




Memorandum

Subject: **INFORMATION:** Clarification of FHWA
Policy for Bidding Alternate Pavement Type on
the National Highway System

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From: Peter J. Stephanos 
Director, Office of Pavement Technology

In Reply Refer To: HIPT

To: Associate Administrators
Chief Counsel
Directors of Field Services
Federal Lands Highway Division Engineers
Resource Center Director
Division Administrators

Recent changes in pavement materials costs have impacted the competitive environment relative to the determination of the most cost effective pavement structure for a specific project. In response, State highway agencies (SHA's) have a renewed interest in using alternate pavement type bidding procedures to determine the appropriate pavement type. The FHWA policies relative to pavement design, pavement type selection, economic analysis, and alternate bidding procedures are distributed among several resources. The intent of this memorandum is to consolidate and clarify FHWA policy relative to alternate pavement type bidding procedures on National Highway System (NHS) projects. In accordance with Title 23 U.S.C. 109(o), contracting agencies may use State design and construction standards, including alternate pavement type bidding, for Non-National Highway System projects.

Guidance on alternate pavement type bidding procedures is contained in 23 CFR 626 Non-Regulatory Supplement. It states that "FHWA does not encourage the use of alternate bids to determine mainline pavement types primarily due to the difficulty in developing truly equivalent pavement designs". It further states that "In the rare instances where the use of alternate bids is considered, the SHA's engineering and economic analysis process should clearly show there is no clear cut choice between two or more alternatives having equivalent designs. Equivalent design implies that each alternative will be designed to perform equally, and provide the same level of service, over the same performance period, and has similar life-cycle costs."

The FHWA Pavement Type Selection Policy published in the Federal Register on November 9, 1981, states "Where (engineering and economic) analysis shows that two or more initial designs and their forecasted performance are determined to be comparable (or equivalent), the use of alternate bids may be permitted as requested by the contracting agency."



There are several factors that should be considered prior to determining that alternate bidding procedures should be used. Additionally, there are several factors that should be considered once the determination has been made to utilize alternate bidding procedures for pavement type selection.

The factors that should be considered prior to making the determination to utilize alternate bidding procedures include:

Designs must be equivalent – The 23 CFR 626 Non-Regulatory Supplement defines “equivalent design” as a design that performs equally, provide the same level of service, over the same performance period, and has similar life-cycle costs. It is difficult for two pavement structures utilizing different materials to be truly equivalent, so engineering judgment is required in the determination of what is and what is not “equivalent design”. The performance period (analysis period) should be long enough to cover at least one major rehabilitation cycle. Life-cycle cost should be considered similar when the Net Present Value (NPV) for the higher cost alternative is within less than 10 percent higher than the lowest cost alternative. This difference is appropriate due to the uncertainty associated with estimating future costs and timing of maintenance and rehabilitation. It should be highlighted that no design methodology or analysis procedures currently available will output “equivalent designs” using design lives and analysis periods typically used for high-type facilities.

Realistic discount rate – Discount rates have a significant impact on the determination of the Net Present Value (NPV) of alternate pavement designs. The Final Policy Statement on Life - Cycle Cost Analysis (LCCA), published in the Federal Register on September 18, 1996, recommends that future agency costs should be discounted to NPV or equivalent uniform annual costs using appropriate (real) discount rates. Discount rates should be consistent with OMB Circular A-94. The trend over the past 10 years indicates a discount rate in the range on 2-4 percent is reasonable.

Consideration of uncertainty – The impact of uncertainty in factors such as performance life, material costs, construction duration, and future actions should be considered in the determination of total life-cycle cost for each alternative. The RealCost Software Program (available for free download at <http://www.fhwa.dot.gov/infrastructure/asstmgmt/lccasoft.cfm>) is a useful tool to perform LCCA as well as quantify the uncertainty of future factors through a sensitivity or probabilistic LCCA.

Realistic rehabilitation strategy - The rehabilitation strategy selected for each “equivalent design” should accurately reflect current or anticipated owner-agency pavement management practices. If recent experience with a pavement design is limited, available “best-practice” guidance on pavement rehabilitation strategies should be utilized.

Subjective Considerations – Despite the outcome of an objective engineering and economic analysis, an owner-agency may consider non-cost related factors such as constructability, type of adjacent pavements, recycling, and conservation of materials when making the determination to utilize alternate bidding procedures for pavement type selection.

Appropriate application – Alternate pavement type bidding procedures should only be used where the pavement items impacted by the alternate bid are likely to influence the final determination of the lowest responsive bidder for the project. Projects with substantial bridge or earthwork items are generally not suited for alternate bids. Additionally, projects with substantial quantities of different pavement materials may not be suited for alternate bids due to equipment mobilization costs.

The factors that should be considered once a decision has been made to bid alternate pavement types include:

Commodity price adjustment factors – The Pavement Type Selection Policy, published in the Federal Register on November 9, 1981, specifies that price adjustment clauses should not be used when using alternate bidding procedures. Price adjustment clauses transfer some material cost escalation risk from the contractor to the owner agency. As it is very difficult, if not impossible, to administer equal treatment with price adjustment factors to alternate materials, using these clauses will result in different levels of materials cost risk being included in the bid for alternate pavement types.

Incentive/Disincentive (I/D) Provisions for quality - If quality based I/D provisions are included with alternate bidding procedures, the I/D provisions should provide comparable opportunity for each alternate.

Specifications of material quantities – Using different methods to specify/quantify alternate pavement types may result in different levels of materials quantity risk for the alternate pavement types. Owner-agencies should consider approaches that balance materials quantity risk between the alternate pavement types.

SEP 14 approval needed if using adjustment factors – Some States have utilized price adjustments to account for differences in life-cycle costs for the alternate pavement types to determine the lowest responsive bidder. If adjustment factors are used, approval under Special Experimental Project #14 (SEP14) is required. It is recommended that prior to utilizing any adjustment factors that appropriate stakeholders be provided an opportunity to provide input. Adjustment factors should include, at a minimum, anticipated maintenance costs, anticipated rehabilitation costs, and salvage value.

Approval Requirements - The Pavement Type Selection Policy, published in the Federal Register on November 9, 1981, specifies that the division administrator shall review the analysis and concur in the finding of equivalency, when bidding alternate pavement types, and no adjustment factors are used.

Guidance related to LCCA and pavement type selection is currently under review and development. Once completed, more comprehensive guidance relative to the alternative pavement type bidding procedures will be issued. If there are questions concerning bidding of alternate pavement types, please contact Mark Swanlund of my staff at (202) 366-1323 or via email at mark.swanlund@dot.gov.