



Florida Department of Transportation

**JEB BUSH
GOVERNOR**

605 Suwannee Street
Tallahassee, FL 32399-0450

**JOSE ABREU
SECRETARY**

January 7, 2005

MEMORANDUM

TO: District Structures Design Engineers
(Gerard Moliere, Rod Nelson, Keith Shores, John Danielsen, Neil Kenis, Kim Saing, Jose Rodriguez, and Agnes Spielmann)
District Directors of Production
(Chris Smith, Larry Parks, Tommy Barfield, Gerry O'Reilly, Noranne Downs, Javier Rodriguez, Donald Skelton, Nancy Clements)
District Structures and Facilities Engineers
(Pepe Garcia, Keith Campbell, John Locke, Jose Quintana, Ron Meade, Frank Guyamier, Chris Toenjes)
District Construction Engineers
(Jon Sands, Tim Ruelke Steve Benak, Jennifer Olson, Frank O'Dea, Mark Croft, Brian McKishnie, William Sears)

FROM: William Nickas, P.E., State Structures Design Engineer

COPIES: Freddie Simmons, Bob Greer, Sharon Holmes, Lap Hoang, Chester Henson, John Harris, Larry Sessions, Jack Evans, Marcus Ansley, David O'Hagan, Robert Robertson, Andre Pavlov, Steve Plotkin, Jeffrey Ger (FHWA)

SUBJECT: Temporary Design Bulletin CO5-02
Span-by-Span Concrete Segmental Bridge Details

REQUIREMENTS:

Add the following Section to the Structures Design Guidelines:

4.6.10 Span-by-Span Segmental Diaphragm Details

- A. The highest point of any external tendon's alignment shall be its anchorages in the diaphragm segment. Arching tendons in diaphragm segments will not be permitted.
- B. The grout ports and vents for all tendons shall not pierce the top slab of the structural section.
- C. For bridge superstructures situated in extremely aggressive environments or over any body of salt water, the diaphragms shall be constructed from one continuous section of concrete. "Split" segments will not be permitted in these instances.

IMPLEMENTATION:

Incorporate immediately into all Design/Bid/Build projects where bridge designs are at or less than 60% complete.

Incorporate immediately into all Design/Build projects where proposals have not been received as of the date of this Bulletin.

COMMENTARY:

Arching post-tensioned tendons in diaphragm segments creates regions of possible recharge of grout water. The most common solution to eliminate this potentially corrosive condition is to install grout ports or vents at the duct's apex in the diaphragm. This then creates another possible ingress of water into the tendon duct. Additional problems reported with arching tendon alignments include deck delamination due to insufficient vertical reinforcement and wire breakages due to insufficient duct tangent length from the anchorage.

Splitting the diaphragm segment into two longitudinal pieces creates a joint through which water may enter into the tendon ducts.

WNN/DOH/h

Attachments