Florida Department of Transportation

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GOVERNOR

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JOSE ABREU
SECRETARY

March 31, 2004 (Revised)

MEMORANDUM

TO: District Directors of Operations, District Directors of Production, District Design Engineers, District Structures and Facilities Engineers, District Maintenance Engineers, District Construction Engineers, District Structures Design Engineers, District Materials Engineers

FROM: William N. Nickas, State Structures Design Engineer

COPIES: Bob Greer, Freddie Simmons, Bill Albaugh, Jack Evans, Larry Sessions, Marcus Ansley, Doug Edwards (FHWA), Ananth Prasad, Sharon Holmes, Henry Bollmann, Steve Plotkin, Tom Andres, Robert Robertson, Tony Mireles, Rafiq Darji, David O'Hagan, Duane Brautigam

SUBJECT: Temporary Design Bulletin C04-03
Alternate Designs for Major Bridges
Effective Immediately

A formal alternative bridge design policy is recommended for bidding steel versus concrete bridge designs for major bridge projects. A comparison of bridge cost must include MOT and retaining wall cost as these are affected by and related to the bridge geometry and construction processes.

Amend the current alternate design policy found in Chapter 26 of the PPM to include the following:

1. Require management evaluation for the need of alternative designs or even partial designs for all projects with:

a) Total structures that cost more than $25 million, and
b) A difference in alternate material (steel versus concrete) construction costs that are within twice the cost of producing the alternate plans. For example, alternative designs would be warranted if the additional preliminary engineering costs for final plans preparation is $1.5 million per alternate and the difference between the construction cost estimates utilizing FDOT estimating practices in the BDR was less than $3million.

2. For bridges that cost less than $25 million consider alternative designs when project issues reflect possible advantages (i.e. MOT, A+B) from competitive bids.

3. For bridges estimated to cost more than $10 million require evaluation of alternative designs whenever a unique design concept is proposed until such time that a bid history is established for the unique design.

4. Projects containing multiple bridges with a reasonable mixture of concrete and steel designs do not require alternate designs.

Active projects containing alternative designs should continue to be developed with these alternate designs through final plans. For new projects, the above guidance should be used. Based on our cursory review of active design projects, there are only a few projects that might be impacted by this policy change.

Commentary: Due to increased competition in the steel fabrication industry, new coating systems and new developments in steel bridge technology, interest in alternative designs has been renewed. Alternate designs will allow for more bid competition between different materials and may result in lower overall project cost for the Department.

During the next five years, the State of Florida will construct approximately 11.5 million square feet of bridges. Of these 11.5 million square feet, 7.1 million square feet will be major bridges (Category 2 Structures). The balance will be minor bridges (Category 1). Bridges with superstructures constructed of steel account for 3.6 million square feet of the 7.1 million square feet of major bridges. Steel will be used in the construction of approximately 100 bridges in 33 interchange and overpass projects. Steel will be a major component in the Florida bridge construction program.

A new committee has been formed with department staff (design, construction, materials & maintenance), contractors, consultant designers, steel fabricators and affiliated industries involved with Florida's steel bridges. The primary mission of this new committee is to provide forums for information exchange between the various parties. It is intended and believed that this information exchange will benefit the public through improved design, construction and maintenance practices and reduced bridge construction costs.

Background: On August 15, 1995 the FHWA cancelled the policy requiring alternative designs for bridges with construction costs exceeding $10,000,000. Since then each State has been at liberty to establish its own guidance concerning alternative designs.

When FHWA cancelled its policy the Structures Office revised the Department's procedures for alternate design. For all projects with major structures (Category 2) a Bridge Development Report (BDR) was required. The BDR analyzed project specific information relative to viable structure and foundation types, cost information, aesthetics, materials, constructability and maintainability. From the information provided, engineering judgments were made as to the best structure concepts for the project and the cost differential between the concepts. Accordingly, decisions were made relative to the competitiveness that could be expected from bids on alternative designs on each project. If the competition was deemed to be significant, then the cost of preparing an alternate design could possibly be offset by the lower construction cost bids resulting from the competition.

Recent price changes have made steel more competitive with concrete and improvements in

coating systems have decreased the durability concerns normally associated with steel.

The following is a summary of Category 2 steel bridge projects under Design as of Oct 7, 2003

District 1	108,188 SF
District 2	576,453 SF
District 3	13,779 SF
District 4	80,833 SF
District 5	1,373,544SF
District 6	912,042 SF
District 7	493,988 SF
Turnpike	32,873 SF
Total	3,591,700 SF

Represents more than 60,000 tons of structural steel over the next 5 years!