



Florida Department of Transportation

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ANANTH PRASAD
SECRETARY

STRUCTURES DESIGN BULLETIN C11-09

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TO: District Directors of Operations, District Directors of Production, District Design Engineers, District Construction Engineers, District Structures Design Engineers

FROM: Robert V. Robertson, P. E., State Structures Design Engineer 

COPIES: David Sadler, Tom Andres, Charles Boyd, Dennis Golabek, Andre Pavlov, Jeffrey Ger (FHWA)

SUBJECT: Continuity of Precast Concrete Beams

REQUIREMENT

Add the following to *Structures Design Guidelines*, Section 4.1:

4.1.7 Continuity of Precast Beams

Use only post-tensioning to splice beam segments within simple spans and/or to establish continuity between adjacent spans.

COMMENTARY

Research of structures made continuous for live load by the use of methods other than post tensioning indicates that the concept has not been developed and tested to the extent that the connection can be considered structurally reliable. Current FDOT details do not assume continuity in the design of the structure.

BACKGROUND

Cost savings in the design of multi span bridges may be achieved by making beams within each span behave continuous under the application of live load and composite dead load. This continuity is achieved by providing a connection at the regions of negative moment such that bending is transferred

to adjacent spans with a reduction in required capacity for the beams potentially translating into reduced cost. Generally, this continuity is achieved by the use of continuous post-tensioning.

Across the country there are numerous details being used to achieve continuity without post tensioning. These connections are subject to a variety of conditions which tend to compromise the actual capacity compared to the theoretical capacity which can lead to overstressing of the beams and poor deck performance. Load testing of structures where these details have been used show a wide range of effectiveness with actual continuity ranging between 0% and 90%.

The Department is currently evaluating the use of alternate methods and details to obtain continuity and the associated potential for reduced superstructure construction and maintenance costs. If the use of this type of connection is ultimately determined to be viable, appropriate design and detailing criteria will be developed to ensure that the connection actually provides the theoretical continuity while not compromising structural performance or durability.

Until these evaluations are complete, only post-tensioning is allowed for splicing or establishing continuity between beams.

IMPLEMENTATION

This requirement is effective immediately. Projects already underway should incorporate the new requirement when deemed appropriate and where minimal revision to the existing design is necessary.

CONTACT

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