

September 14, 2001

MEMORANDUM

**TO:** Ken Hartmann, P.E., District Secretary for District Seven

**FROM:** Ken Morefield, P.E., Assistant Secretary for Transportation Policy

**COPIES:** Secretary Barry, Chris Speer, District Secretaries, Freddie Simmons, Billy Hattaway, William Nickas

**SUBJECT:** Florida Department of Transportation Assumption of Toll Facility Maintenance

As you know there has been much conversation concerning post-tensioned segmental bridges, particularly those constructed by local toll authorities independent from the FDOT and, oftentimes, from specific Department requirements. However, in many cases, the Department is being asked to assume the maintenance function for these independently constructed toll facility structures.

If a toll facility structure is going to be maintained by FDOT, then the type of bridge (concrete or steel - beam or box) or the type pavement (rigid or flexible) will not be the issue as long as the facility was designed using current FDOT policies, standards, and practices. If a toll authority departs from these regulations and procedures, then specific arrangements will be contractually required to protect the Department from being burdened with any future maintenance issues associated with the toll authority's departure from FDOT design and/or construction requirements. The following concerns must be addressed in each instance where the FDOT is requested to assume maintenance responsibility for these independently constructed facilities:

1. All new facilities shall meet basic life, safety and design requirements covered by FDOT Policies, Standards, and Specifications and by AASHTO criteria. In the cases where departure from these requirements is necessary for reasons specified in the Department's Plans Preparation Manual, then engineering documentation for an Exception or Variance, as appropriate, will be necessary along with approval by the appropriate authorities.
2. If FDOT fiscal participation in design and construction is capped or fixed, then the "added architectural preferences" may be allowed. However, if these options cause excessive maintenance costs, then special consideration will be needed to protect FDOT from undue burdens prior to entering into a maintenance agreement. An example of an extreme maintenance expense is the monthly cleaning of Translucent Noise Walls. If a toll facility is going to be totally maintained by a Toll Authority, then FDOT should bring such high maintenance costs to the attention of the authority for their consideration in developing adequate financial maintenance plans.

3. Specifically, in the bridge technology arena, the FDOT's Structures Design Office has adopted a policy excluding the use of dry joints and requiring epoxy between precast segments on all FDOT post-tensioned segmental bridges. This policy is based upon utilization of a standard methodology derived from a comprehensive report by The British Concrete Society, for both cantilever and span-by-span segmental construction, which yields three levels of protection for the post-tensioning reinforcement, and from our own experience with leaking dry joints.

It is noteworthy that a segmental bridge constructed with dry joints has not been approved by FDOT since 1982. All bridges constructed in Florida with dry joints either approved by FDOT or constructed without FDOT approval have leaking segment joints. Leaking joints compromise one level of protection for the post-tensioning reinforcement. Recent experience has shown that high density polyethylene (HDPE) ducts can split, thereby eliminating a second level of protection, or in some cases, leaving no protection for the post-tensioning. Therefore, the FDOT Structures Offices continues to require by procedure the use of epoxy between the joints for all FDOT Bridges.

As you have read in recent articles, some post-tensioned bridges have experienced premature tendon corrosion. The Florida Department of Transportation has issued interim policy statements on these tendon corrosion issues to Municipalities, Authorities, other State and Governmental Agencies, Designers, Contractors and Maintenance units. These documents outline the main concerns known at this time, but also outline viable solutions to the premature corrosion.

Florida's post-tensioning findings are resulting in national efforts to improve the durability of post-tensioning systems. The FDOT has briefed national committees on the subject and sponsored an American Association of State Highway and Transportation Officials' (AASHTO) ballot item to change the National Bridge Code. Recently, the AASHTO post-tensioning grouting specification was changed by a unanimous vote of all 50 State Bridge Engineers.

The Department of Transportation continues to support post-tensioned bridges and has recently awarded contracts for several of these type bridges that incorporate our latest revised requirements. With the continuous improvement in materials, details and proper training of personnel, these bridges should last a very long time.

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