

FHWA Plans to Launch 'Performance-Based' Practical Design Approach to Advance Projects

The Federal Highway Administration will soon launch a new "performance-based" practical design approach aimed at helping transportation agencies stretch limited project development dollars by strictly adhering to carefully targeted purpose and need statements for projects and improving overall system performance by applying cost savings to other projects.

The approach expands on the practical design approach, under which some states have exercised a renewed focus on scoping projects to stay within the identified purpose and need and have eliminated nonessential project elements. This can lower costs and increase the number of projects that can be developed while improving the performance of the transportation system.

The new approach will be rolled out this fall, FHWA spokesman Doug Hecox told Bloomberg BNA in an August 8 e-mail. Hecox said FHWA will "encourage states to use a practical design approach and to consider using performance analysis tools to make informed planning and design decisions," hence the name, performance-based practical design.

At a session of AASHTO's Standing Committee on the Environment meeting in June, Shari Schaftlein, Director of FHWA's Office of Human Environment, said FHWA took interest in the concept in 2013 after publication of a National Cooperative Highway Research Program synthesis report, *Practical Highway Design Solutions* ([NCHRP Synthesis 443](#)).

FHWA subsequently interviewed seven states that have incorporated practical design approaches and worked with stakeholders to define the performance-based practical design approach as a means of helping state DOTs advance project delivery with limited resources.

Moving Away from Standards-First Design

The concept is to "build many good projects rather than a few great projects," Schaftlein said. The approach is grounded in performance management, it considers short-term and long-term goals, and it addresses both project needs and system needs, she added.

The notion is to "move away from standards-first design" with a renewed focus on project purpose and need. The approach also focuses on "not overbuilding" and eliminating inessential project elements, she said. At the same time, designers must work to retain context sensitive design and livability features and avoid over-

emphasizing short-term cost savings.

Schaftlein said FHWA is working to promote the approach through a range of outreach efforts. The agency has begun introducing the concept at meeting presentations and has developed background information and tools, such as a fact sheet and a draft question-and-answer document distributed to AASHTO conference attendees in June. FHWA also will be developing case studies, a website, and other resources and soon will begin providing technical assistance and training.

Design-Up Process Described

The draft Q&A document differentiates performance-based practical design from standards-first design. "In a standards-first approach, the engineer identifies the functional class of the roadway and selects the dimensions of the roadway elements based on established standards," the document said.

Using a performance-based practical design approach, the engineer considers the project purpose and need, the transportation performance needs, and the social, natural, and environmental constraints for a location. "Only then does the engineer select and size the necessary project design elements that directly serve those needs while remaining within constraints and avoiding impacts to other resources," it said. At that point, the engineer evaluates how the preliminary design compares to the applicable design standards and determines whether modifications are needed for elements that don't conform to the standards.

The approach relies on use of "analytical tools" to conduct performance analysis. These include highway safety manuals produced by AASHTO and FHWA as well as FHWA's highway safety manual website, FHWA's Highway Capacity Manual and its traffic analysis tools website.

Broader Context Emphasized

The new approach emphasizes the need to look at a broader context.

The Q&A document points to a potential conflict between performance based practical design, which emphasizes costs, and context-sensitive design and livability approaches. But it notes that performance-based practical design "can be an enhancement to CSS and livability by increasing emphasis on project purpose and need and the effective use of agency resources in a broader, system-wide context."

State DOT officials at the June meeting raised questions regarding potential legal liability if states do not strictly follow design standards and the extent to which design exceptions would be required under the approach.

Gerry Solomon, Director of FHWA's Office of Project Development and Environmental Review, said FHWA's legal team has felt comfortable defending projects that have gone through a performance-based practical design process.

Regarding design exceptions, the draft Q&A document stressed that design standards and guidelines are "intended to guide the decision-making process, not dictate a particular solution." The performance-based practical design approach "can be implemented with flexibilities already available" in FHWA regulations and policies, it said. Design exceptions will remain "as a means of evaluating, documenting, and approving decisions to select a value outside of established design standards."

For more information on performance-based practical design, contact Robert Mooney, FHWA Office of Infrastructure, at Robert.Mooney@dot.gov; or Ray Krammes, FHWA Office of Safety, at Ray.Krammes@dot.gov.

Reproduced with permission from Transportation / Environment Alert, 16 TEALERT 3 (Aug. 8, 2014).
Copyright 2014 by The Bureau of National Affairs, Inc. (800-372-1033) <<http://www.bna.com>>