

# Long-Term Pavement Performance Data Analysis Program

Strategic Plan Objectives, Analysis Outcomes, and Supporting Projects



Strategic Objective 1:	Strategic Objective 2:	Strategic Objective 3:	Strategic Objective 4:	Strategic Objective 5:	Strategic Objective 6:	Strategic Objective 7:
<p><b>Traffic characterization and prediction</b></p> <p><b>A. Guidelines for data collection</b> (hardware, software, placement, calibration, data collection frequency), Some elements require work beyond LTPP data analysis, but analysis is needed to provide some components.</p> <p><b>NCHRP 1-39</b> \$ 600,000 Traffic Data Collection, Analysis, and Forecasting for Mechanistic Pavement Design. Product: Report 509 July 30, 2004 Cambridge Systematics Werblin/Hanna Planned 2003 TBD</p> <p><b>NCHRP 20-50(14)</b> \$ 100,000 Significance of "As-Constructed" AC Air Voids to Pavement Performance. Project completed: June 5, 2000 Research digest 269 Aug. 28, 2002 Applied Pav't Tech. Smith/Hanna</p> <p><b>FHWA</b> \$ 243,000 Assessment of Selected LTPP Materials, Data Tables and Development of Representative Test Tables - Volume I. Project completed: Sept. 1, 1999 Report: FHWA-RD-02-051 Mar. 1, 2001 ERES/Johnson Ayers/Richter</p> <p><b>FHWA</b> \$ 27,000 Study of LTPP Laboratory Resilient Modulus Test Data and Response Characteristics. Project completed: June 1, 2000 Report: FHWA-RD-02-001 Mar. 1, 2001 ERES/Fugro-BRE Von Quintus/Richter</p> <p><b>FHWA</b> \$ 100,000 Review of the SP5-B (SUPERPAVE) Performance Experience. Project completed: TBD Planned 2003 TBD/Visser</p> <p><b>FHWA</b> \$ 50,000 Review of Laboratory Resilient Modulus Testing of MMA Mixtures. Project completed: TBD Planned 2003 TBD/Visser</p> <p><b>B. Guidelines for applying traffic loading and classification data in pavement design.</b></p> <p><b>FHWA</b> \$ 307,810 Optimization of Traffic Data Collection for Specific Pavement Applications. Project completed: June 23, 2003 June 23, 2004 Nichols Papapanagos/Visser (To be coordinated with NCHRP 1-39)</p> <p><b>C. Procedures for forecasting and back-casting traffic loading data.</b></p> <p><b>FHWA</b> \$ 250,000 Estimating Cumulative Traffic Loads, Phase 1. Project completed: Oct. 15, 1998 Sept. 30, 2001 Hajek/Visser</p> <p><b>FHWA</b> \$ 293,000 Estimating Cumulative Traffic Loads, Phase 2. Project completed: Oct. 31, 1998 Hajek/Visser</p> <p><b>Problem Statement Number 411</b> Procedures for forecasting and back-casting traffic loading data. 12 months \$250,000</p> <p><b>D. Impact of pavement roughness on the dynamic loads applied to pavements.</b></p> <p><b>Problem Statement Number 410</b> Tools for analyzing errors and improving accuracy of existing WIM systems. 24 months \$450,000</p>	<p><b>Materials characterization</b></p> <p><b>A. Relative importance of different material characteristics in predicting pavement performance.</b></p> <p><b>NCHRP 20-50(14)</b> \$ 100,000 Significance of "As-Constructed" AC Air Voids to Pavement Performance. Project completed: June 5, 2000 Research digest 269 Aug. 28, 2002 Applied Pav't Tech. Smith/Hanna</p> <p><b>FHWA</b> \$ 243,000 Assessment of Selected LTPP Materials, Data Tables and Development of Representative Test Tables - Volume I. Project completed: Sept. 1, 1999 Report: FHWA-RD-02-051 Mar. 1, 2001 ERES/Johnson Ayers/Richter</p> <p><b>FHWA</b> \$ 27,000 Study of LTPP Laboratory Resilient Modulus Test Data and Response Characteristics. Project completed: June 1, 2000 Report: FHWA-RD-02-001 Mar. 1, 2001 ERES/Fugro-BRE Von Quintus/Richter</p> <p><b>FHWA</b> \$ 100,000 Review of the SP5-B (SUPERPAVE) Performance Experience. Project completed: TBD Planned 2003 TBD/Visser</p> <p><b>FHWA</b> \$ 50,000 Review of Laboratory Resilient Modulus Testing of MMA Mixtures. Project completed: TBD Planned 2003 TBD/Visser</p> <p><b>B. Relationships to enable interchangeable use of laboratory and field-derived material parameters.</b></p> <p><b>FHWA</b> \$ 231,830 Temperature Predictions and Adjustments Factors for Asphalt Pavements. Project completed: Oct. 1, 1994 Report: FHWA-RD-98-085 June 1, 1999 Braun Lukaven/Richter</p> <p><b>FHWA</b> \$ 270,000 Analysis Relating to Pavement Material Characterization and Their Effects on Pavement Performance. Project completed: Apr. 1, 1995 Report: FHWA-RD-97-076 Sept. 1997 Fugro-BRE Von Quintus/Richter</p> <p><b>FHWA</b> \$ 125,000 Backcalculation of Layer Parameters for LTPP Test Sections, Volume I. Project completed: Aug. 1, 1997 Report: FHWA-RD-00-086 July 31, 1998 ERES Khazanchi/Richter</p> <p><b>FHWA</b> \$ 171,000 Backcalculation of Layer Parameters for LTPP Test Sections, Volume II. Project completed: May 1, 1997 Report: FHWA-RD-01-110 Aug. 31, 2000 Fugro-BRE Von Quintus/Richter</p> <p><b>FHWA</b> \$ 228,875 Review of LTPP Backcalculation Results. Project completed: Jan. 23, 2003 Jan. 23, 2004 Stubs/Wisser</p> <p><b>C. Relationship between as-designed and as-built material characteristics.</b></p> <p><b>Problem Statement Number 2E1</b> Estimation of key test results, subgrade, and component engineering properties from index properties, routine tests, and physical characteristics. (Materials ETC) Planned 2003 TBD</p> <p><b>Problem Statement Number 2E2</b> Estimation of key test results, subgrade, and component engineering properties from routine tests, and physical characteristics. (Materials ETC) Planned 2003 TBD</p> <p><b>F. Improved deflection-based analysis methods for materials characterization.</b></p> <p><b>Problem Statement Number 3E1</b> Improved deflection based analysis methods for materials characterization. Planned 2003 TBD</p> <p><b>G. Combination of all results under this objective to provide a unified set of tools/guidelines for characterizing pavement materials/soils for pavement design and construction.</b></p>	<p><b>Determination of environmental effects in pavement design and prediction.</b></p> <p><b>NCHRP 9-23</b> \$ 487,234 Environmental Effects in Pavement Mix and Structural Design Systems. Project completed: Feb. 27, 2001 Aug. 31, 2004 Arizona State U. Houston/Hanna</p> <p><b>NCHRP 20-50(712)</b> \$ 349,689 Daily and Seasonal Variations in In-Situ Material Properties. Project completed: Feb. 7, 2000 Web document 60 Aug. 31, 2003 U. of Tennessee Durum/Hanna</p> <p><b>FHWA</b> \$ 94,200 Study of LTPP Pavement Temperatures. Project completed: Oct. 1998 Project pending: Nov. 1999 Braun/Conspulav Lukaven/Symons</p> <p><b>FHWA</b> \$ 103,056 Analysis of Time Domain Reflectometry. Project completed: Aug. 1997 Report: FHWA-RD-98-115 July 1998 ERES Jang/Richter</p> <p><b>FHWA</b> \$ 5,0 Seasonal Variations in Unbound Pavement Materials. Project completed: Mar. 31, 1997 Richter</p> <p><b>FHWA</b> \$ 100,840 Evaluation of LTPP Site-Specific Climatic Data. Project completed: TBD Planned 2003 TBD</p> <p><b>Problem Statement Number 4A1</b> Assessment of the effects of loading and environment on pavement life using SP5 data. 24 months \$300,000</p> <p><b>B. Impact of freeze-thaw cycles on pavement performance.</b></p> <p><b>FHWA</b> \$ 88,822 Determination of Frost Penetration in LTPP Sections. Project completed: Aug. 1997 Report: FHWA-RD-98-088 July 1998 ERES Jang/Richter</p> <p><b>FHWA</b> \$ 375,000 Effect on Performance of Multiple Freeze Cycles vs. Deep Frost Penetration. Mar. 4, 2003 Sept. 4, 2005 Nichols Jackson/Visser</p> <p><b>Problem Statement Number 3B2</b> Pavement damage caused by swelling and frost susceptible soils. Planned 2003 TBD</p> <p><b>C. Long-term changes in pavement characteristics due to environmental effects and aging.</b></p> <p><b>Problem Statement Number 3C1</b> Evaluation of the integrated climatic needed using LTPP Seasonal Monitoring Program (SMP) data. (after NCHRP 9-23 (Environmental Effects in Pavement Mix and Structural Design Systems (3))) Planned 2003 TBD</p> <p><b>Problem Statement Number 3C2</b> Seasonal validity of the assumptions underlying in-situ mechanistic pavement design methods. Planned 2003 TBD</p> <p><b>D. Recommendations for climate data collection to adequately predict pavement performance.</b></p> <p><b>FHWA</b> \$ 135,000 Verification of LTPP Virtual Weather. Project completed: Jan. 2000 Report pending: Oct. 2000 Mohseni Mohseni/Symons</p> <p><b>E. Region specific guidelines for considering environmental and load effects.</b></p> <p><b>FHWA</b> \$ N/A LTPP Seasonal Asphalt Concrete Pavement Temperature Models. Project completed: June 1, 1996 Report: FHWA-RD-97-103 June 1, 1996 Ba/Svi Mosen/Richter</p> <p><b>Problem Statement Number 3E1</b> Region specific guidelines for pavement modeling and design considering environmental effects. Planned 2003 TBD</p>	<p><b>Evaluation and use of pavement condition data in pavement management.</b></p> <p><b>NCHRP 1-35A</b> \$ 200,000 Guide for Pavement Management. Project completed: Dec. 1, 1997 ASHSTO Pavement Management Guide Texas A&amp;M U. Smith/Hanna</p> <p><b>FHWA</b> \$ 55,838 LTPP Friction Data. Project completed: Aug. 1, 1997 Report: FHWA-RD-99-037 July 1, 1998 ERES Giverson/Richter</p> <p><b>FHWA</b> \$ 100,000 Study of LTPP Distress Data Variability. Project completed: Jan. 1, 1997 Report: FHWA-RD-99-074 Aug. 1, 1999 Lusa/PCS Rask/Richter</p> <p><b>FHWA</b> \$ 141,000 Distress Data Consolidation. Project completed: Aug. 15, 1998 Report pending: Dec. 31, 2000 Fugro-BRE Simpson/Richter</p> <p><b>FHWA</b> \$ 397,000 LTPP Profile Variability. Project completed: July 28, 1997 Report: FHWA-RD-00-113 Mar. 1, 2000 ERES Simpson/Richter</p> <p><b>FHWA</b> \$ 58,000 Preliminary Evaluation and Analysis of LTPP Faulting Data. Project completed: May 1, 1998 Report: FHWA-RD-00-076 Sept. 1, 1998 ERES Tavaly/Richter</p> <p><b>FHWA</b> \$ 198,000 Characterization of Transverse Profiles. Project completed: Aug. 15, 1998 Report: FHWA-RD-01-024 Sept. 1, 2000 Fugro-BRE Simpson/Richter</p> <p><b>FHWA</b> \$ 60,000 Pavement Smoothness Index Relationships. Project completed: Feb. 1, 2001 Report: FHWA-RD-02-057 Nov. 1, 2001 ERES Simpson/Richter</p> <p><b>FHWA</b> \$ 74,991 Smoothness Index Differences Related to LTPP Equipment Type. Project completed: Jan. 6, 2004 Oct. 6, 2004 Peters/Richter</p> <p><b>Problem Statement Number 4A1</b> Develop improved pavement performance index values or models for life-cycle cost determination. Planned 2003 TBD</p> <p><b>Problem Statement Number 4A2</b> Develop hierarchical data collection for network and project-level pavement management consistency types and frequency of measurements. Planned 2003 TBD</p> <p><b>Problem Statement Number 4A3</b> Types and frequencies of measurements for accurate description of pavement condition. Planned 2003 TBD</p> <p><b>Problem Statement Number 4A4</b> Numerical pavement evaluation indices for pavement condition. Planned 2003 TBD</p> <p><b>B. Improve measures of pavement structural condition for use in network-level pavement management.</b></p> <p><b>FHWA</b> \$ 100,000 Study of LTPP Pavement Deflections. Project completed: Feb. 2001 Report pending: Sept. 2001 Conspulav Stubs/Symons</p> <p><b>FHWA</b> \$ 100,000 Characterization of PCC Pavements. Project completed: TBD Planned 2003 TBD</p> <p><b>FHWA</b> \$ 200,000 New Techniques for Evaluation and Interpretation of Pavement Deflections for Network-Level Analysis. Planned 2003 TBD</p> <p><b>C. Models relating functional and structural performance.</b></p> <p><b>Problem Statement Number 4C1</b> Relating life quality and structural adequacy for pavement rehabilitation design decisions. 12 months \$300,000</p> <p><b>D. Criteria for applying performance measures (including variability) to construction quality evaluation.</b></p> <p><b>NCHRP 20-50(9)</b> \$ 174,998 Feasibility of Using FWD Deflection Data to Characterize Pavement Construction Quality. Project completed: May 2, 2000 Web document 52 June 3, 2002 Conspulav Stubs/Hanna</p> <p><b>Problem Statement Number 4D1</b> Criteria for applying performance measures to construction quality evaluation. Planned 2003 TBD</p> <p><b>E. Relationship between variation in pavement performance measures and environmental factors.</b></p> <p><b>Problem Statement Number 4E1</b> Quantitative information of environmental variables on pavement performance. Planned 2003 TBD</p> <p><b>Problem Statement Number 4E2</b> PCC temperature construction factors for interpretation of FWD test results. Planned 2003 TBD</p>	<p><b>Development of pavement response and performance models applicable to pavement design and performance prediction.</b></p> <p><b>NCHRP 1-37A</b> \$ 6,579,080 Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures (Phase II). Project completed: Feb. 1, 1998 Feb. 26, 2004 ERES Hall/Hanna</p> <p><b>FHWA</b> \$ 60,000 Comparison and Quality Evaluation of LTPP Dynamic Load Response Data from Ohio and North Carolina. Project completed: Dec. 1999 Report pending: Dec. 2000 FHWA Staff</p> <p><b>Problem Statement Number 5A1</b> Evaluation of load-response models (axle load and environment). 24 months \$200,000</p> <p><b>B. Mechanistic-empirical procedures for using commonly collected pavement data to predict specific distresses.</b></p> <p><b>NCHRP 20-50(5)</b> \$ 249,991 Variations in Pavement Design Inputs. Project completed: Oct. 12, 2001 Web document 48 Oct. 12, 2001 Conspulav Stubs/Hanna</p> <p><b>Problem Statement Number 5B1</b> Evaluation of the performance prediction models in the 2002 Pavement Design Guide. 24 months \$400,000</p> <p><b>C. Calibrated relationships (transfer functions) between pavement response and individual distress types.</b></p> <p><b>FHWA</b> \$ 84,000 Validation of Guidelines for k-Value Selection and Concrete Pavement Performance Prediction. Project completed: Oct. 1, 1994 Report: FHWA-RD-96-198 Hall/Hanna</p> <p><b>FHWA</b> \$ 84,000 Design and Construction of PCC Pavements, Volume I. Project completed: Oct. 1, 1994 Report: FHWA-RD-98-052 Aug. 1, 1998 ERES Antwi/Richter</p> <p><b>FHWA</b> \$ 84,000 Design and Construction of PCC Pavements, Volume II. Project completed: Oct. 1, 1994 Report: FHWA-RD-98-127 Aug. 1, 1998 ERES Giverson/Richter</p> <p><b>FHWA</b> \$ 84,000 Design and Construction of PCC Pavements, Volume III. Project completed: Oct. 1, 1994 Report: FHWA-RD-98-113 Aug. 1, 1998 ERES Giverson/Richter</p> <p><b>Problem Statement Number 5C1</b> Evaluation of pavement performance models. 24 months \$200,000</p> <p><b>Problem Statement Number 5C2</b> Development of longitudinal cracking models for PCC pavements. 24 months \$200,000</p>	<p><b>Maintenance and rehabilitation strategy selection and performance prediction.</b></p> <p><b>NCHRP 20-50(3A)</b> \$ 250,000 Effectiveness of Maintenance and Rehabilitation Options. Project completed: Oct. 14, 1999 Web document 47 Mar. 31, 2002 Kashien Hall/Hanna</p> <p><b>FHWA</b> \$ 54,000 Performance of Rehabilitated AC Pavements in the LTPP Experiments. Project completed: Oct. 1, 1997 Report pending: Aug. 1, 1999 Fugro-BRE Raush/Richter</p> <p><b>FHWA</b> \$ 25,433 Assessment of the SP5-B Bonded Concrete Overlay Experiments. Project completed: July 1, 1998 Report: FHWA-RD-98-130 Dec. 1, 2000 ERES Smith/Richter</p> <p><b>FHWA</b> \$ 54,000 LTPP Maintenance and Rehabilitation Data Review. Project completed: July 1999 Report: FHWA-RD-01-019 Nov. 2000 Fugro-BRE Von Quintus/Richter</p> <p><b>B. Guidelines for timing and selection of pavement maintenance and rehabilitation options, and expected performance impacts of each.</b></p> <p><b>NCHRP 1-38</b> \$ 100,000 Guide on Pavement Rehabilitation Strategies. Project completed: Mar. 1, 1998 Web document 35 Mar. 31, 2001 Kashien Hall/Hanna</p> <p><b>NCHRP 14-14</b> \$ 312,397 Preventive Maintenance Treatment Applications. Project completed: Apr. 10, 2000 Sept. 30, 2003 Applied Pav't Tech. Michigan State U.</p> <p><b>Problem Statement Number 6B1</b> Guidelines for selecting pavement rehabilitation strategies that consider impact on pavement life and/or performance. (after 20-50(3)(4) (6A)) 18 months \$300,000</p> <p><b>NCHRP 1-34A</b> \$ 149,923 Contributors of Pavement Structural Layers to Rutting of Flexible Pavements. Project completed: July 31, 2001 Rut/Risk/Wade-Haddock/Hanna</p> <p><b>NCHRP 1-34B</b> \$ 50,000 Effectiveness of Subsurface Drainage for HMA and PCC Pavements. Project completed: Apr. 1, 1999 Research digest 268 Nov. 30, 1999 Kashien Hall/Hanna</p> <p><b>NCHRP 1-34C</b> \$ 116,024 Effects of Subsurface Drainage on Performance of Asphalt and Concrete Pavements. Project completed: Apr. 6, 2000 Report 499 Mar. 31, 2003 Kashien Hall/Hanna</p> <p><b>NCHRP 1-34D</b> \$ 230,000 Effects of Subsurface Drainage on Performance of Asphalt and Concrete Pavements. Evaluation and Analysis of LTPP SPS-1 and SPS-2 Field Sections. Project completed: Nov. 18, 2002 Nov. 30, 2004 Kashien Hall/Hanna</p> <p><b>NCHRP 20-50(9)(3)</b> \$ 199,998 Factors Affecting Pavement Smoothness. Project completed: Oct. 25, 1999 Web document 40 Dec. 30, 2001 Soll &amp; Marti Ebers. Kohm/Hanna</p> <p><b>FHWA</b> \$ 194,534 Investigation of Development of Pavement Roughness. Project completed: June 1, 1997 Report: FHWA-RD-97-147 Aug. 1, 1997 Soll &amp; Materials Ebers. Peters/Richter</p> <p><b>FHWA</b> \$ 240,000 Characteristics of Good and Poorly Performing PCC Pavements. Project completed: Oct. 1, 1996 Report: FHWA-RD-97-131 Nov. 1, 1997 ERES Khazanchi/Richter</p> <p><b>FHWA</b> \$ 100,000 Evaluation and Characterization of Pavement Drainage after NCHRP 1-34D. Planned 2003 TBD</p> <p><b>Problem Statement Number 7B1a</b> Determine the impact of design features on pavement distress for new flexible pavements. 24 months \$300,000</p> <p><b>Problem Statement Number 7B1b</b> Determine the impact of design features on pavement distress for new rigid pavements. 24 months \$300,000</p> <p><b>C. Guidelines for the selection of pavement design features.</b></p> <p><b>Problem Statement Number 7C1</b> Guidelines for the selection of pavement design features. Planned 2003 TBD</p>	<p><b>Quantification of the performance impact of pavement design features (deflections, load-transfer, strains, etc.).</b></p> <p><b>NCHRP 20-50(2)</b> \$ 74,983 Relative Performance of Jointed Plain Concrete Pavements with Sealed and Unsealed Joints. Project completed: July 29, 1999 Web document 32 Jan. 31, 2001 Kashien Hall/Hanna</p> <p><b>FHWA</b> \$ 360,000 Review of SPS-1, -2, -5, and -6 Experiments. Projects completed: July 12, 1999 Reports pending: Dec. 31, 2000 Darter &amp; ERES/Fugro-BRE Von Quintus/Richter</p> <p><b>FHWA</b> \$ 191,000 Evaluation and Analysis of LTPP Pavement Layer Thickness Data. Project completed: Sept. 1, 1999 Report: FHWA-RD-03-041 Oct. 31, 2000 ERES Jang/Richter</p> <p><b>FHWA</b> \$ 75,000 Study of Environmental Effects on the Absence of Heavy Loads SPS-8 - Initial Pavement Layer Thickness Data. Project completed: Mar. 2002 Report pending: Jan. 2001 Madsen/Richter</p> <p><b>FHWA</b> \$ 75,000 Evaluation of Joint and Crack Load Transfer. Project completed: Mar. 2002 Report: FHWA-RD-02-088 Jan. 2002 ERES Khazanchi/Richter</p> <p><b>NCHRP 20-50(10)(6)</b> \$ 299,301 Criteria of Design and Construction Features on the Response and Performance of New Flexible and Rigid Pavements. Project completed: June 27, 2002 Michigan State U. Dec. 27, 2004</p> <p><b>Problem Statement Number 7A2</b> Criteria of design features on pavement response in rehabilitated pavements. Planned 2003 TBD</p> <p><b>B. Impact of design features on pavement distresses.</b></p> <p><b>NCHRP 1-34A</b> \$ 149,923 Contributors of Pavement Structural Layers to Rutting of Flexible Pavements. Project completed: July 31, 2001 Rut/Risk/Wade-Haddock/Hanna</p> <p><b>NCHRP 1-34B</b> \$ 50,000 Effectiveness of Subsurface Drainage for HMA and PCC Pavements. Project completed: Apr. 1, 1999 Research digest 268 Nov. 30, 1999 Kashien Hall/Hanna</p> <p><b>NCHRP 1-34C</b> \$ 116,024 Effects of Subsurface Drainage on Performance of Asphalt and Concrete Pavements. Project completed: Apr. 6, 2000 Report 499 Mar. 31, 2003 Kashien Hall/Hanna</p> <p><b>NCHRP 1-34D</b> \$ 230,000 Effects of Subsurface Drainage on Performance of Asphalt and Concrete Pavements. Evaluation and Analysis of LTPP SPS-1 and SPS-2 Field Sections. Project completed: Nov. 18, 2002 Nov. 30, 2004 Kashien Hall/Hanna</p> <p><b>NCHRP 20-50(9)(3)</b> \$ 199,998 Factors Affecting Pavement Smoothness. Project completed: Oct. 25, 1999 Web document 40 Dec. 30, 2001 Soll &amp; Marti Ebers. Kohm/Hanna</p> <p><b>FHWA</b> \$ 194,534 Investigation of Development of Pavement Roughness. Project completed: June 1, 1997 Report: FHWA-RD-97-147 Aug. 1, 1997 Soll &amp; Materials Ebers. Peters/Richter</p> <p><b>FHWA</b> \$ 240,000 Characteristics of Good and Poorly Performing PCC Pavements. Project completed: Oct. 1, 1996 Report: FHWA-RD-97-131 Nov. 1, 1997 ERES Khazanchi/Richter</p> <p><b>FHWA</b> \$ 100,000 Evaluation and Characterization of Pavement Drainage after NCHRP 1-34D. Planned 2003 TBD</p> <p><b>Problem Statement Number 7B1a</b> Determine the impact of design features on pavement distress for new flexible pavements. 24 months \$300,000</p> <p><b>Problem Statement Number 7B1b</b> Determine the impact of design features on pavement distress for new rigid pavements. 24 months \$300,000</p> <p><b>C. Guidelines for the selection of pavement design features.</b></p> <p><b>Problem Statement Number 7C1</b> Guidelines for the selection of pavement design features. Planned 2003 TBD</p>

**Priorities**

Critical (Red)

Very High (Orange)

High (Yellow)

Sequence (Green)

1 2 3

Sequence numbers denote the order in which Analysis Outcomes should be addressed for a given Objective. Analysis Outcomes with the same sequence number can be addressed at the same time.

**NCHRP Project Number** \$ Funds  
NCHRP project title  
Dashed light blue boxes are on-going NCHRP projects that were initiated by the LTPP ETRG. Solid Light Blue boxes are completed projects.

**FHWA Technical Support Contract** \$ Funds  
Project title  
Planned Start Date  
Responsible Agency Principal Inv./FHWA Staff

**FHWA Technical Support Contract** \$ Funds  
Project title  
Completion Date  
Responsible Agency Principal Inv./FHWA Staff

**Problem Statement Number** O, A, N, H  
Proposed problem title  
Project duration. Anticipated Project Funds

Dashed white boxes are proposed Research Problem Statements that were developed in LTPP Workshops (See Note 1) for an explanation of the Problem Statement Numbering scheme.

Dashed orange boxes are planned FHWA projects that will be funded using LTPP budgeted funds.

Dashed pink boxes are on-going NCHRP projects that are directly associated with LTPP Data Analysis Plan Strategic Objectives and Analysis Outcomes. Solid Pink boxes are completed projects.

Dashed white boxes are completed projects with reports pending.

Thick solid boxes are completed projects with reports published.

**Note**

1) Problem Statements are assigned a 3 character number using the convention "O, A, N, H" (O is the associated Strategic Objective number through 7; 'A' is the associated Analysis Outcome number through 7; 'N' is an arbitrarily assigned number used for identification purposes. The number '1' does not imply a sequence in which Problem Statements should be addressed.

June 22, 2004