

September 19, 2002

MEMORANDUM

TO: District Structures Design Engineers
(Gerard Moliere, Rod Nelson, Keith Shores, John Danielsen,
Neil Kenis, Kim Saing, Jose Rodriguez, and Agnes Spielmann)
District and Central Office Construction Engineers
(Dan Foss, Henry Haggerty, Steve Benak, Jennifer Olson, Steve
Wigle, Mark Croft, Jim Moulton, Jr., Walt Lange)

FROM: William N. Nickas, State Structures Design Engineer

COPIES: Bob Greer, Freddie Simmons, Bill Albaugh, Bill Domico, Jack Evans,
Bob Nichols, Larry Sessions, Marcus Ansley, Doug Edwards (FHWA),
Anath Prasad, Sharon Holmes, Henry Bollmann, Steve Plotkin, Tom
Andres, Robert Robertson, Tony Mireles, Duane Brautigam

SUBJECT: Temporary Design Bulletin C02-14
Strategy 4 – Watertight Bridges
(Reference: New Direction for Florida Post-Tensioned Bridges – Corven
Engineering, Inc)
Effective 8/1/02

To emphasize the importance of the Department's new directions for post-tensioned structures which increase the durability and level of performance of these structures, the Department of Transportation is issuing Temporary Design Bulletins C02-11 thru 15.

The lack of water-tightness of post-tensioned structures has caused the accelerated rate of corrosion in the post-tensioning tendons. The Department's first step to address water-tightness was to require two-face epoxy in segmental construction (DB-C01-1) and this requirement has been added to Department's Structures Design Guidelines and Construction Specifications. Additional requirements for water-tightness are required and are discussed below. The document containing each these requirements is listed in [] after each requirement.

A. Bottom Slab Drains [SDG 1.4.4]

Provide drains through bottom slab of box girder bridges to prevent water that may enter from any source, including condensation, from ponding in the vicinity of post-tensioning components. Show details on Contract Drawings including the following features:

- Drains may be formed using 2 inch diameter permanent plastic pipes (PVC with UV Inhibitor) set flush with the top of the bottom slab.
- Provide a small drip recess, 1/2 inch by 1/2 inch around bottom of pipe insert.
- Provide drains at all low-points against internal barriers (blisters, etc..).
- Provide drains on both sides of box, regardless of cross-slope – to avoid confusion.
- Show in the Contract Drawings, locations and details for drains taking into account bridge grade and cross-slope.
- Provide vermin guards for all drains.

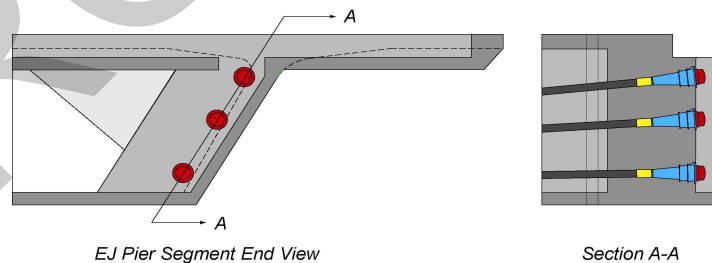
Add a note to the Contract Drawings stating - “The Contractor shall install similar drains at all low spots made by barriers, such as blocks or blisters, introduced to accommodate his means and methods of construction”.

B. Drip Notches/Flanges [SDG 7.10.6]

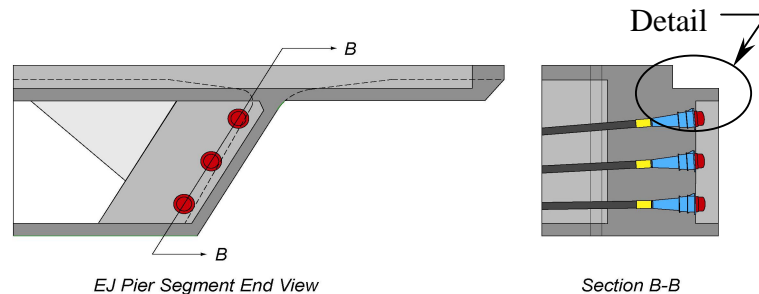
At all expansion joints, protect anchors from dripping water by means of bladders, skirts, baffles, V-grooves, or drip flanges. Drip flanges shall be of adequate size and shape to maintain structural integrity during form removal and erection.

At expansion joints, provide a recess and continuous expansion joint device seat to receive the assembly, anchor bolts, and frames of the expansion joint – i.e. a finger or modular type joint. In the past, block-outs have been made in such seats to provide access for stressing jacks to the upper longitudinal tendon anchors set as high as possible in the anchor block. Lower the upper tendon anchors and re-arrange the anchor layout as necessary to provide access for the stressing jacks.

Previous Practice



New Practice



C. Deck Overlays [SDG 2.9]

Deck overlays shall not be considered as a level of protection for strands or anchorages.

D. Deck Block-outs for Construction

One temporary access hole per span (42" wide x 30" long) to facilitate access for erection, jacking, and grouting operations inside the box during construction is allowed. In lieu of (1) 42" x 30" temporary access hole, a maximum of 2 top slab blockouts (12"x12" (max)) between the webs is allowed. Block-outs shall be a minimum of 12" from the nearest longitudinal duct or anchor and shall be located to prevent direct dripping of water onto bottom slab anchors. [Standards]

Temporary construction access holes shall be formed with tapered sides. Immediately before casting the repair concrete, the tapered sides shall be mechanically cleaned to remove any laitance and to expose small aggregate. The pour-back material shall be either an Epoxy Grout or a Magnesium Ammonium Phosphate Concrete with a Methyl Methacrylate sealer. [Standards]

Slab block-outs for temporary / permanent longitudinal post-tensioning bars are not allowed. [SDG 7.10.11]

Temporary / permanent PT bars in the top slab shall be placed in oversized ducts ½" larger than coupler and all ducts shall be grouted. [SDG 7.11.1]

E. Shimming [Section 452]

Shimming of joints to correct mis-alignment is discouraged. When shimming is warranted, submit a proposal detailing the geometry of the span with and without the shims and the thickness and location of the shims. All shims shall be made of a porous material to allow for the flow of epoxy through the shim. After epoxy squeeze, the extruded bead of epoxy on interior and exterior faces shall conform to the size and requirements in the Specifications

WNN/ph