Experimental Features

1. What Is an Experimental Feature?

An experimental feature is any material, process, method, innovative highway technology or alternative standard technology that needs to be evaluated, because it has not been tested sufficiently under actual service conditions to merit acceptance, or has been accepted and needs to be compared with alternative acceptable features to determine relative merit and cost effectiveness. Experimental features do not have to be new to the world; they can be new to your state and the conditions (e.g., weather, traffic, and available materials) of your state. The Experimental Features Program can be used in conjunction with a state’s product testing and acceptance process.

Note: Not all states have an experimental features program. Check with your state DOT research manager to determine if this option is available to you. In addition to your state DOT research manager, NCHRP Report 727, Effective Experimental Design and Data Analysis in Transportation Research provides useful information. The following principles describe the experimental features process:

- **Experimental Project Designation.** Any Federal-aid project incorporating experimental features should be designated an experimental project and treated accordingly.

- **Work plan.** A work plan is required for each experimental feature.

- **Approvals**
  - For projects on the Interstate system that incorporate experimental features or on any NHS route that incorporates proprietary products, the work plans must be approved by the Division Administrator prior to or with approval of Plans, Specifications, and Estimates (PS&E).
  - Work plans for experimental projects utilizing State Planning and Research (SPR) funds need approval by the Division Administrator in accordance with normal approval procedures for SPR funded studies. (For NHS projects with State approval authority and oversight, work plan approval is delegated to the State.)

- Experimental features included in ongoing projects by change order also need approval by the Division Administrator.

- **Control Sections.** Control sections or other alternatives should be provided for performance comparisons in all experimental projects unless the nature of the experiment is such that a control section or alternative would serve no purpose.

- **Cost Data.** Cost data should be compiled for all experimental and control features.

- **Multiple Project Justification.** Two or three construction projects should be adequate to conclusively evaluate a single feature. The justification for more than five construction projects should be carefully analyzed prior to initiation.

2. How Do I Proceed with Experimental Features?

- Inform your experimental features coordinator/office as soon as you identify a feature you would like to test. Early notification may allow for a literature search and a query to state DOTs.
allowing you to gain from the knowledge of others. It also allows a discussion on appropriate controls to include in your deployment.

- Your experimental features coordinator/office may then perform the following tasks:
  - Draft a work plan for FHWA approval. This document contains the following information on the specific experimental feature to be deployed:
    i. Location and extent of project
    ii. Project type
    iii. Research staff involved
    iv. Technical area contact(s)
    v. Objectives
    vi. Experimental design
    vii. Estimated quantities and costs
    viii. Evaluation method(s)
    ix. Evaluation schedule
  - Send the work plan to the technical contact(s) for review
  - Send the work plan to FHWA for approval. Once formally approved by FHWA, this affords some additional benefits as follows:
    i. Proprietary products can be specified without a public interest finding
    ii. Total construction costs attributable to experimental features may be financed with the appropriate class of Federal-aid funding
    iii. If an experimental feature should prematurely fail, total costs attributable to the removal, repair, and/or reconstruction on an experimental feature may be financed with the appropriate class of Federal-aid funding
  - Attend any preconstruction meetings
  - Attend construction and write a construction report to document any events that might affect the performance of the experimental feature and/or the control sections
  - Evaluate the experimental feature as detailed in the project work plan to document performance. This is documented in evaluation and final reports
  - Report back to the technical contact, AASHTO committee members, and others regarding the performance and cost-effectiveness

3. How Long Does This Process Last?

The time to complete each experimental feature is highly variable, ranging from months to test new flexible delineators used in construction projects, to years when testing the performance of a new asphalt or concrete. The timing depends on how long it may take to see different performance between the test and control sections.

The complete set of “How To” documents include the following:

- Committee Approach to Research
- Writing a Strategic Plan
- Writing a Problem Statement
- Funding Resources
- Experimental Features
- Sharing Results
- Implementing Results
- Determining the Value of Research
- Monitoring Results