New Design, Construction and Material Proposal Use For Pavement Rehabilitation Strategy

BACKGROUND

The Department encourages the development of new and innovative pavement materials, design methodologies and construction processes in the area of pavement preservation and rehabilitation. These will all lead to better strategies for the design, construction and maintenance of the state highway network. Limited resources have encouraged the use of recycled materials. Advances in technology provides for means of improving existing design methodologies and construction processes. When a new or innovative material, design method, or construction process is proposed, a thorough investigation shall be performed to assure that it benefits the Department in its attempt to maintain the highway network at an acceptable level of service.

This investigation should include a review of the design methodology and procedure, construction techniques and performance, to name a few. A process has been established to take into account these parameters and provide the proper assurance that the proposal is appropriate for use in the materials, design or construction of pavement preservation or rehabilitation projects.

PROCESS

The initial step in the process is a thorough review and acceptance of the proposed strategy by the New Product Evaluation Team. This acceptance is typically in the form of a "needs assessment." If a needs assessment is determined, the new strategy or treatment proposal shall be allowed to go forward to the Pavement Standards Team(PST) for consideration.

The PST will review the proposal and determine if it can be included in the team's current or future work plan. No proposal will be considered unless accompanied by a sponsor either represented by the department or a vendor/supplier. If the proposal is considered by PST to be a "high" need, a member of the team will be given the responsibility of overseeing the progress of the proposal. If PST is unable to commit time and/or resources to the proposal in the current or next fiscal year work plan, the proposal will be set aside until adequate time and/or resources are available or an alternate process is presented.

If PST is able to commit the sponsor shall first submit a feasibility study, at the appropriate time, to the PST for review and approval. The feasibility study shall include background information regarding the use of the material, methodology or process and advantages and disadvantages of using the material, methodology or process. The study shall also identify all resources and costs associated with investigating and potentially implementing the strategy including PYs, development costs and any additional costs in connection with a pilot program. Lastly, the study shall include a draft work and evaluation plan. If PST approves of the study and if finds to be beneficial, the sponsor

will then be responsible for finalizing the work and evaluation plan, identifying pilot projects, developing the appropriate specifications, guidelines and contract plans as well as a final report to be reviewed by the PST and if necessary, move forward to the Pavement Program Steering Committee (PPSC). The sponsor will be required to follow this strategy from introduction to completion. Attached are the steps required of the sponsor to see the strategy through.

FEASIBILITY STUDY

The unit responsible for proposing the treatment or rehabilitation strategy will be required to submit a feasibility study. The study shall include the following;

1. Purpose of the treatment or strategy.
2. Any available background information of the treatment or strategy.
3. Costs associated with the evaluation of the treatment or strategy (i.e. PYs, equipment, development, etc.)
4. Resources, which include all units impacted,
5. Responsibilities
6. Draft Work and Evaluation Plan
7. The anticipated time frame for completion of the performance evaluation associated with the treatment or strategy.

The PST will review the feasibility study and determine if the proposal has merit. If acceptable, the PST will prioritize the study and commit the resources necessary to proceed with the proposal. If not, the proposing unit will be required to supply any additional information required.

WORK AND EVALUATION PLAN

Once PST has approved of the strategy proposal in the form of a feasibility study, the sponsor is to arrange a meeting with all the necessary functions to discuss and finalize the work plan. (See Attachment A) The work plan is to include all the necessary tasks and the functions responsible for those tasks. This is to include, but not limited to, design methodology, specifications, construction evaluation (Attachment B) for pilot projects and timelines. The sponsor and functions affected by the proposal shall identify the resource requirements in the form of PYs and dollars. Other things to be considered are the expected service life and life cycle costs.

The sponsor will also be required to develop a construction evaluation. The construction evaluation shall include all the necessary reports and documents to justify any and all recommendations upon completion of the pilot projects. The plan shall also identify all required resources to perform the evaluation during and subsequent to construction. The construction evaluation shall be submitted to PST for review and approval and must be completed before candidate projects can be approved.

PILOT PROGRAM

Once a work and evaluation plans have been finalized and approved by the PST, the sponsor will then be responsible for finding the pilot projects to apply the new strategy to, as defined in the work plan. The incorporation of the new strategy into the pilot projects must be done in a timely manner not to disrupt the delivery schedule of the project.

Intermittent guidelines need to be established and provided to all the appropriate functions responsible for their aspects of the project.

During design the sponsor shall provide the necessary support to the project engineer responsible for the project. The sponsor shall see that the designer has incorporated all the necessary plans and specifications associated with the treatment or strategy.

Once the design has been completed the sponsor shall make sure the appropriate specifications, standard plan sheets, and information are supplied to the Resident Engineer pending file for construction. Prior to the start of construction, the designer, Resident Engineer and his staff, should meet with the sponsor and the Pavement Standard Team representative to discuss those aspects of the new strategy that apply to construction, including specifications, plans, methods of inspection sampling, and/or testing and data collection and reporting.

Upon completion of the construction evaluation of all of the pilot projects, the sponsor will be required to update and complete the initial set of guidelines developed earlier in the process. This will include guidelines for use by design and construction.

PAVEMENT STANDARDS TEAM REVIEW

A final report and a draft implementation plan shall be submitted and reviewed by the PST. If approved, the PST will assign a lead unit/office to develop a final implementation plan. If necessary, the final implementation plan will be presented to the PPSC for review and approval.

Work Plan Requirements

Background

Short background on the strategy or treatment regarding benefits, uses, and successes

Sponsor and functions participating

Identify the sponsor and what their responsibilities are as well as the responsibilities of the other functions participating

Design methodology

Describe the design methodology being used. AASHTO,API, etc. M-E, empirical.

Project selection criteria

Describe the criteria that will be used for determining pilot projects and if possible the critieria for project selection when implemented(ADT, TI, Class 3 routes)

Laboratory testing

What type of lab testing will be required and/or performed to evaluate the treatment or strategy. (Greater detail in CE)

Field sampling and testing

How will it be sampled and tested in the field for evaluation(greaer detail in the CE)

Specifications

What are the specification needs for the treatment or strategy. Building off existing or developing new ones. What type of construction details are required

Construction evaluation

Develop a plan for fully evaluating the treatment or strategy from initial application or placement to some future date (1,2,3 or 5 yrs)

CONSTRUCTION-EVALUATION PROJECT

TITLE

INTRODUCTION

1. Description of Experimental Feature
   a. Is it a proprietary product, or use of proprietary equipment?
   b. Is it a material, technique or process
2. Function/Purpose
   a. Describe what it does, how and why.
   b. Attach plan sheet and typical section or working drawings if helpful in describing the experimental feature.
3. Background
   a. Has the feature been used previously in California?
      - List previous or current Department or C-E Projects
      - List any known laboratory testing
      - List and supply available reports on any known installation or use by other agencies, cities and counties
   b. Describe performance of the projects listed above (successes and failures).
4. Planned Study of Similar C-E Project Features
   a. How is this particular proposed experimental feature project different than other similar C-E Projects (limit of four federal funded projects statewide, including local agencies)?
   b. Description of any related approved or planned experimental feature projects and how their purpose fits into the overall research effort for this experimental feature.

PROPOSAL

1. Location of the Experimental Feature
   a. Project (Co-Route-Post Mile & Expense Authorization)
   b. Experimental Feature limits (i.e., Post Mile limits of each test section, direction of travel, lane number, right or left of, bridge number, etc.). Attach a plan sheet or schematic layout of the test sections if helpful in describing the location(s).
   c. Number of units/physical size (i.e., what is the total amount of proposed work?).
   d. How will each test section be identified in the field (e.g., paddle on R/W fence, paint on shoulder, etc.)?
   e. Control sections or other alternatives should be provided for performance comparisons unless the nature of the experiments is such that they would serve no purpose.
2. Estimated Construction Cost
   a. Unit cost per experimental feature (for comparison with standard or alternative features).
   b. Total Cost
      - List individual features (on multiple feature projects).

- Grand Total

3. Construction Season (include planned advertisement date).
4. Discuss Other Alternatives Considered (include costs/benefits).

PERFORMANCE EVALUATION

Describe how the experimental feature will be evaluated.

1. Comparison
   a. Test section versus control section?
   b. Before/after study?
2. Laboratory Testing
3. Horizontal/Vertical Surveys
4. Visual Observations/Engineering Judgement

REPORTING

1. Construction (due at VE/RC Branch within 90 days of completion of the experimental features)
2. Performance Evaluation
   a. Due annually on or before July 1st.
   b. C-E Project evaluations can be for up to 5 years.
3. Final Report
   a. May be filed any time after specific conclusions can be reached.

RESPONSIBILITY

Person responsible for Technical Liaison and all report submissions (Principal Investigator).

1. Name
2. Division or Office Title
3. Telephone Number

IMPLEMENTATION

1. Statement to the effect that HQ Division/Office (with functional responsibility) will review conclusions of all similar C-E Projects to determine the statewide application/impact prior to Caltrans requesting termination of this specific project.
2. Anticipated manual, policy, specification changes, etc. should be mentioned if positive impact is concluded.