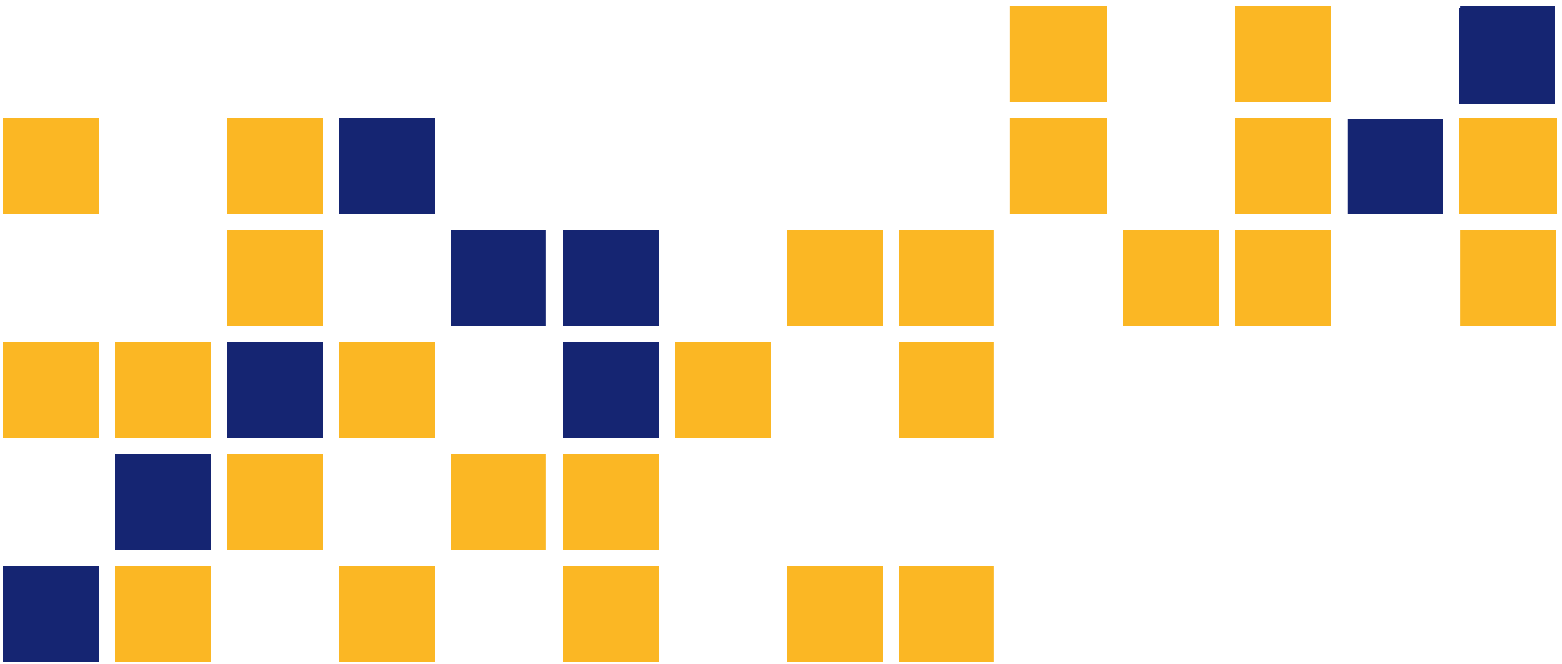


Consortium of Accelerated Pavement Testers (CAPT)

Susan F. Barker, P.E.

*Kansas Department of Transportation
Bureau of Research*

A Transportation Pooled Fund Study - TPF-5(127)



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<p>FHWA and a group of state Departments of Transportation from nine of the 14 US Accelerated Pavement Testing (APT) facilities have proposed the creation of a joint or pooled funded program to encourage coordination among the various facilities and provide resources and management for collaborative studies.</p> <p>The main objective of the Consortium of Accelerated Pavement Testers (CAPT) Pooled Fund is to develop technical deliverables unique to APT facilities and to accelerate technology transfer among APT owners.</p> <p>The scope of work was to organize and structure a program that identifies and produces key technical deliverables; provide a means to define, support, and share APT technology of mutual interest; develop a longer-range plan of collaboration (strategic plan), including potential cooperation with international community; and provide for special studies, investigations, research, and training.</p>			
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Consortium of Accelerated Pavement Testers (CAPT)

Final Report

Prepared by

Susan F. Barker, P.E.

**Kansas Department of Transportation
Bureau of Research**

A Report on Research Sponsored by

**THE KANSAS DEPARTMENT OF TRANSPORTATION
TOPEKA, KANSAS**

May 2016

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The contents of this report reflect the views of the authors who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the views or the policies of the state of Kansas. This report does not constitute a standard, specification or regulation.

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Consortium of Accelerated Pavement Testers (CAPT)

Background

FHWA and a group of state Departments of Transportation from nine of the 14 US Accelerated Pavement Testing (APT) facilities have proposed the creation of a joint or pooled funded program to encourage coordination among the various facilities and provide resources and management for collaborative studies.

Objectives

The main objective of the Consortium of Accelerated Pavement Testers (CAPT) Pooled Fund is to develop technical deliverables unique to APT facilities and to accelerate technology transfer among APT owners.

Scope of Work

Organize and structure a program that identifies and produces key technical deliverables. Provide a means to define, support, and share APT technology of mutual interest. Develop a longer-range plan of collaboration (strategic plan), including potential cooperation with international community. Provide for special studies, investigations, research, and training.

Project Progress

The participating agencies met in February 2012 in Kansas City, Missouri, to prioritize the tasks to be done. Kansas State University (KSU) then collected proposals for the tasks selected and sent them to the CAPT leadership for selection of the contractors.

- A subcontract with Dr. Richard Willis of Auburn University to do “how to” for instrumentation. A position paper and videos for instrumentation were developed in this subcontract.
- A web developer was hired at Kansas State University to develop a dedicated website for CAPT (<http://pavementtesters.org>) and the database was populated with information from different CAPT states.
- A workshop on instrumentation at the 4th International Conference on Accelerated Pavement Testing, in Davis, California, in September 2012 was

developed and delivered by Dr. Richard Willis of Auburn University under the sponsorship of CAPT.

- A GoToMeeting among member states was arranged in March of 2014 with the new project monitor, Mr. Greg Schieber (GregS@ksdot.org), Geotechnical Engineer of KDOT as chair. The developments of the project and specifics of the searchable database were discussed. Development of a searchable database was agreed upon.
- In a June 2014 GoToMeeting, member states indicated a different approach for the searchable database. In December 2015, the contract with KSU was cancelled. The Kansas Department of Transportation, lead state on TPF-5(127), decided to reduce the tasks of the project due to a lack of interest from participating states and the availability of other avenues for collaborative studies. Unspent SPR funds will be returned to TPF partners to be better utilized elsewhere.

Significant Results

A dedicated website for CAPT: <http://pavementtesters.org>

A “how to” position paper for instrumentation.

Professional videos on how to do instrumentation:

- Pressure Cell
- Strain Gauge
- Gauge Array Setup

APT Facilities and Publications listed on the CAPT website are shown in Appendices A and B.

All files for website, video, report, etc., are available upon request from:

Kansas DOT Library
700 SW Harrison, Ste 470 West Wing
Topeka, KS 66603-3745

KDOT#Research.Library@ksdot.org

Appendix A: Facilities

Caltrans/University of California Pavement Research Center (UCPRC)

In operation since 1993, the Partnered Pavement Research Center (PPRC) was started as the Caltrans Accelerated Pavement Testing (CAL/APT) program in what was then the University of California Berkeley Institute of Transportation Studies Bituminous Materials Laboratory in Richmond, California.

Cold Regions Research and Engineering Laboratory (CRREL)

The Cold Regions Research and Engineering Laboratory (CRREL) was established by the re-designation of SIPRE (Snow, Ice and Permafrost Research Establishment) and the merger with the Arctic Construction and Frost Effects Laboratory, as directed by U.S. Army General Order No. 3.

Florida Department of Transportation (FDOT)

The APT test site consists of eight linear flexible pavement test tracks. The original lanes measured 150 feet long and 12 feet wide. A 2011 expansion of the test track extended seven of the lanes an additional 300 feet.

FHWA Turner Fairbank Highway Research Center (TFHRC)

Began circa 1986. Characterized effects of tire type, load, and inflation.

Illinois Center for Transportation (ICT)

The Illinois Center for Transportation (ICT) is a transportation research center that uses experience of experts in transportation and related fields at the University of Illinois and the Illinois Department of Transportation (IDOT) as well as other universities by providing appropriate tools and support for research.

Indiana Department of Transportation (INDOT)

The Indiana Department of Transportation (INDOT), in association with Purdue University, has designed, constructed, and commissioned an Accelerated Pavement Testing (APT) facility at the INDOT Division of Research and Development in West Lafayette, Indiana.

Kansas Department of Transportation (KDOT)

Located at and exclusively owned by Kansas State University. Accelerated pavement testing at the Civil Infrastructure System Laboratory of Kansas State University serves the full-scale pavement testing needs of the States of Iowa, Kansas, Missouri, and Nebraska.

Louisiana Transportation Research Center (LTRC)

The Pavement Research Facility, operated by the Louisiana Transportation Research Center (LTRC), is sponsored jointly by the Louisiana Department of Transportation and Development and Louisiana State University. The facility is funded by the DOTD in cooperation with the Federal Highway Administration.

MnROAD

MnROAD, located near Albertville, Minnesota, is one of the most sophisticated independently operated pavement test facilities of its type in the world. Completed in 1991 to 1993 at a cost of \$25 million, MnROAD consists of two unique road segments located parallel to Interstate 94.

National Center for Asphalt Technology (NCAT)

The National Center for Asphalt Technology is a cooperative venture between the National Asphalt Pavement Association's (NAPA) Research and Education Foundation and Auburn University.

New York (Instrumented Sites Only)

NY has seven instrumented sites, with three located on I-86.

Ohio Accelerated Pavement Load Facility (OH-APLF)

The Ohio facility was constructed in 1997 as a joint venture between Ohio University and Ohio State University, through a grant from the Ohio Board of Regents.

University of Texas at Arlington

The University of Texas at Arlington owns and operates the APT program in Texas. Up to 30 pavement sections can be constructed at the Accelerated Pavement Testing Facility and loaded with the Pavement Testing Machine (PTM), a mobile, linear loading device.

Waterways Experiment Station (WES)

The U.S. Army Corps of Engineers Waterways Experiment Station (WES) established in 1998 is the largest Civil Engineering and Environmental Quality Research and Development (R&D) complex in the United States. Each WES project is conducted in response to the requirements of Army Civil Works and military R&D.

Appendix B: Facility Locations & Publications

Caltrans/UCPRC

Address:

7233 Apiary Drive
Davis, CA 95616
United States

Contact Name:

John Harvey
Phone Number:
(530) 754-6409
E-Mail Address:
jtharvey@ucdavis.edu

Date Established: 1993

Testing Capabilities: Field testing capabilities testing include Falling Weight Deflectometer (FWD), Dynamic Cone Penetrometer (DCP), nuclear gauging, and coring equipment. All APT and laboratory results are stored in a relational database for future access and analysis, and are currently being used for calibration of mechanistic-empirical design procedures. Field sites for both flexible and rigid pavements are often instrumented and monitored to augment and extrapolate APT results throughout California.

Background: In operation since 1993, the Partnered Pavement Research Center (PPRC) was started as the Caltrans Accelerated Pavement Testing (CAL/APT) program in what was then the University of California Berkeley Institute of Transportation Studies Bituminous Materials Laboratory in Richmond, California. The program was renamed the Partnered Pavement Research Center in 2000, to reflect a broader range of research partners and pavement-related research areas, while maintaining a core accelerated pavement testing component. In 2002, the PPRC expanded to the Davis campus of the University of California, and the PPRC now operates as a two-campus organization under joint leadership.

Focus Areas:

Asphalt
Comparative testing
Concrete
Long Lasting Pavements
LTPP
Surface Treatments

Data File:

CalTrans-Full Depth Pavement Reclamation - March 2009.
CalTrans-Warm-Mix Asphalt Study first level analysis phase 3B - June 2011.
CalTrans-Warm-Mix Asphalt Study first level analysis phase 3A - June 2011.
CalTrans-Warm-Mix Asphalt Study first level analysis of phase 2 HVS - July 2009.
CalTrans-UCPRC Life Cycle Assessment - April 2012.
CalTrans-Superpave Implementation Phase I - December 2012.
CalTrans-Summary of Laboratory Tests - November 2010.
CalTrans-Summary of a Computer Modeling Study - November 2010.
CalTrans-Re-Cementation of Crushed Material - October 2009.
CalTrans-Quiet Pavement Research - June 2011.
CalTrans-Preliminary Results - August 2013.
CalTrans-Pavement Life Cycle Assessment - May 2010.
CalTrans-Laboratory Testing and Modeling - November 2010.
CalTrans-Investigation of Noise and Ride Quality - August 2012.
CalTrans-Investigation of Noise and Durability - April 2011.
CalTrans-Guidelines for the Stabilization - July 2010.
CalTrans-Full Depth Pavement Reclamation - March 2009.
CalTrans-Freight Truck Pavement Interaction - December 2012.
CalTrans-Evaluation of CT 371 Field Data - August 2011.
CalTrans-Concrete Pavement Tire Noise - December 2011.
CalTrans-Accelerated Traffic Load Testing - December 2011.
CalTrans-A Framework for Life-Cycle - June 2010.
CalTrans-Warm-Mix Asphalt Study for AkzoNobel Rediset - April 2010.
CalTrans-Temperature Influence On Road Traffic Noise - May 2010.
CalTrans-Rehabilitation Design for 06-KIN-198 - May 2010.
CalTrans-Quieter Pavement Research - May 2011.
CalTrans-Quality Assurance - January 2011.
CalTrans-Noise Barrier Design - May 2010.
CalTrans-Investigation of Noise and Durability Performance Trends - January 2009.
CalTrans-Highway Noise Abatement - May 2010.
CalTrans-Friction Testing Of Pavement - April 2009.
CalTrans-Acoustic Aging of Asphalt Pavements - May 2010.
CalTrans-Implementation of New Quieter Pavement - February 2013.
CalTrans-Laboratory Evaluation of the Noise and Durability Properties - December 2009.
CalTrans-Rehabilitation Design for 01-LAK-53 - September 2009.
CalTrans-MnROAD Case Study - August 2009.
CalTrans-Rehabilitation Design for 02-PLU-36 - August 2009.

CalTrans-Friction Testing of Pavement Preservation Treatments - July 2009.

CalTrans-Full-Depth Pavement Reclamation - March 2009.

CalTrans-Summary Report The Phase One I-710 Freeway Rehabilitation Project- February 2009.

CalTrans-Development of Thin HMA Overlay Crack - December 2008.

CalTrans-Technical Memorandum on Innovative Contracting Methods - November 2008.

CalTrans-Full-Depth Pavement Reclamation with Foamed Asphalt-Final Report - April 2008.

CalTrans-Development of Empirical-Mechanistic Pavement - October 2005.

CalTrans-Evaluation of Modified Binder Gap-Graded Mixes-SR-2007.

CalTrans-Summary Report Investigation of Noise Durability Permeability and Friction - August 2008.

CalTrans-Warm-Mix Asphalt Study Test Track Construction and First Level Analysis Phase 1 HVS - July 2008.

CalTrans-Construction and Traffic Analysis of Interstate 15(Devore II) - March 2008.

CalTrans-Calibration of the CalME Rutting Model Using 2000 NCAT Data - March 2008.

CalTrans-Investigation of Noise Durability Permeability and Friction Performance Trends for Asphaltic Pavement Surface - February 2008.

CalTrans-State of the Practice in 2006 for Open-Graded Asphalt Mix Design - December 2007.

CalTrans-Reflective Cracking Study Summary Report - December 2007.

CalTrans-Summary and Recommendations toward Implementing Innovations - September 2007.

CalTrans-Reflective Cracking Study Backcalculation of HVS Test Section - November 2007.

CalTrans-Summary Report on the Evaluation of Rigid Pavement Long-Life Strategies - December 2005.

CalTrans-Alligator Cracking Performance and Life-Cycle Cost Analysis of Pavement Preservation Treatments - November 2007.

CalTrans-Asphalt Compaction Mold - October 2007.

CalTrans-Reflective Cracking Study First level Report on Laboratory Shear Testing - September 2007.

CalTrans-Investigation of Conditions for Moisture Damage in Asphalt Concrete - August 2007.

CalTrans-Reflective Cracking Study Second-Level Analysis Report - July 2007.

CalTrans-Acoustical Absorption of Open Graded Gap Graded Dense Graded Asphalt Pavements - July 2007.

CalTrans-Reflective Cracking Study First-Level Report on HVS Testing on Section 591RF - July 2007.

CalTrans-Reflective Cracking Study HVS Test Section Forensic Investigation - July 2007.

CalTrans-Calibration of Incremental-Recursive - April 2006.

CalTrans-Calibration of CalME Models Using WesTrack Performance Data - November 2006.

CalTrans-Construction and Preliminary HVS Test - January 2007.

CalTrans-Development of an Empirical Mechanistic Model of Overlay Crack - December 2006.

CalTrans-Friction Testing of Pavement Preservation Treatments - December 2006.

CalTrans-Full Depth Pavement Reclamation with Foamed Asphalt First-Level Analysis Report on HVS Testing on State Route 89 - June 2006.

CalTrans-Full Depth Pavement Reclamation with Foamed Asphalt FWD Backcalculation on Interstate Highway 80 Rehabilitation Section - July 2005.

CalTrans-Interim Assessment of Expected Structural Life of Pre-Cast Concrete - January 2007.

CalTrans-Investigation of Conditions for Moisture Damage in Asphalt Concrete - November 2005.

CalTrans-Laboratory Evaluation of Corrosion Resistance of Steel Dowels - January 2007.

CalTrans-Moisture Sensitivity Study Database Documentation - March 2006.

CalTrans-Partnered Pavement Research Program Summary Report Year Period 2000-2004 - August 2006.

CalTrans-Pavement Preservation Studies Technical Advisory Guide Summary - January 2007.

CalTrans-Pavement Preservation Studies Technical Advisory Guide - January 2007.

CalTrans-Performance Based Pay Factors for Asphalt Concrete Construction - November 2006.

CalTrans-Pilot Project for Fixed Segmentation of the Pavement Network - December 2005.

CalTrans-Pre and Postconstruction Analysis of the Interstate 15 (Devore) Concrete - December 2005.

CalTrans-Reflective Cracking Study First Level Report on Laboratory Fatigue Testing - October 2006.

CalTrans-Reflective Cracking Study First-Level Report on HVS Testing on Section 588RF - August 2006.

CalTrans-Reflective Cracking Study First-Level Report on HVS Testing on Section 589RF - August 2006.

CalTrans-Reflective Cracking Study First-Level Report on HVS Testing on Section 590RF - June 2006.

CalTrans-Reflective Cracking Study First-Level Report on the HVS Rutting Experiment - April 2007.

CalTrans-Reflective Cracking Study First-Level Report on the HVS Testing on Section 586RF - December 2006.

CalTrans-Reflective Cracking Study First-Level Report on the HVS Testing on Section 587RF - January 2007.

CalTrans-Reflective Cracking Study Initial Construction Phase 1 HVS Testing and Overlay Construction - October 2005.

CalTrans-Sample Rigid Pavement Design Tables Based on Version 0.8 - June 2006.

CalTrans-Sensitivity Analysis of 2002 Design Guide Rigid Pavement Distress Prediction Model - June 2006.

CalTrans-Summary Report of HVS Testing of the Palmdale Test Site North Tangent Section - August 2005.

CalTrans-Construction and Test Results on Dowel Bar Retrofit HVS Test Section 556FD 557FD 558FD and 559FD - March 2006.

CalTrans-Accelerated Laboratory Testing for Alkali-Silica Reaction Using ASTM 1293 and Comparison with ASTM 1260 - November 2004.

CalTrans-Analysis and Estimation of Effective Built In Temperature Difference for North Tangent Slabs - May 2004.

CalTrans-Analysis of 30 Years of Pavement Temperatures Using the Enhanced Integrated Climate Model (EICM) - August 2004.

CalTrans-Analysis of Sensitivity of Plain Jointed Concrete Pavement in California to Early-Age Cracking using HIPERPAV - August 2003.

CalTrans-Characterization of Effective Built in Curling and Concrete Pavement Cracking on Palmdale Test Sections - May 2005.

CalTrans-Discussion of Deep In-Situ Recycling (DISR) - May 2004.

CalTrans-Durability Testing of LCB and CTB Materials Supplied by Caltrans - May 2003.

CalTrans-Economic Implications of Selection of Long Life Versus Conventional Caltrans Rehabilitation Strategies - June 2005.

CalTrans-Environmental Influences on the Curling of Concrete Slabs at the Palmdale HVS Test Site - June 2003.

CalTrans-Evaluation of I-10 Pomona Long Life Pavement Rehabilitation Costs - June 2005.

CalTrans-Evaluation of I-80 Long Life Corridor Costs - June 2005.

CalTrans-Evaluation of I-710 Long Beach Long Life Pavement Rehabilitation Costs - June 2005.

CalTrans-Evaluation of New Patching Material for Open Graded Asphalt Concrete - June 2005.

CalTrans-Evaluation of the Maturity Method for Flexural Strength Estimation in Concrete Pavement - May 2004.

CalTrans-Evaluation of I-15 Devore Long Life Pavement Rehabilitation Costs - June 2005.

CalTrans-Fast-Track Urban Freeway Rehabilitation with 55-hour Weekend Closure I-710 Long Beach Case Study - March 2004.

CalTrans-Goal 4 Long Life Pavement Rehabilitation Strategies - February 2004.

CalTrans-High Temperature Fatigue and Fatigue Damage Process of Aggregate-Asphalt Mixes.

CalTrans-Impact of Urban Freeway Rehabilitation on Network Traffic Measurement and Simulation Study - February 2004.

CalTrans-Integrated Design Construction Operation Analysis for Fast-Track Urban Freeway Reconstruction - December 2003.

CalTrans-Minimizing Total Cost for Urban Freeway Reconstruction with Integrated Construction Traffic Analysis - February 2004.

CalTrans-Normalizing the Behavior of Unsaturated Granular Pavement Materials - March 2004.

CalTrans-Palmdale South Tangent Slab Built In Curling and Cracking Preliminary Analysis Report - May 2004.

CalTrans-Performance of Drained and Undrained Flexible Pavement Structures in Accelerated Loading under Wet Conditions - March 2003.

CalTrans-Relationship Between DCP Stiffness Shear Strength and R-Value - July 2005.

CalTrans-Report of Field Site Visit District 3 Sacramento Interstate 5 - June 2005.

CalTrans-Report of Trip to SR-86 District 11 Near Brawley California - February 2005.

CalTrans-State Route 138-Test Site Evaluation Update of Evaluation Activities in March and October 2002 - April 2003.

CalTrans-The Design and Implementation of the Pavement Research Center Heavy Vehicle Simulator Database - February 2003.

CalTrans-Virtual Weigh Stations The Business Case - June 2005.

CalTrans-Accelerated Laboratory Testing for High Early Strength Concrete for Alkali Aggregate Reaction - July 2001.

CalTrans-Accelerated Test for Measuring Sulfate Resistance of Hydraulic Cements for Caltrans LLPRS Program - April 2000.

CalTrans-Assessing the Economic Benefits from the Implementation of New Pavement Construction Methods - March 2000.

CalTrans-CAL-APT Program-Asphalt Treated Permeable Base (ATPB) - July 1999.

CalTrans-CAL-APT Program-Comparison of CalTrans and AASHTO Pavement Design Methods - September 1999.

CalTrans-CAL-APT Program-Construction of the Goal 3 Overlays and Recommendations for Improved Overlay Performance in California - November 1999.

CalTrans-Caltrans Accelerated Pavement Test (CAL-APT) Program Summary Report 1994-2000 - June 2000.

CalTrans-Case Study of Urban Concrete Pavement Reconstruction and Traffic Management for I-10 Project.

CalTrans-Climate Regions for Mechanistic Empirical Pavement Design in California and Expected Effects on Performance - June 2000.

CalTrans-Constructability and Productivity Analysis for Long Life Asphalt Concrete Pavement Rehabilitation Strategies - June 2001.

CalTrans-Constructability and Productivity Analysis for Long Life Concrete Pavement Rehabilitation Strategies - February 2000.

CalTrans-Construction Instrumentation and Testing of Fast Setting Hydraulic Cement Concrete in Palmdale California - April 2000.

CalTrans-Data Mining of the Caltrans Pavement Management System (PMS) Database - August 2002.

CalTrans-Evaluation of Recycled Asphalt Concrete Materials as Aggregate Base - November 2001.

CalTrans-HVS Test Results on Fast Setting Hydraulic Cement Concrete Palmdale California Test Section South Tangent - July 2002.

CalTrans-Investigation of Design and Construction Issues for Long Life Concrete Pavement Strategies - February 2000.

CalTrans-Pay Factors for Asphalt Concrete Construction Effect of Construction Quality on Agency Costs - February 2001.

CalTrans-Performance of Drained and Undrained Flexible Pavement Structures under Wet Conditions Accelerated Test Data Section 543 Drained - February 2004.

CalTrans-Performance of Drained and Undrained Flexible Pavement Structures under Wet Conditions Accelerated Test Data Section 544 Undrained - May 2004.

CalTrans-Performance of Drained and Undrained Flexible Pavement Structures under Wet Conditions Accelerated Test Data Section 545 Undrained - December 2001.

CalTrans-Preliminary Evaluation of Proposed LLPRS Rigid Pavement Structures and Design Inputs - May 2000.

CalTrans-Rutting of CalTrans Asphalt Concrete and Asphalt-Rubber Hot Mix Under Different Wheels Tires and Temperatures Accelerated - January 2000.

CalTrans-Shrinkage and Thermal Cracking of Fast Setting Hydraulic Cement Concrete Pavements in Palmdale California - December 1999.

CalTrans-State Route 138 Test Site Evaluation - June 2001.

CalTrans-Stiffness Strength Performance of Unbound Aggregate Material Application of South African HVS - July 2002.

CalTrans-Technical Memorandum-TM UCB PRC 99-3 Overlay Design for Cracked and Seated Portland Cement Concrete Interstate Route 710 - September 1999.

CalTrans-Tests to Evaluate the Stiffness and Permanent Deformation Characteristics of Asphalt Binder Aggregate Mixes - June 2000.

CalTrans-Vision for Caltrans UC-Berkeley Partnered Pavement Research Center - December 2000.

CalTrans-Analysis of Durability of Advanced Cementitious Materials for Rigid Pavement Construction in California - April 1999.

CalTrans-CAL-APT Goal LLPRS Rigid Phase III Concrete Test Section 516CT Report - April 1999.

CalTrans-CAL-APT Program Test Results from Accelerated Pavement Test Containing Aggregate Base Section 503RF.

CalTrans-CAL-APT Program Test Results From Accelerated Pavement Test Containing Asphalt Treated Permeable Base Section 500RF - June 1997.

CalTrans-CAL-APT Program Test Results From Accelerated Pavement Test Containing Asphalt Treated Permeable Base Section 502CT - November 1998.

CalTrans-CAL-APT Program Test Results From Accelerated Pavement Test on Pavement Structure Containing Untreated Aggregate Base Section 501 RF - April 1999.

CalTrans-Contact Stresses of Pneumatic Tires Measured with the Vehicle Road Surface Pressure Transducer Array - June 1997.

CalTrans-Effects of Material Properties Specimen Geometry Specimen Preparation Variables on Asphalt Concrete Tests for Rutting - March 1999.

CalTrans-Fatigue Performance of Asphalt Concrete Mixes and its Relationship to Asphalt Concrete Pavement Performance in California - October 1995.

CalTrans-Interim Report Initial CAL-APT Program -June 1996.

CalTrans-Technical Memorandum TM-UCB PRC 99-2 Mix Design and Analysis and Structural Section Design Interstate Route 710 - June 1999.

CalTrans-Technical Memorandum TM-UCB-Cal-Apt 97-1 Pay Factors for Asphalt Concrete Construction Effect of Construction Quality on Agency Costs - April 1997.

CalTrans-Mix Design Analysis Structural Section Design for Full Depth Pavement for Interstate Route 710 - June 1999.

CRREL

Address: 72 Lyme Road
Hanover, NH 03755
United States

Contact Name: Dr. Robert E. Davis
Phone Number: 1 (603) 646-4200
E-Mail Address: Robert.E.Davis@erdc.usace.army.mil

Date Established: 1997

Testing Capabilities: The test device is the HVS Mark IV and can accommodate dual truck tires, a single truck tire, or a C141 aircraft tire. The load can vary between 20 kN and 111 kN on super singles or duals and up to 200 kN on C141 tires. Speeds can reach 13 km/h, which yields 700 load applications per hour in a unidirectional trafficking mode. The wheels wander up to 900 mm in increments of 50 mm. The facility is housed in an environmentally controlled building with a battery of test cells, each of which is 6.5 m wide × 7.6 m wide × 3.7 m deep. The water table can be varied in the test cells, and the ambient air temperature can be controlled. Six freeze-thaw cycles can be simulated in a calendar year. Test sections are 6.1 m long and 1.8 m wide. The study under development aims at developing new performance criteria for subgrade strain in flexible pavements and is funded by the FHWA Pooled Fund Program.

Background: The Cold Regions Research and Engineering Laboratory (CRREL) was established by the redesignation of SIPRE (Snow, Ice and Permafrost Research Establishment) and the merger with the Arctic Construction and Frost Effects Laboratory, as directed by U.S. Army General Order No. 3. Its current focuses are the environmentally sustainable development of major energy reserves beneath Alaska's North Slope, reducing freeze-thaw damage to military facilities in the northern tier and Alaska, developing more effective year-round construction methods, capitalizing on current and developing remote sensing technologies to meet management and emergency response needs, and helping the nation to restore a rapidly deteriorating infrastructure.

Focus Areas:
Surface Treatments

FDOT

Address:

5007 NE 39th Ave
Gainesville, FL 32609
United States

Contact Name: James Greene

Phone Number: 1 (352) 955-6329

E-Mail Address: james.greene@dot.state.fl.us

Testing Capabilities: Accelerated loading is performed using a Heavy Vehicle Simulator (HVS), Mark IV model. The HVS can apply wheel loads between 7 and 45 kips at speeds of 2 to 8 mph along a 30-foot test strip. The effective test segment within this span is 20 feet. Wheel wander of up to 30 inches can be induced. A heater system was developed and installed during 2001. Rut measurements are typically performed at 50°C and terminated after a rut depth of 12.5 mm is achieved. A laser profiler system is used to automatically determine rut depth.

Background: The APT test site consists of eight linear flexible pavement test tracks. The original lanes measured 150 feet long and 12 feet wide. A 2011 expansion of the test track extended seven of the lanes an additional 300 feet. The supporting soil layers consist of a 10.5-inch limerock base over a 12-inch mixture of limerock and native A-3 soil. The asphalt layers tested in the previous experiment are milled and new asphalt layers are placed for upcoming experiments. The supporting layers of these tracks have been in place since initially constructed in 2000. Two additional 50-foot-long test tracks (referred to as the test pits) are enclosed by a sump with an interconnecting channel system for controlling the water table. In order to control the water table, the sump may be filled with water to the desired level. Water flows from the sump through concrete blocks at the bottom of the test pit and rises through the test track soils to the level in the sump. Supporting layers and base clearance (depth to water table) can be designed and constructed as necessary.

Focus Areas:

Asphalt

Bitumen/polymer stab

Comparative testing

Concrete

Light Weight Material

Long Lasting Pavements

Modified Binders

Surface Treatments

Pictures:



Data File:

FDOT-Application for Construction Management Development Program and Bond Guarantee Program.

FDOT-Application for Small Business Certification.

FDOT-Application Web Standards - February 2014.

FDOT-Banking Certificate of Training.

FDOT-Business Development Initiative Reference Sheet.

FDOT-Certificate of Training.

FDOT-Certification of Non Segregation and Non Discrimination.

FDOT-Class Word Domain Data Type Crosswalk - June 2013.

FDOT-Commercially Useful Function DBE Monitoring Report.

FDOT-Contractor Notification to FDOT for Use of Temporary Employment Agency Day Laborers.

FDOT-Contractor's Annual July EEO Report.

FDOT-Contractor's Company Wide EEO Report.

FDOT-Contractor's Recruitment Report.

FDOT-Daily Weekly Report for on the Job Trainees.

FDOT-Data Modeling Standards - February 2013.

FDOT-DBE Bid Package Information.
FDOT-DBE Trucking Certification.
FDOT-Development Environment - February 2014.
FDOT-Disadvantaged Business Enterprise Affirmative Action Plan.
FDOT-Element Naming Convention - February 2013.
FDOT-Employee Grievance Disposition.
FDOT-Employee Grievance Form.
FDOT-Equal Employment Opportunity Officers.
FDOT-Equal Opportunity Compliance System Access Request New Contractor and Consultant Users.
FDOT-Exempt Documents Security System Plan Distribution Form.
FDOT-Federal Aid Highway Construction Summary.
FDOT-Inspection Report for Job Site Bulletin Board.
FDOT-Internet Standards - October 2007.
FDOT-Internship Application.
FDOT-Intranet Standards - August 2005.
FDOT-Justification For Bond Guarantee.
FDOT-Lien Disclosure Statement.
FDOT-Logo Usage Guidelines - March 2014.
FDOT-Multimedia Standards - February 2014.
FDOT-Net Code Review Standards - October 2013.
FDOT-Notification to FDOT of EEO Officer.
FDOT-O.J.T. Monthly Time Report Antenna and Transmission Line Installer Tester.
FDOT-O.J.T. Monthly Time Report Asphalt Bridge Deck Screed Operator.
FDOT-O.J.T. Monthly Time Report Asphalt Distributor Operator.
FDOT-O.J.T. Monthly Time Report Asphalt Luteman Raker.
FDOT-O.J.T. Monthly Time Report Asphalt Paving Machine Operator.
FDOT-O.J.T. Monthly Time Report Asphalt Plant Drier Operator.
FDOT-O.J.T. Monthly Time Report Asphalt Shuttle Buggy Operator.
FDOT-O.J.T. Monthly Time Report Backhoe Operator.
FDOT-O.J.T. Monthly Time Report Bulldozer Operator.
FDOT-O.J.T. Monthly Time Report Concrete Curb Sidewalk Machine Operator.
FDOT-O.J.T. Monthly Time Report Concrete Paving Finishing Machine Operator.
FDOT-O.J.T. Monthly Time Report Concrete Paving Machine Spreader Operator.
FDOT-O.J.T. Monthly Time Report Concrete Paving Sub Grader Operator.
FDOT-O.J.T. Monthly Time Report Crane Clamshell Derrick Dragline Shovel Operator.
FDOT-O.J.T. Monthly Time Report Deckhand.
FDOT-O.J.T. Monthly Time Report Earth Wall Erector.

FDOT-O.J.T. Monthly Time Report Electronics Installer.
FDOT-O.J.T. Monthly Time Report Equipment Maintenance Technician.
FDOT-O.J.T. Monthly Time Report Erosion Control Specialist.
FDOT-O.J.T. Monthly Time Report Form Curb and Gutter Builder (Structures).
FDOT-O.J.T. Monthly Time Report Frontend Loader Operator.
FDOT-O.J.T. Monthly Time Report Grade Checker.
FDOT-O.J.T. Monthly Time Report Guard Rail Erector.
FDOT-O.J.T. Monthly Time Report Highway Bridge Carpenter.
FDOT-O.J.T. Monthly Time Report Highway Concrete Finisher.
FDOT-O.J.T. Monthly Time Report Instrument Person.
FDOT-O.J.T. Monthly Time Report Iron Worker Reinforcing Highway or Bridge.
FDOT-O.J.T. Monthly Time Report Landscape Worker.
FDOT-O.J.T. Monthly Time Report Mason.
FDOT-O.J.T. Monthly Time Report Mechanic.
FDOT-O.J.T. Monthly Time Report Milling Machine Operator.
FDOT-O.J.T. Monthly Time Report Mixer Operator.
FDOT-O.J.T. Monthly Time Report Motor Grader Operator.
FDOT-O.J.T. Monthly Time Report Painter Highway or Bridge.
FDOT-O.J.T. Monthly Time Report Pavement Marking Machine Operator.
FDOT-O.J.T. Monthly Time Report Pile Driver Leadman.
FDOT-O.J.T. Monthly Time Report Pile Driver.
FDOT-O.J.T. Monthly Time Report Pipelayer.
FDOT-O.J.T. Monthly Time Report Rough-Finish Roller Operator.
FDOT-O.J.T. Monthly Time Report Scraper Pan Operator.
FDOT-O.J.T. Monthly Time Report Sign Erector.
FDOT-O.J.T. Monthly Time Report Sound Wall Erector.
FDOT-O.J.T. Monthly Time Report Stone and Aggregate Spreader Operator.
FDOT-O.J.T. Monthly Time Report Structural Ironworker Highway or Bridge.
FDOT-O.J.T. Monthly Time Report Sweeper Operator.
FDOT-O.J.T. Monthly Time Report Tractor Operator.
FDOT-O.J.T. Monthly Time Report Traffic Control Specialist.
FDOT-O.J.T. Monthly Time Report Traffic Signalization Installer Mechanic.
FDOT-O.J.T. Monthly Time Report Trenching Machine Operator.
FDOT-O.J.T. Monthly Time Report Truck Driver.
FDOT-On the Job Training Schedule.
FDOT-On the Job Training Trainee Interview.
FDOT-Photo Audio Video Release Form.
FDOT-Physical Naming Convention - November 2013.

FDOT-Proficiency Record for On the Job Training.
FDOT-Project Delivery Methodology - May 2013.
FDOT-Project Request for New OJT Classification.
FDOT-Project Delivery Methodology - January 2013.
FDOT-Record of Project Personnel EEO Meeting.
FDOT-Record of Supervisory and Office Personnel EEO Meeting or Individual Orientation.
FDOT-Review Standard - May 2013.
FDOT-Sign Fabrication Form.
FDOT-Small Business Affidavit Certification for Prequalified Professional Services Firms.
FDOT-Small Business Affidavit Certification for Road and Bridge Construction Firms.
FDOT-Statement of Claim for Bodily Injury and Property Damage Form.
FDOT-Statement of Claim for Property Damage Form.
FDOT-Technical Assistance Request.
FDOT-Title VI- Nondiscrimination Complaint.
FDOT-Title VI-Quarterly Report.
FDOT-Titulo VI-Denuncia de Discriminacion (Spanish nondiscrimination complaint).
FDOT-Trainee Enrollment and Notice of Personnel Action.
FDOT-Volunteer Application.
FDOT-Workers' Compensation Memorandum.
FDOT-Vendor Certification Regarding Scrutinized Companies Lists.
FDOT-Truth in Negotiation Certification.
FDOT-Travel Form.
FDOT-Transaction Research Universal Fleet Card Fraud Services Dispute Form.
FDOT-Transaction Research Universal Fleet Card Dispute Form.
FDOT-Summary Sheet (Multi-Project Task).
FDOT-Structures Consultant Technical Evaluation Group 4 Highway Design-Bridges.
FDOT-State Highway Lighting Maintenance and Compensation Agreement.
FDOT-Software License Agreement Other State Agencies.
FDOT-Software License Agreement Florida State Agencies.
FDOT-Self Certification of Accounting System and Reimbursement Rates.
FDOT-Sample Contract Documents Proposal of.
FDOT-Request for Qualification Package for Professional Consultants.
FDOT-Reasonable Determination for Items not Purchased from Respect or Pride.
FDOT-Purchasing Card Request.
FDOT-Purchase Order Terms and Conditions.
FDOT-Public Records Form.
FDOT-Proposed Consultants for DBE and Small Business Under Utilized Work Groups.
FDOT-Professional Services Letter of Response.

FDOT-Professional Services Letter of Qualification for Use with Standard Note 1 Advertisements Only.

FDOT-Professional Services Expanded Letter of Response.

FDOT-Professional Consultants Quality Assurance Review Package.

FDOT-Painted Galvanized Steel Structures Performance Bond.

FDOT-One Page Invoice.

FDOT-Minority Business Enterprises (MBE) Payment Certification.

FDOT-Local Highway Finance Report.

FDOT-Landscaping Contractor Additional Experience.

FDOT-Invoice Summary Sheet.

FDOT-Intelligent Transportation System Contractor Additional Experience.

FDOT-In State Preference Form for Invitation to Bid Commodity.

FDOT-Hot in Place Resurfacing Contractor Additional Experience.

FDOT-Fax Order Form.

FDOT-Disclosure of Lobbying Activities.

FDOT-Determination to Use an Invitation to Negotiate (ITN) Method of Procurement.

FDOT-Design Build Procurement Confidentiality Certification for Technical Advisors.

FDOT-Debris Removal Emergency Contractor Additional Experience.

FDOT-Design Build Selection Committee Package Phase I Evaluation.

FDOT-DBE Participation Statement.

FDOT-Cost Reimbursable Invoice.

FDOT-Contractor Travel Form.

FDOT-Contractor Cost Certification.

FDOT-Contract Renegotiation Reprocurement 3 Percent Savings Requirement Results Documentation Form.

FDOT-Contract Proposal Processing Online Ordering Exempt Documents Distribution Agreement.

FDOT-Consultant Schedule Evaluation.

FDOT-Consultant Right of Way Clearing And Leasing Group 25.

FDOT-Consultant Relocation Evaluation Group 24 Acquisition Relocation Assistance.

FDOT-Consultant Quality Evaluation Group 99 Non Standard Work Types.

FDOT-Consultant Quality Evaluation Group 15 Landscape Architecture.

FDOT-Consultant Quality Evaluation Group 14 Architect.

FDOT-Consultant Quality Evaluation Group 13 Planning.

FDOT-Consultant Quality Evaluation Group 11 Engineering Contract Administration and Management.

FDOT-Consultant Quality Evaluation Group 9 Soil Exploration Material Testing and Foundation.

FDOT-Consultant Quality Evaluation Group 8 Surveying and Mapping.

FDOT-Consultant Quality Evaluation Group 7 Traffic Operations Design.

FDOT-Consultant Quality Evaluation Group 6 Traffic Engineering and Operation Studies.

FDOT-Consultant Quality Evaluation Group 5 Bridge Inspection.

FDOT-Consultant Quality Evaluation Group 3 Highway Design Roadway.

FDOT-Consultant Quality Evaluation Group 2 Project Development And Environmental.

FDOT-Consultant Management Evaluation.

FDOT-Consultant CEI (CCEI) Work Performance Evaluation.

FDOT-Consultant Business Damage Estimating and Review Evaluation Group 22 Acquisition Business.

FDOT-Consultant Affirmation.

FDOT-Consultant Acquisition and Litigation Evaluation Group 21 Acquisition Closing and Order Taking.

FDOT-Constructability Evaluation.

FDOT-Certification Regarding Debarment Suspension Ineligibility and Voluntary Exclusion for Federal Aid Contracts.

FDOT-Certification of Use of Lower Tier Subs.

FDOT-Certification for Disclosure of Lobbying Activities on Federal-Aid Contracts.

FDOT-Bridge Design Qualification Form.

FDOT-Audit Certification Package for Unlimited Level.

FDOT-Audit Certification Package for Minor Level.

FDOT-Aspiration Goal Form for DBE and Non DBE Small Business Firms.

FDOT-Application for Qualification for Emergency Debris Removal.

FDOT-Acknowledgement of Security Use and Responsibilities for the Use of Personally Owned Computer or Mobile Computing Devices.

FDOT-Acknowledgement of Security Use and Responsibilities for Access to FDOT Technology Resources with FDOT Devices.

FHWA Turner Fairbank Highway Research Center (TFHRC)

Address:

6300 Georgetown Pike
McLean, VA 22101
United States

Contact Name: Nelson Gibson

Phone Number: 1 (202) 493-3073

E-Mail Address: nelson.gibson@dot.gov

Date Established: 1986

Testing Capabilities: Two Accelerated Load Facility (ALF) units; outdoor linear machines. Intermediate and high temperature pavement control. Lateral wheel wander, adjustable wheel type and load, unidirectional loading, FWD, PSPA, instrumentation and data acquisition system. Renewed/upgraded electronic control system completed 2013.

Background: Began circa 1986. Characterized effects of tire type, load, and inflation. Validated SHRP asphalt binder performance grade specifications for rutting, evaluated Ultra-Thin White Topping Design, recommended replacement Superpave performance grade specifications for modified asphalt binders, evaluated pavement life extension with thin overlay to resist top down cracking.

Focus Areas:

Asphalt
Cemented Layers
Comparative testing
Concrete
Light Weight Material
Long Lasting Pavements
LTPP
Surface Treatments

Data File:

FHWA-A Case for Intelligent Transportation System Telecommunication Analysis Maryland State Highway Administration - 1997.

FHWA-A Comparative Analysis of Bicycle Lanes Versus Wide Curb Lanes Final Report - December 1999.

FHWA-A Toolbox for Alleviating Traffic Congestion and Enhancing Mobility - 1998.

FHWA-Accelerated Determination of ASR Susceptibility During Concrete Prism Testing through Nonlinear Impact Resonance Ultrasonic Spectroscopy - October 2013.

FHWA-Accelerated Determination of ASR Susceptibility During Concrete Prism Testing through Nonlinear Resonance Ultrasonic Spectroscopy - October 2013.

FHWA-Achieving a High Level of Smoothness in Concrete Pavements Without Sacrificing Long-Term Performance - May 2005.

FHWA-Achieving a High Level of Smoothness in Concrete Pavements Without Sacrificing Long-Term Performance - October 2005.

FHWA-Achieving Shared Efficiencies through Cooperative Implementation - 1999.

FHWA-Advanced Public Transportation Systems Deployment in the United States - January 1999.

FHWA-Advanced Public Transportation Systems the State of the Art - January 1998.

FHWA-Advanced Quality Systems Guidelines for Establishing and Maintaining Construction Quality Databases - November 2006.

FHWA-Advanced Traveler Information Systems and Commercial Vehicle Operations Components of Intelligent Transportation On Road Evaluation of ATIS Messages - March 1998.

FHWA-Advanced Traveler Information Systems Choosing the Route to Traveler Information Systems Deployment Decision Factors for Creating Public Private Business Plans.

FHWA-Alabama Highway 199 over Uphapee Creek Macon County.

FHWA-Alternative Design Consistency Rating Methods for Two-Lane Rural Highways - August 2000.

FHWA-An Evaluation of High Visibility Crosswalk Treatment Clearwater Florida - August 2001.

FHWA-An Evaluation of Illuminated Pedestrian Push Buttons in Windsor Ontario - August 2001.

FHWA-An Investigation of the Use of GPS Technology and its Augmentations - July 2000.

FHWA-An Investment Benefiting America's Highways-The Long Term Pavement Performance Program.

FHWA-Analysis of Time Domain Reflectometry Data from LTP Seasonal Monitoring Program Test Sections.

FHWA-Appendix B to the Casual Carpooling Scan Report - November 2012.

FHWA-Application Notes FWD Calibration Centers Ensure States Get Quality Data.

FHWA-Application Notes Kansas Relies on LTPPBind Software to Select Superpave Binder PGs.

FHWA-Application Notes LTPP Distress Identification Manual Sets a Standard for States.

FHWA-Application Notes LTPP Findings Pay Off for Pennsylvania.

FHWA-Application of Radiographic Testing to Multilayered Gusset Plate Inspection - October 2012.

FHWA-Assessing Stream Channel Stability at Bridges in Physiographic Regions - July 2006.

FHWA-Assessment of the SPS-7 Bonded Concrete Overlays Experiment Final Report - October 1998.

FHWA-Assessment of the Geographic Information Systems Needs and Obstacles in Traffic Safety - October 2013.

FHWA-ATIS & CVO Components of Intelligent Transportation Systems-Head Up Displays & Driver Attention for Navigation Info - March 1998.

FHWA-ATIS-CVO Comparable Systems Analysis Design and Operation of Advanced Control Centers - August 1995.

FHWA-Automated Video Feature Extraction - December 2012.

FHWA-Backcalculation of Layer Moduli of LTPP General Pavement Study Sites - September 1997.

FHWA-Backcalculation of Layer Parameters for LTPP Test Sections Volume II - October 2002.

FHWA-Backcalculation of Layer Parameters for LTPP Test Sections Volume I - January 2001.

FHWA-Balancing Safety and Capacity in an Adaptive Signal Control System Phase 1 - October 2010.

FHWA-Basic Collision Warning and Driver Information Systems Human Factors Research Needs - November 1998.

FHWA-Behavior of Fiber Reinforced Polymer Composite Piles under Vertical Loads-August 2006.

FHWA-Better Service Safer Service Transit Management for Fixed Route Systems - 1999.

FHWA-Bicycle Lanes versus Wide Curb Lanes Operational and Safety Findings and Countermeasure Recommendations-October 1999.

FHWA-Bottomless Culvert Scour Study Phase II Laboratory Report - February 2007.

FHWA-Bridge Pressure Flow Scour for Clear Water Conditions - October 2009.

FHWA-Building Professional Capacity in ITS Documentation and Analysis of Training and Education Needs in Support of ITS Deployment - April 1999.

FHWA-Building Professional Capacity in ITS Guidelines for Designing an Individualized Training and Education Plan in Support of ITS Deployment - April 1999.

FHWA-Building Professional Capacity in ITS Guidelines for Staffing Hiring Designing Ideal Project Teams - April 1999.

FHWA-Building Professional Capacity in ITS the Transportation Perspective - April 1999.

FHWA-Canadian Research on Pedestrian Safety - December 1999.

FHWA-Capability and Enhancement of VDANL and TWOPAS for Analyzing Vehicle Performance on Upgrades and Downgrades within IHSDM - August 2000.

FHWA-Cash Cost Estimates by Maximum Police-Reported Injury Severity within Selected Crash Geometries - October 2005.

FHWA-Casual Carpooling Focus Group Study - June 2013.

FHWA-Casual Carpooling Scan Report - November-December 2010.

FHWA-Challenges and Opportunities for an ITS Intermodal Freight Program Final Report - February 1999.

FHWA-Characteristics of Emerging Road Users and Their Safety - October 2004.

FHWA-Characterization of Bridge Foundations Workshop Report - November 2013.

FHWA-Characterization of Transverse Profiles - April 2001.

FHWA-Chemistry Research Facility Fact Sheet - November 2008.

FHWA-China Earthquake Reconnaissance Report Performance of Transportation Structures - October 2011.

FHWA-Collaborative Research on Road Weather Observations and Predictions - October 2004.

FHWA-Commercial Driver Rest and Parking Requirements Making Space for Safety Final Report - May 1996.

FHWA-Commercial Vehicle Driver Survey Assessment of Parking Needs and Preferences Final Report - March 2002.

FHWA-Common Characteristics of Good and Poorly Performing AC Pavements - November 1999.

FHWA-Communications Reference Guide.

FHWA-Compilation and Evaluation of Results from High-Performance Concrete Bridge Projects - November 2005.

FHWA-Compilation and Evaluation of Results from High-Performance Concrete Bridge Projects Volume I Final Report - October 2006.

FHWA-Compilation and Evaluation of Results from High-Performance Concrete Bridge Projects Volume II Appendixes - October 2006.

FHWA-Composite Behavior of Geosynthetic Reinforced Soil Mass - July 2013.

FHWA-Compression Response of a Rapid-Strengthening Ultra-High Performance Concrete Formulation - September 2012.

FHWA-Computed Parameters Freeze Thaw Monograph for LTPP.

FHWA-Computer-Based Guidelines for Concrete Pavements HIPERPAV III User Manual - October 2009.

FHWA-Computer-Based Guidelines for Concrete Pavements Volume I Project Summary - February 2005.

FHWA-Computer-Based Guidelines for Concrete Pavements Volume II - February 2005.

FHWA-Computer-Based Guidelines for Concrete Pavements Volume III Technical Appendices - January 2006.

FHWA-Concrete Mixture Optimization using Statistical Methods Final Report.

FHWA-Concrete Pavement Road Map - June 2005.

FHWA-Congestion Pricing Experiments and the Effects on Driver Choices - July 2013.

FHWA-Construction Quality Assurance for Design-Build Highway Projects - April 2012.

FHWA-Cooperative Adaptive Cruise Control Human Factors Analysis - October 2013.

FHWA-Coordinated Freeway and Arterial Operations Handbook - May 2006.

FHWA-Coordinated Freeway and Arterial Operations - March 2006.

FHWA-Corrosion Monitoring Research of New York City Bridges - December 2013.

FHWA-Corrosion Protection Concrete Bridges - September 1998.

FHWA-Corrosion Resistant Alloys for Reinforced Concrete - April 2009.

FHWA-Corrosion Resistant Alloys for Reinforced Concrete - July 2007.

FHWA-Covered Bridge Manual - April 2005.

FHWA-Crash Data Analyses for Vehicle to Infrastructure Communications for Safety Applications - November 2012.

FHWA-Crash Models for Rural Intersections Four Lane by Two Lane Stop Controlled & Two by Two Lane Signalized - October 1999.

FHWA-Creating Productive Roadways - May 2013.

FHWA-Critical Literature Review of High Performance Corrosion Reinforcement in Concrete Bridge Applications Final Report - July 2004.

FHWA-Crosswalk Marking Field Visibility Study - November 2010.

FHWA-Crosswalk Marking Field Visibility Study - October 2010.

FHWA-Curl and Warp Analysis of the LTPP SPS-2 Site in Arizona - December 2012.

FHWA-Curl and Warp Analysis of the LTPP SPS-2 Site in Arizona - May 2013.

FHWA-Daytime Color Appearance of Retroreflective Traffic Control Sign Materials - April 2013.

FHWA-Design and Construction of Driven Pile Foundations Lessons Learned on the Central Artery Tunnel Project - June 2006.

FHWA-Design and Construction of PCC Pavements Volume I - April 1998.

FHWA-Design and Construction of PCC pavements Volume II - October 1998.

FHWA-Design and Evaluation of Jointed Plain Concrete Pavement with Fiber Reinforced Polymer Dowels - September 2009.

FHWA-Design of an ITS-Level Advanced Traffic Management System - July 1996.

FHWA-Design of Continuously Reinforced Concrete Pavements using Glass Fiber Reinforced Polymer Rebars - October 2005.

FHWA-Design Pamphlet for the Backcalculation of Pavement Layer Moduli in Support of the 1993 AASHTO - September 1997.

FHWA-Design Pamphlet for the Determination of Design Subgrade in Support of the 1993 AASHTO - September 1997.

FHWA-Design Pamphlet for the Determination of Layered Elastic Moduli for Flexible Pavement Design in Support of the 1993 AASHTO - September 1997.

FHWA-Designing a New National Household Travel Survey - September 2013.

FHWA-Designing Effective in Vehicle Icons - April 2000.

FHWA-Detection Technology for IVHS Volume I Final Report - 1996.

FHWA-Developing Freeway and Incident Management Systems using the National ITS Architecture - August 1998.

FHWA-Developing Intelligent Transportation Systems using the National ITS Architecture Executive Edition - July 1998.

FHWA-Developing Traveler Information Systems Using the National ITS Architecture - August 1998.

FHWA-Development of a Driver Vehicle Module for the Interactive Highway Safety Design Model - November 2007.

FHWA-Development of a Family of Ultra High Performance Concrete Pi-Girders - January 2014.

FHWA-Development of a Speeding-Related Crash Typology - April 2010.

FHWA-Development of Countermeasures for Driver Maneuver Errors - December 1999.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Display Formats & Commercial Vehicle Operator Workload - September 1997.

FHWA-Development of Human Factors Guidelines for Advanced Traveler Information Systems & Commercial Vehicle Operations - CVO Driver Fatigue - October 1997.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Driver Memory for In Vehicle Visual & Auditory Messages - December 1999.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Driver Response to Unexpected Situations when Using In Vehicle Info System - December 1999.

FHWA-Development of Human Factors Guidelines for Advanced Traveler Information Systems & Commercial Vehicle Operations - Examination of Driver Performance - December 1999.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Human Factors Evaluation of the Effectiveness of Multi-Modality Displays - December 1999.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Identification of the Strengths & Weaknesses of Alternative Info Display Formats - October 1998.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Integration of ATIS & Crash Avoidance Preliminary Simulator Study - December 1999.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Investigation of ATIS Function Transition - December 1999.

FHWA-Development of Human Factors Guidelines for ATIS & CVO - Investigation of User Stereotypes and Preferences - December 1999.

FHWA-Development of Non-Proprietary Ultra High Performance Concrete for Use in the Highway Bridge Sector - October 2013.

FHWA-Development of Performance Related Specifications for Portland Cement Concrete Pavement Construction - May 1990.

FHWA-Distress Identification Manual - June 2003.

FHWA-Distribution of the FHWA GRS-IBS Construction Video - October 2011.

FHWA-Driver Attitudes and Behaviors at Intersections and Potential Effectiveness of Engineering Countermeasures-November 2005.

FHWA-Driver Expectations when Navigating Complex Interchanges - October 2013.

FHWA-Durability Analysis of Aluminized Type 2 Corrugated Metal Pipe - January 2000.

FHWA-Durability of Geosynthetics for Highway Applications - January 2001.

FHWA-Durability of Segmental Retaining Wall Blocks Final Report - April 2007.

FHWA-Dutch Pedestrian Safety Research Review - December 1999.

FHWA-Dynamic Bridge Substructure Evaluation and Monitoring - September 2005.

FHWA-Dynamic Evaluation of the New FOIL Instrumented Rigid Pole-Foil Test Numbers 96F008 through 96F015 - December 1998.

ICT

Address:

1161 Titan Drive
Rantoul, IL 61866
United States

Contact Name: Dr. Imad Al-Qadi

Phone Number: 1 (217) 893-0705

E-Mail Address: alqadi@uiuc.edu

Date Established: 2000

Testing Capabilities: The facility has 67,000 square feet of laboratories and three major buildings for testing pavement materials and transportation operations. The large land area at the Advanced Transportation Research and Engineering Laboratory (ATREL) complex houses a full-scale pavement testing facility that uses an Accelerated Transportation Loading Assembly (ATLAS), which is capable of evaluating multiple transportation support systems under real environmental and vehicular loading conditions.

Background: The Illinois Center for Transportation (ICT) is a premier transportation research center that builds on the experience of renowned experts in transportation and related fields at the University of Illinois and the Illinois Department of Transportation (IDOT), as well as other universities in Illinois and across the country, by providing the appropriate tools and support required for objective research. ICT facilitates the development and timely implementation of cost-effective technologies that improve safety and reliability, reduce congestion and impact on the environment, optimize the utilization of the state transportation infrastructure, and maximize the return from taxpayers' dollars. ICT is headquartered at the Advanced Transportation Research and Engineering Laboratory (ATREL), one of the top transportation research facilities in the nation located on 47 acres of the former Chanute Air Force Base in Rantoul, Illinois.

Focus Areas:

Asphalt

Cemented Layers

Comparative testing

Concrete

Long Lasting Pavements

Surface Treatments

INDOT

Address:

1205 Montgomery Street
West Lafayette, IN 47906
United States

Contact Name: Tommy Nantung, Ph.D.

Phone Number: (765) 463-1521

E-Mail Address: tnantung@indot.in.gov

Date Established: 1992

Testing Capabilities: The APT facility is housed in a 2,000 square feet environmentally-controlled building comprising a test pit, loading mechanism, and control and monitoring equipment. Measuring 20 feet x 20 feet x 6 feet deep, the pit allows full control of water table. Pavement can be constructed using conventional equipment. Pavement may be heated internally up to about 120°F and also cooling control. Loads can be applied with a dual wheel or a super-single half-axle assembly travelling over the test pavement at 5 miles per hour and may be operated uni-directionally or bi-directionally. A unique loading mechanism applies and maintains a constant force of up to 20,000 pounds on the wheel assembly. With modifications this half-axle loading can be increased to 40,000 pounds, applied statically or as a programmed dynamic load function.

Background: The Indiana Department of Transportation (INDOT), in association with Purdue University, has designed, constructed and commissioned an Accelerated Pavement Testing (APT) facility at the INDOT Division of Research and Development in West Lafayette, Indiana. INDOT administration and Purdue University actively support the APT facility. The initial experimental research project involves participation of the Indiana pavement industry. The APT facility is housed in a 2,000 square feet environmentally-controlled building comprising a test pit, loading mechanism, and control and monitoring equipment. The Accelerated Pavement Testing Program is a program to evaluate the ability of pavement mixtures to resist permanent deformation or rutting and fatigue using half of a standard truck axle in combination with speed and temperature control. Using this approach, in an environmentally controlled facility, the effects of 25 million Equivalent Single Axle Loads (ESALs) can be compressed into just a few days. This represents the effect of several years of in-service pavement traffic. The goal is to efficiently use the facility to evaluate pavement mixtures' quality to achieve longer design life when constructed in the field. This in turn results in less traffic congestion due to pavement reconstruction, and therefore minimizes the life-cycle cost of the pavement and the users-costs to the traveling public. This program, consequently, results in significant cost-savings by improving the quality, durability, and performance of Indiana's pavements. The INDOT Research Program has attracted interest in accelerated pavement testing as Indiana has one of the few functional Accelerated Pavement Testers (APTs) in the nation. In addition to bringing research funds from other transportation departments and industry into Indiana to address shared research needs,

visitors from more than 18 countries and 30 states have toured the APT facility. Since it opened in 1992, more than 6 million load passes have been made on various mix designs, significantly reducing the time it takes to determine mix performance and effectiveness.

Pictures:



Focus Areas:

Asphalt

Comparative testing

Concrete

Granular

Long Lasting Pavements

Surface Treatments

KDOT

Address:

2118 Fiedler Hall
Manhattan, KS 66506
United States

Contact Name: Dr. Mustaque Hossain

Phone Number: 1 (785) 532-1576

E-Mail Address: mustak@ksu.edu

Date Established: 1996

Testing Capabilities: Testing large-scale asphalt and concrete pavement sections under full-scale loading.

Background: Located at and exclusively owned by Kansas State University. Accelerated pavement testing at the Civil Infrastructure System Laboratory of Kansas State University serves the full-scale pavement testing needs of the States of Iowa, Kansas, Missouri, and Nebraska.

Focus Areas:

Asphalt

Cemented Layers

Comparative testing

Concrete

Light Weight Material

Long Lasting Pavements

Surface Treatments

LTRC

Address:

4101 Gourrier Avenue
Baton Rouge, LA 70808
United States

Contact Name: Dr. Zhongjie Zhang

Phone Number: 1 (225) 767-9131

E-Mail Address: DocZhang@dotd.louisiana.gov

Date Established: 1993

Testing Capabilities: The Louisiana Transportation Research Center is staffed with an engineer manager, an electronics expert, and a mechanical expert. For each research project, research professors and engineers along with other LTRC staff augment the full time staff members.

Background: The Pavement Research Facility, operated by the Louisiana Transportation Research Center (LTRC), is sponsored jointly by the Louisiana Department of Transportation and Louisiana State University. A technical advisory committee, comprised of members representing DOTD, FHWA, and state universities, provides direction and strategic planning for the research program. The facility is funded by the DOTD in cooperation with the Federal Highway Administration. Over \$3 million has been invested in the site development, facility operation, and test bed construction at this state-of-art facility. The PRF is located on a 6-acre site near LA 1 south, across the Mississippi River from Baton Rouge. With easy access to Interstate 10, Missouri Pacific Railroad, and the Intracoastal Waterway, materials can be conveniently transported to the site for accelerated loading studies. Pavement test sections are built with full-scale construction equipment closely simulating normal highway construction. The Accelerated Loading Facility (ALF) provides traffic loading.

Focus Areas:

Asphalt

Cemented Layers

Comparative testing

Concrete

Long Lasting Pavements

Surface Treatments

Equipment:

ALF

MnROAD

Address:

1400 Gervais Ave.

Maplewood, MN 55109

United States

Contact Name: Ben Worel

Phone Number: 1 (651) 366-5522

E-Mail Address: ben.worel@state.mn.us

Date Established: 1990

Testing Capabilities: Thousands of static and dynamic sensors embedded in the pavement and soil record pavement load response data. Environmental sensors capture moisture, temperature, and frost data below, inside, and above the pavement surface. This environmental data combined with the pavement performance data (ride, cracking, faulting/rutting) enables researchers to evaluate the potential performance of new designs and materials under real-life conditions, and examine the effects of environmental conditions, traffic loads and volumes, and innovative construction techniques and materials on pavement performance.

Background: MnROAD, located near Albertville, Minnesota, is one of the most sophisticated independently operated pavement test facilities of its type in the world. Completed in 1991 to 1993 at a cost of \$25 million, MnROAD consists of two unique road segments located parallel to Interstate 94. The two road segments include 51 instrumented concrete and hot mix asphalt pavement test sections representing a broad range of materials and designs.

Pictures:



Focus Areas:

Asphalt
Cemented Layers
Concrete
Long Lasting Pavements
LTPP
Surface Treatments
Upgrading of LVRs

Data File:

MnROAD Infrastructure - February 2013.
MnROAD LVR Traffic Summary - December 2011.
MnROAD Mainline Traffic Calculator - July 1994 to September 2013.
MnROAD Mainline Traffic Summary - August 2011.
MnROAD ML Traffic Switches - December 2011.
MnROAD Semi Descriptions - March 2013.
MnROAD Surface Type Summary - May 2012.
MnROAD Weather Station Document - April 2011.
MnROAD PCC Distress - Concrete - January 2012.
MnROAD ALPS Rutting Results - Asphalt - January 2012.
MnROAD ALPS Rutting Results - Composite - January 2012.
MnROAD HMA Distress - Asphalt - January 2012.
MnROAD HMA Distress - Composite - January 2012.
MnROAD HMA Rutting - June 2011.
MnROAD Lane Shoulder Dropoff - Composite - January 2012.
MnROAD Lane Shoulder Dropoff - Concrete - January 2011.
MnROAD Lane-Shoulder Dropoff - June 2011.
MnROAD PCC Distress - Composite - January 2012.
MnROAD PCC Joint Faulting - January 2012.
MnROAD PCC Joint Faulting - Georgia Faultmeter - June 2011.
MnROAD Rutting Dipstick - Asphalt - January 2012.
MnROAD Rutting Straight Edge - Asphalt - January 2012.
MnROAD Surface Distress Surveys - June 2009.
MnROAD Sound Absorption - Composite - January 2012.
MnROAD Circular Texture Meter - Asphalt - January 2012.
MnROAD Circular Texture Meter - Composite - January 2012.
MnROAD Circular Texture Meter - Concrete - January 2012.
MnROAD Friction DFT - Asphalt - January 2012.
MnROAD Friction DFT - Composite - January 2012.

MnROAD Friction DFT - Concrete - January 2012.
MnROAD Friction Trailer - Asphalt - January 2012.
MnROAD Friction Trailer - Composite - January 2012.
MnROAD Friction Trailer - Concrete - January 2012.
MnROAD Friction Trailer - June 2011.
MnROAD Noise - OBSI - June 2011.
MnROAD OBSI Data - Asphalt - January 2012.
MnROAD OBSI Data - Composite - January 2012.
MnROAD OBSI Data - Concrete - January 2012.
MnROAD OBSI Summary - Asphalt - January 2012.
MnROAD OBSI Summary - Composite - January 2012.
MnROAD OBSI Summary - Concrete - January 2012.
MnROAD Ride LISA - Asphalt - January 2012.
MnROAD Ride LISA - Asphalt - January 2012.
MnROAD Ride LISA - Composite - January 2012.
MnROAD Ride LISA - Concrete - January 2012.
MnROAD Ride Pathways - Asphalt - January 2012.
MnROAD Ride Pathways - Composite - January 2012.
MnROAD Ride Pathways - Concrete - January 2014.
MnROAD Ride Pavetech - Asphalt - January 2012.
MnROAD Ride Pavetech - Concrete - January 2012.
MnROAD Ride Quality Pavement Management Vans - June 2011.
MnROAD Sand Patch - Asphalt - January 2012.
MnROAD Sand Patch - Composite - January 2012.
MnROAD Sand Patch - Concrete - January 2012.
MnROAD Sound Absorption - Asphalt - January 2012.
MnROAD Sound Absorption - Concrete - January 2012.
MnROAD Texture - CTM - August 2011.
MnROAD Texture Sand Patch - August 2011.
MnROAD - HMA Cell 88 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 87 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 86 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 84 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 83 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 79 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 78 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 77 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 35 Design 3 Fwd Drops - January 2012.

MnROAD - HMA Cell 35 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 34 Design 3 Fwd Drops - January 2012.
MnROAD - HMA Cell 34 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 33 Design 3 Fwd Drops - January 2012.
MnROAD - HMA Cell 33 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 31 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 31 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 30 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 29 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 28 Design 4 Fwd Drops - January 2012.
MnROAD - HMA Cell 28 Design 3 Fwd Drops - January 2012 .
MnROAD - HMA Cell 28 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 28 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 27 Design 4 Fwd Drops - January 2012.
MnROAD - HMA Cell 27 Design 3 Fwd Drops - January 2012.
MnROAD - HMA Cell 27 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 27 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 26 Design 3 Fwd Drops - January 2012.
MnROAD - HMA Cell 26 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 26 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 25 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 24 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 24 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 23 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 23 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 22 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 22 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 21 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 21 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 20 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 20 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 19 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 19 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 18 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 18 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 17 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 17 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 16 Design 2 Fwd Drops - January 2012.

MnROAD - HMA Cell 16 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 15 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 15 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 14 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 4 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 4 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 3 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 3 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 2 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 2 Design 1 Fwd Drops - January 2012.
MnROAD - HMA Cell 1 Design 2 Fwd Drops - January 2012.
MnROAD - HMA Cell 1 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 313 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 306 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 213 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 113 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 40 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 39 Design 2 Fwd Drops - January 2012.
MnROAD - PCC Cell 39 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 38 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 37 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 36 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 32 Design 2 Fwd Drops - January 2012.
MnROAD - PCC Cell 13 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 12 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 11 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 10 Design 1 Fwd Drops - January 2012.
MnROAD - PCC Cell 10 Design 1 Fwd Drops - January 2012.
MnROAD - FWD Cell 13 (2008+) - January 2012.
MnROAD - PCC Cell 513 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 413 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 406 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 89 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 85 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 72 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 71 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 64 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 54 Design 2 FWD Drops - January 2012.

MnROAD - PCC Cell 53 Design 2 FWD Drops - January 2012.
MnROAD - PCC Cell 53 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 52 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 9 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 8 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 7 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 6 Design 1 FWD Drops - January 2012.
MnROAD - PCC Cell 5 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 514 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 505 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 414 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 405 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 314 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 305 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 214 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 206 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 205 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 114 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 106 Design 1 FWD Drops - January 2012.
MnROAD - Composite FWD Cell 14 (2008+) - January 2012.
MnROAD - Composite FWD Cell 6 (2008+) - January 2012.
MnROAD - Composite FWD Cell 5 (2008+) - January 2012.
MnROAD - Composite Cell 914 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 814 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 714 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 614 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 605 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 97 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 96 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 92 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 70 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 63 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 62 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 61 Design 1 FWD Drops - January 2012.
MnROAD - Composite Cell 60 Design 1 FWD Drops - January 2012.
MnROAD - Strength - Dynamic Cone Penetrometer - June 2009.
MnROAD - DCP Concrete STRENGTH - January 2012.
MnROAD - DCP Composite - January 2012.

MnROAD - DCP Asphalt - January 2012.
MnROAD - Ride Pavetech - Asphalt - January 2012.
MnROAD - Ride Pathways - Asphalt - January 2012.
MnROAD - Ride Lisa - Asphalt - January 2012.
MnROAD - Lightweight Internal Surface Analyzer - June 2009.
MnROAD - Ride Pavetech - Concrete - January 2012.
MnROAD - Ride Pathways - Concrete - January 2012.
MnROAD - Ride LISA - Concrete - January 2012.
MnROAD - Ride Pathways - Composite - January 2012.
MnROAD - Ride LISA - Composite - January 2012.
MnROAD - Unbound Field Moisture - Concrete - January 2012.
MnROAD - Unbound Field Moisture - Composite - January 2012.
MnROAD - Unbound Field Moisture - Asphalt - January 2012.
MnROAD - Soil Strength - Unbound Moisture - September 2012.
MnROAD - Nuclear Density Gauge - June 2009.
MnROAD - Nuclear Density - Concrete - January 2012.
MnROAD - Nuclear Density - Asphalt - January 2012.
MnROAD - LWD - Concrete - January 2012.
MnROAD - LWD - Composite - January 2012.
MnROAD - LWD - Asphalt - January 2012.
MnROAD - Light Weight Deflectometer - June 2009.
MnROAD - Unbound Gradation Test - Aggregate: Soil - January 2012.
MnROAD - Tube Suction Test - Aggregate: Soil - January 2012.
MnROAD - Traditional Soil Tests - Aggregate: Soil - January 2012.
MnROAD - Resilient Modulus Test - Aggregate: Soil - January 2012.
MnROAD - Material Sampling and Lab Testing - January 2011.

NCAT

Address:

277 Technology Parkway
Auburn, AL 36830
United States

Contact Name: Karen Hunley

Phone Number: 1 (334) 844-7328

E-Mail Address: karen.hunley@auburn.edu

Date Established: 1986

Testing Capabilities: NCAT is fully equipped with the latest laboratory and field testing equipment for pavement engineering and forensic analysis, materials testing, field testing, and asphalt research.

Background: The National Center for Asphalt Technology is a cooperative venture between the National Asphalt Pavement Association's (NAPA) Research and Education Foundation and Auburn University. Industry's financial endowment supports Auburn's facilities and faculty in improving the performance of HMA pavements through research, education, and information services. The 309-acre site located 30 minutes from Auburn's campus was purchased by Auburn, with subsequent improvements (including earthwork, buildings, and robust Track foundation) made by ALDOT. The inaugural NCAT Pavement Test Track was completed in 2000 as a partnership between Auburn University and the Alabama Department of Transportation (ALDOT). Reconstruction of the test track for the fourth research cycle was completed in August of 2009. The fifth cycle was completed in 2012.

Focus Areas:

Asphalt
Cemented Layers
Comparative Testing
Concrete
Light Weight Material
Long Lasting Pavements
Roadbed Preparation
Surface Treatments

Pictures:



NY (Instrumented Sites Only)

United States

Contact Name: Dr. Julian Bendana

E-Mail Address: drjulianbendana@gmail.com

Background: NY has seven instrumented sites, with three located on I-86.

OH-APLF

Address:
136 Stocker Center
Athens, OH 45701
United States

Contact Name: Roger Green
E-Mail Address: roger.green@dot.state.oh.us

Date Established: 1997

Testing Capabilities: OH-APLF has the capability of testing asphalt and portland cement concrete, full width capacity for two, 12-foot-wide adjacent lanes with 4-foot and 10-foot shoulders, and 8-foot-deep pit for construction of the desired base and subgrade. They have full access for construction equipment to place pavements in accordance with standard highway specifications. With broad loading versatility and the ability to use various wheel loading configurations (loads from 9,000 lb to 30,000 lb and optional random lateral wander of the loaded wheels), OH-APLF can run multiple test paths across the 24-foot-wide pavement. The enclosed test facility has full environmental control to regulate air temperature, humidity, and subsurface moisture and optional instrumentation to monitor pavement response to environmental changes and dynamic loading. Recent applications at the APLF include a study of Warm Asphalt sections and a study of the performance of PCC sections under controlled environmental conditions.

Background: The Ohio facility was constructed in 1997 as a joint venture between Ohio University and Ohio State University, through a grant from the Ohio Board of Regents. The Accelerated Pavement Load Facility (APLF), located on the Ohio University Lancaster Campus, allows researchers to apply repeated wheel loads of up to 30,000 pounds over full scale sections of asphalt or concrete pavement under tightly controlled environmental conditions. The 2.5 million dollar, 4200 square foot facility provides space for construction of two lanes of pavement and monitoring under various environmental conditions.

Focus Areas:

- Asphalt
- Cemented Layers
- Comparative Testing
- Concrete
- Granular
- LIC
- Light Weight Material
- Long Lasting Pavements
- LTPP
- Surface Treatments
- Unpaved Roads

University of Texas at Arlington

Address:

1829 Robotics Place
Fort Worth, TX 76118
United States

Contact Name: Dr. Stefan Romanoschi

E-Mail Address: romanoschi@uta.edu

Date Established: 2013

Background: The University of Texas at Arlington owns and operates the APT program in Texas. Up to 30 pavement sections can be constructed at the Accelerated Pavement Testing Facility and loaded with the Pavement Testing Machine (PTM), a mobile, linear loading device. The first research study investigates the optimization of recycled asphalt mixes and it is sponsored by TxDOT.

Focus Areas:

Asphalt
Comparative Testing
Long Lasting Pavements
LTPP
NDT

Equipment:

Texas Pavement Testing Machine

WES

Address:

3909 Halls Ferry Road
Vicksburg, MS 39180
United States

Contact Name: John W. Morris III

E-Mail Address: ceerd-pa-z@erdc.usace.army.mil

Date Established: 1930

Testing Capabilities: WES research is carried out in five separate, but closely interrelated laboratories: Coastal and Hydraulics Laboratory, Geotechnical Laboratory, Structures Laboratory, Environmental Laboratory, and Information Technology Laboratory.

Background: The U.S. Army Corps of Engineers Waterways Experiment Station (WES) established in 1998 is the largest Civil Engineering and Environmental Quality Research and Development (R&D) complex in the United States, sprawling 673 acres. WES was established in response to one of the nation's most destructive natural disasters—the Great Mississippi Flood of 1927. WES's role as the first federal hydraulics research facility was to help the Mississippi River Commission develop and implement a flood control plan for the lower Mississippi Valley. Each WES project is conducted in response to the requirements of Army Civil Works R&D (coastal engineering, flood control and navigation, materials and structures, and environmental quality) and military R&D (airfields and pavements, survivability and protective structures, sustainment engineering, environmental cleanup, computer aided design and drafting, high performance computing, and software engineering).

