

 <b>U. S. DEPARTMENT OF TRANSPORTATION</b>  FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY MANUAL	
<b>Chapter 6</b>	Technical Services
<b>Section A</b>	Technology
<b>Subsection 2</b>	Technology Deployment Initiatives and Partnership Program

Transmittal  
September 25, 2003

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1.    PURPOSE

- a.    To establish policy and procedures for the Federal Lands Highway Technology Deployment Initiatives and Partnership Program (TDIPP). The program purpose is to significantly accelerate the adoption of innovative technologies by the surface transportation community

2.    AUTHORITY

- a.    23 U.S.C. 204. Public Law 97-424, dated January 6, 1983, Surface Transportation Assistance Act of 1982, establishes the Federal Lands Highway (FLH) Program.
- b.    23 U.S.C. 204. Public Law 105-178, dated June 9, 1998, The Transportation Equity Act for the 21st Century.

3.    BACKGROUND

- a.    The Federal Highway Administration (FHWA) established the Technology Deployment Initiatives and Partnership Program in order to encourage innovations and technology transfer in highway design and construction.
- b.    The FHWA has long supported a research and development program, which serves the basic needs of the transportation community by solving transportation related problems. The objective of this program is to augment RD&T programs to improve the FLH Program.

- c. This program will focus on not more than 5 deployment goals to be determined by the Secretary that will produce tangible national benefits.
- d. The program will use domestic and international technology to develop strategies and initiatives to achieve deployment goals, including technical assistance in deploying technology and mechanisms for sharing information among program participants.
- e. Strategies will be established in cooperation with public, private, and academic partners; and will emphasize leveraging of Federal funds with other resources.
- f. Program is to include technical assistance, information sharing mechanisms, and be integrated with efforts to disseminate DOT research

4. DEFINITIONS

- a. Technology Deployment Initiatives and Partnership Program (TDIPP) - A coordinated and cooperative technology development and sharing program between the FLH, FLMA, and BIA.
- b. Technology Deployment Coordinators - The guiding body for TDIPP studies consisting of one coordinator from each Federal Lands division and headquarters.
- d. Problem Statement - An outline of the problem, the proposed initiative, its expected output and implementation, its cost, and its duration (Attachment 1).
- e. Work Plan – Describe the feature that the WFLHD will be constructing and evaluating in more detail than the problem statement. The work plan is used to develop the SOW or RFP.
- f. Statement of Work (SOW) - A detailed description of a proposed initiative which includes an introduction, background, objectives, scope, tasks, costs, duration, implementation plan and deliverables.
- g. Request for Proposal (RFP) - A formalized solicitation prepared according to the Federal Acquisition Regulation for an offeror to submit proposals to perform an initiative.
- h. Procurement Package - The documentation required to prepare an RFP. The procurement package must include a procurement request, the SOW, required contract provisions, a proposal evaluation procedure, detailed estimate, and schedule of cost.
- i. Proposal - The material submitted by an offeror which outlines a plan for conducting an initiative. This may be in response to an RFP or be unsolicited.

5. POLICY

- a. It is the FLH policy to promote and share technology with other transportation organizations through a technology deployment initiatives and partnership program.

6. TECHNOLOGY DEPLOYMENT COORDINATORS

- a. The TD Coordinators are the national directing body for technology development and transfer between the FLH, FLMA, and BIA. The coordinators provide guidance, approves problem statements, and ensures the effective management of the program.
- b. The TD Coordinators shall be made up of one representative from each of the FLH divisions and the FLH Technology Programs Engineer in headquarters.
- d. The FLH Technology Programs Engineer shall be responsible for tracking the overall status of TDIPP. This includes preparing agenda for meeting, distribution of problem statements, meeting minutes, and distributing funds.
- e. The TD Coordinators have the following responsibilities:
  - (1) Coordinate the TD program between FLH divisions.
  - (2) Solicit and review problem statements for the TDIPP studies.
  - (3) Prioritize any proposed TDIPP studies.
  - (4) Fund the TDIPP studies.
  - (5) Organize a technical panel for each initiative.
  - (6) Provide guidance and direction for accomplishing the TDIPP activities.
  - (7) Track deadlines and milestones for each project.
  - (8) Review and approve project modifications.
  - (9) Review and modify this TDIPP policy when needed.

7. INITIATIVE PROCESS The CTIP initiative process consists of:

- a. By mid-November, each division submits proposed TDIPP problem statements to the FLH Technology Programs Engineer in a format similar to Attachment 1.
- b. The TD Coordinators meet to review and approve the proposed problem statements. The TD Coordinators will determine the merits and ranking for funding for the upcoming fiscal year.

- d. By mid February, the FLH Technology Programs Engineer notifies each division of the proposals approved for funding for the upcoming fiscal year.
  - e. When funds are appropriated, the FLH Technology Programs Engineer allocates funds to each division for the approved proposals. Funding limitation set aside for research and technology programs may be carried over for 3 years.
  - g. The TD Coordinators meet bi-annually to review the status of current projects, new initiatives, and any changes in scope, schedule and budget. The TD coordinators will submit project status reports to the group by April 1 and November 1. Progress Reports will be in a format similar to Attachment 2.
  - h. By July 31, any funds that will not be obligated in the current fiscal year must be identified and reported in order to be made available for redistribution.
8. **ELIGIBILITY** The TDIPP initiatives must meet all the following criteria:
- 1. The initiative must be innovative, or unique, or under-used transportation technology. This can be defined as not been sufficiently tested under actual service conditions to merit acceptance without reservation in normal highway construction, or has been accepted but needs to be compared with alternative acceptable features for determining their relative merits and cost effectiveness;
  - 2. The initiative must be for use in the development, construction or maintenance of public roads or facilities;
  - 3. The initiative must show value added;
  - 4. The initiative must meet a need;
  - 5. And, the initiative must be completed in time less than 3 years.

Each technology initiative will be prioritized for funding for the upcoming fiscal year by the TD coordinators. Screening criteria shall be in a format similar to Attachment 3.

9. **FIELD COORDINATION AND INPUT**
- a. Each FLH Division should include the TDIPP initiative in the FLH Technology Deployment Roadmap.
  - b. Each division should coordinate, present, review, and comment on proposals, problem statements and other documents as needed for the other divisions.
10. **FUNDING**

11. IMPLEMENTATION

- a. TDIPP initiatives should result in products such as reports, manuals, procedures, specifications, or training aids.
- b. To ensure successful distribution, marketing, and implementation of the TDIPP initiatives, the reports shall be in a format similar to Attachment 4.
- c. Deliverables and information on new and innovative technologies will be posted on the FLH web library and provided to Federal Land Management Agencies, other FHWA offices, the Report Center, and the Local Technical Assistance Program centers.
- d. Copies should also be made available to the public through the National Technical Information Service, the Department of Transportation Library, Transportation Research Board, and TRISNET Repositories.

## Attachment No. 1

### Technology Deployment Initiative Problem Statement Request for Funding FY200\_\_\_

#### Project Title:

***Problem Statement:*** State the problem to be addressed focusing on the "state of the art". This explanation should clearly define the circumstances or parameters that are unknown and need evaluation. The background and/or history of the technology condition provide knowledge important for the development of the work plan. Describe how the problem affects Federal Lands. (It may be appropriate for the preparer to confirm through a quick literature review that the study proposed has not been completed for the subject area. A review through the Transportation Research Information System (TRIS) database should provide needed information).

***Description of Technology Feature:*** Generally describe the feature that the WFLHD will be evaluating and/or constructing. Include an explanation/description of why the feature meets the definition below. The feature should be innovative and meet a need. Be clear and concise.

FHWA defines a technology feature as a material, process, method, equipment item, traffic operational device, or other feature that:

- *has not been sufficiently tested under actual service conditions to merit acceptance without reservation in normal highway construction, or*
- *has been accepted but needs to be compared with alternative acceptable features for determining their relative merits and cost effectiveness."*

***Objectives and Scope:*** State clearly the specific objectives of the study, including the technical questions it will try to answer or the knowledge that Federal Lands expects to gain at the completion of the Initiative. Describe this knowledge in terms of goals that develop, evaluate, and/or demonstrate the merits of new, non-standard, or alternate highway design, construction features, methods and practices, products, equipment, and materials by using them in highway construction work and establishing their behavior under actual highway service conditions.

Include a description of the scope of the study to set limits on what is and is not to be included in the initiative. Scope should be described in sufficient detail to permit evaluation of the probability of success in achieving the objectives.  
Clearly indicate the expected audience for the initiative results.

***Estimated Resources/Costs:*** Provide estimated resources needed and cost for successful completion of initiative.

***Duration:*** Time needed to complete the initiative.

***Submitted:***

Agency/Division:

Name:

Phone:

Date:

**Attachment No. 2**



**TECHNOLOGY DEPLOYMENT PROGRESS REPORT**

U.S. Department of Transportation  
Federal Highway Administration

INSTRUCTIONS		
Champions: Submit one copy to the Technology Deployment Coordinator each quarter.		
Funding Source:	Champion:	Date:
Project Title:		
Status of Work, Actual Deliverables, or Performance Milestones Met:		
Reasons for Difficulties or Delay Factors, Potential Impacts to Scope/Schedule:		
Actions Taken or Proposed to Overcome Difficulties or Delay Factors:		
Assistance Needed from Technology Deployment:		
Comments:		

**Attachment No. 3**

TD Initiative Selection Criteria

(For Use by the Technology Deployment Coordinators)

STANDARDS	POINTS (Whole Numbers)		
	(5-4)	(3-2)	(1-0)
Benefits following initiative completion  Weight = 6 (Value Added)	Supports significant new, identifiable, permanent opportunities or benefits regionally	Supports moderate new identifiable, permanent opportunities or benefits of regional or local scope	Supports minimal speculative or temporary opportunities or benefits or provides non-crucial benefits
Initiative is unique to Federal Lands Management Agencies  Weight = 8 (Meets a Need)	Initiative significantly addresses issue that is highly applicable to Federal Land Management Agencies	Initiative addresses issue that is reasonably applicable to Federal Land Management Agencies	Initiative is minimally applicable to Federal Land Management Agencies
Innovation  Weight = 10 (Innovative)	Initiative exhibits significant innovation, creativity or unique benefits.	Initiative exhibits moderate innovation, creativity or unique benefits	Initiative exhibits no innovation creativity or unique benefits
Documented action plan for implementation  Weight = 6 (Value Added)	Action plan demonstrates method to transfer initiative to the state of the practice (specification, procedures, training aids, manual, etc...)	Action plan lacks detail on how initiative will be transferred to the state of the practice	Initiative focuses on research and does not clearly define deployment (report)
Potential for a widely used deliverable  Weight = 7 (Value Added)	National use	Regional use	Local use
Address a road related issue  Weight = 5 (Meets a Need)	Pressing national need	Moderate statewide or regional need	None
Meets or supports the Vital Few goals  Weight = 8 (Value Added)	Meets more than one goal	Meets one goal	Meets none of the goals
Shared Funding (non-TD match)  Weight = 1 (Meets a Need)	1 point for every 10% of other funding (Maximum of 5)		
Clarity and completeness of proposal  Weight = 7 (Value Added)	Initiative's concept, objective, product and details are clearly stated and proposal complete	Objective and product defined, however proposal lacks detail	Initiative objective and details are vague and poorly supported, proposal incomplete
Time to Complete the Initiative  Weight = 2 (Value Added)	One year or less	2 years	3 or more than years

An average score of 180 or below will not be funded.

### Criteria Score

<u>Standards</u>	<u>Points</u>	<u>Weight</u>	<u>Score</u>
Benefits following initiative completion		6	
Initiative is unique to FLMAs		8	
Innovation		10	
Documented action plan for implementation		6	
Potential for a widely used deliverable		7	
Address a road related		5	
Meets or supports the Vital Few goals		8	
Shared Funding (non-TD match)		1	
Clarity and completeness of proposal		7	
Time to Complete the Initiative		2	
		Total Score	_____

Funding most appropriate for \_\_\_\_\_TDIPP      \_\_\_\_\_CTIP

Funding Year \_\_\_\_\_

Multi-Divisional Effort \_\_\_\_\_

## Attachment No. 4

### GENERAL REQUIREMENTS FOR TECHNOLOGY DEPLOYMENT PROJECT REPORTS

#### Report Quality

The acceptability of final reports is determined by three criteria: (1) fulfillment of project objectives as set forth in the contract; (2) adequacy of documentation; and (3) clarity of presentation. Reports should be complete in all their parts, organized appropriately to serve their purposes, correct in matters of fact and documentation, and edited for basic uniformities of style and usage. *Project reports must be written in active voice to the maximum extent practicable.* Time and effort devoted to the preparation of a quality report is clearly a worthwhile investment, because poorly organized and poorly written reports will not be acceptable in fulfilling contract requirements. *Furthermore, all text, tables, and figures should be suitable for publication with a minimum of editing, because extensive changes made by an editorial staff unfamiliar with the project cause delay and may easily result in unintended changes of meaning.*

#### Title Page

The title page will contain the following information and be set up in the same format as shown on the cover of this document. A relevant photograph or illustration should be used to communicate the subject of the study.

TITLE LINE 1  
TITLE LINE 2

PRELIMINARY DRAFT OR  
FINAL REPORT

Prepared for  
Federal Highway Administration

Author(s)  
Line 1  
Line 2

Report # FHWA-XX -XX-XX-XX  
Month, Year

#### Inside Cover

The inside cover should presents the Department of Transportation's standard disclaimer notice

as written below.

#### **NOTICE**

*This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.*

*The contents of this report reflect the view of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official policy of the Department of Transportation. This report does not constitute a standard, specifications, or regulation.*

*The United States Government does not endorse products or manufacturers. Trademarks or manufacturers' names appear herein only because they are considered essential to the object of this document.*

### **Acknowledgements**

The acknowledgments section in the report should include titles and affiliations of the team members and other contributors and their connection with the project should be reported. If changes in title or affiliation have occurred, the titles or affiliations at the time of report submission also should be stated.

### **Abstract**

An abstract of 200 words or less (i.e., no longer than one page of double-spaced typewritten material), suitable for use in computerized information storage and retrieval systems, should be presented after the acknowledgment. It should use direct statements in complete sentences to describe the work scope and principal findings. An example follows:

*This report documents and presents the results of a study of the safety aspect of curb use. Full-scale tests in combination with computer simulations were applied to investigate vehicle behavior upon impact with a series of commonly used curbs. Three curb designs taken from the AASHTO geometric design manual, and a special configuration 13 inches high were given consideration in the study. The four curbs were investigated at three vehicle approach angles and at three speed levels. Such vehicle responses as redirection, trajectory, path, roll and pitch, and acceleration were observed and evaluated. The model results correlated well with the full-scale results. The findings of the study suggest that curbs of the configurations tested have no redirection capabilities to enhance safety in a high-speed travel environment.*

### **Body of the Report**

The body of the technology deployment report is designed to provide information to the operations-oriented transportation professional, or to any other reader whose primary concern is to put results into practice. For this reason, the report organization is very important, and a standard structure is recommended.

### **Summary of Findings**

The summary of findings is often the most influential part of the report and must be written with the busy transportation professional in mind. It should contain a readable yet condensed description, explained within the context of the project scope and objectives, of the research findings and conclusions that evolved from the project. It should contain only information that is essential to an understanding of the findings and how they relate to the solution of operating problems. It is not an abbreviated version of the full report.

## **Chapter Sequence**

Note: Report chapters should be structured in a concise and logical manner suitable to the subject matter, clearly describing the research approach, findings, and conclusions.

The recommended sequence of chapters is outlined below, with a description of the typical content for each chapter. However, the structure of some reports may not conform to this sequence.

### Chapter Sections

Within the chapter structure, subheadings should be employed to distinguish separate subject matter. Properly used headings can be very helpful to readers, especially to those with limited reading time who must concentrate on what are to them the most consequential parts of a report.

### Chapter 1 – Introduction and Approach

Discussions of the problem that led to the study, current knowledge that can help in its solution, the objectives and scope of the study, and the approach that was used in attempting to solve the problem, are presented in this section. This chapter does not contain the details of any state-of-the-art survey that may have been made; it contains no forms that may have been used in soliciting information; and it does not give details regarding test procedures or mathematical analyses that may have been used. Those details are placed in appendixes. Suggested subheadings could include Problem Statement and Study Objective, Scope of Study, or Project Approach.

### Chapter 2 - Findings

The material in this chapter enlarges on that presented in the Summary of Findings. By definition, a "finding" is the result of an examination. Summary data, principal mathematical formulas that have developed, and other information that represents study findings may be presented here. Details are presented in the appendixes. Discussion of the findings is presented in Chapter 3. Generalized conclusions that are based on the findings are presented in Chapter 4.

### Chapter 3 – Interpretation and Application

What the findings mean, in terms of use in standards, specifications, policies, and procedures, is discussed in this chapter. What they add to an understanding of the problem and what effects they have on economy, safety, amenities, and convenience are appropriate subjects for discussion. An assessment of their limitations is an important

item for inclusion here. Nomographs, design charts, proposed specifications, and other items of immediate use to practicing engineers or other users should be presented here.

#### Chapter 4 - Conclusions

The conclusions are concerned with general principles suggested in the findings of Chapter 2. They differ from the findings in that they are extensions of the findings beyond conditions specific to the project. If the project findings have revealed specific areas where further study would be valuable, this chapter is the place to enumerate and describe them.

#### Appendixes

Preceding sections of the final report have been directed to practitioners and transportation professionals. Appendix presentations are designed for the developer of manuals and guidelines, and other professional users of the study results who are interested in the maximum degree of technical detail provided by the project effort.

In some cases, the appendixes may be minimal in number and content; in others, the appendixes may be larger than the body of the report. Letter and title must designate each appendix, and references to appendixes should be made, as necessary, at appropriate places in the text.

### **Photographs**

Scanned photos, graphics, and slides shall be scanned at no less than 1200 x 1200 dpi and 24-bit color and saved in JPEG format. Digital pictures should be captured with a Megapixel Digital camera set at the highest picture quality resolution and saved JPEG format.

### **Electronic File Formats**

Reports must be in an electronic format that meets the following specifications:

- The report file, with embedded tables and figures, should be in Microsoft Word (6.0 or later version).
- Figures or graphics of any kind should be embedded as images.
- Equations may be created and inserted as part of the text.

Reports are to be delivered electronically on a CD. All reports shall be compliant with Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d).

### **General Guidelines on Margins, Spacings, and Subheadings**

- Margins must be at least 25 mm (1 in.) on all sides, including on pages with figures and tables.
- Right-hand margins should not be justified. Use hyphenation to achieve a smooth right margin. Type with ragged margins is easier to read and correct.
- Use Times New Roman as the font (typeface), no smaller than 10 points.

- Type reports using single or *1.5* line spacing. Use double space between paragraphs.
- Single-spacing is preferred if superscript and subscript do not touch the next line of type.
- Chapter headings should consist of bold type; all capitals, and be centered at the top of the page.
- Subheadings should be flush with the left margin and follow the recommended format:
  - **FIRST-LEVEL SUBHEAD** — all capitals, boldface, on separate line
  - **Second-Level Subhead** — initial capitals, boldface, on separate line
  - *Third-Level Subhead* — initial capitals, italic, on separate line
- Indent first line 12.7 mm (0.5 in.) of bulleted and numbered lists. Do not indent for text runovers.

### **Pagination**

- Use lower case Roman numerals (i, ~ iii) for numbering Front Matter
- Page numbers should be centered 12.7 mm (0.5 in.) up from the bottom edge of the page and should stand alone with no dash on either side of the number.
- Chapters or main sections must begin on the right-hand page. Blank pages-may be used to achieve this. Blank pages are counted in the page number sequence, but no number is printed on the page.

### **References**

- The reference list should contain only references that are cited in the text, numbered in the order in which they are first cited. Materials not cited may be listed in a bibliography placed at the end of the volume on the page(s) following the references.
- Denote a reference at the appropriate place in the text with an italicized Arabic numeral in parentheses, e.g., (2).
- Do not cite as a reference unpublished material, personal communications, telephone conversations, or similar material that would not be available to readers electronically or in printed form in a library or from the originating agency. Instead, cite the unpublished work in the text and enclose the author's name along with the term "unpublished data" in parentheses.

### **System of Units**

All measurements in the text must be expressed in SI (metric) units. English units may be included in parentheses immediately following the associated metric unit. For figures and tables, provide only the units of the original research and show the base unit conversion in a footnote. Alternatively, in figures, equivalent units may be shown in the top and right axes of data plots.

### **Footnotes**

Do not use footnotes to the text. Incorporate the information into the text or delete the notes.

### **Abbreviations, Acronyms, and Symbols**

Abbreviation, acronyms, and symbols must be fully defined the first time they are use in the paper; the definition should be given first, followed by the abbreviated term in parentheses.

### **Copyright**

All data provided to the Government under this Agreement shall be provided free of copyright protection, except as otherwise expressly provided herein. The Government may authorize the creating entity to establish copyright over the created work, or use previously copyrighted data in the created work, when such is in the best interest of the Government. Such authorization shall be in writing and obtained in advance of copyrighting or incorporating copyrighted data into created work. For all copyrighted data, other than computer software, the creating entity grants to the Government, and others acting on its behalf, a paid-up, nonexclusive, irrevocable, worldwide license in such copyrighted data to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government. When appropriate to fulfill the requirements of this paragraph, the creating entity shall acquire on the behalf of the Government a license of the same scope set for above. For the purposes of this paragraph, “data” means recorded information, regardless of form or the media on which it may be recorded, including technical data and computer software. The term does not include information incidental to contract administration, such as financial, administrative, cost or pricing, or management information.