND LIMITATIONS

These guide specifications apply to the design of prestressed concrete beams constructed of normal weight concrete and prestressed by carbon fiber-reinforced polymer (CFRP) prestressing systems. Unless otherwise specifically noted, these guide specifications are applicable to:

- Concrete components made of concrete with compressive strengths used for design from 5.0 to 15.0 ksi, inclusive.
- Pretensioned concrete beams.
- Bonded and unbonded internally post-tensioned concrete beams.
- Shear design of prestressed concrete bridge beams with only transverse steel reinforcement.

Unless amended herein, the existing provisions of the *AASHTO LRFD Bridge Design Specifications, Eighth Edition* shall apply to the design of concrete beams prestressed with CFRP systems. References to articles in the *AASHTO LRFD Bridge Design Specifications* (AASHTO LRFD Design) are those of the eighth edition. References to articles in the *AASHTO LRFD Bridge Construction Specifications* are those of the fourth edition.

The provisions of these guide specifications shall not be applied to:

- Design of anchorage zones for external CFRP post-tensioned strengthening systems.
- Design of partially prestressed concrete beams except that partial prestressing is allowed for post-tensioned beams to resist the loads that are applied prior to application of the final post-tensioning.
- Segmental construction and prestressed concrete bridge beams curved in plan.
- Design for torsion.

C1.1

Specifically, provisions related to unbonded post-tensioned beams may be applicable to beams that are strengthened with external CFRP post-tensioning reinforcement.

The commentary is to provide background information to the articles that need further explanation, where appropriate.

NCHRP Research Report 907 (2019), formerly known as NCHRP Project 12-97 and which has the same title as these Guide Specifications, offers more context and detail about CFRP that is not included in the text or commentary of these Guide Specifications.