

CAIT

Center for Advanced Infrastructure and Transportation



“Businesses can’t move their products and their people if we’ve got infrastructure that isn’t state of the art. ... if we don’t have the best roads, that will hurt our economy over the long term.”

President Barack Obama
Remarks on the American Jobs Act
October 18, 2011

PRP

Pavement Resource Program

PRP is dedicated to pavement research, education, and training activities in the areas of:

- Roadway and airfield material characterization, design, and construction
- Transportation infrastructure engineering and management
- Design and application of innovative materials and practices in roadway and airfield design

PRP is part of Rutgers’ Center for Advanced Infrastructure and Transportation, a U.S. Department of Transportation-designated University Transportation Center.

Our Mission PRP is a university-based collaborative effort among federal and state agencies, local municipalities, and industry. Our goal is to maintain and improve the quality and durability of the region’s roads and highways. With extensive capabilities in all areas of pavement engineering and management, PRP serves the public by implementing world-class research; developing ways to improve and maintain roadway infrastructure; and educating future professionals in the field.

Research PRP’s research encompasses a wide range of paving materials design, testing and procedures, construction quality control methods, and pavement management systems, including:

- Composite pavement design to prevent rutting, fatigue, and reflective cracking
- Tire/pavement interaction (acoustics) and modeling
- Remaining service life evaluation to improve pavement management
- Mechanistic pavement design
- Pavement materials and structure modeling
- Conventional and polymer-modified asphalt
- Innovative materials in hot mix asphalt and warm mix asphalt
- Recycled materials in pavements

Laboratory Equipment/Testing Capabilities PRP conducts most of its materials testing in the Rutgers Asphalt Pavement Laboratory (RAPL). RAPL is one of only a few university laboratories in the United States that is accredited by AASHTO for materials testing of hot mix asphalt, asphalt binder, and aggregate. The lab uses state-of-the-art equipment and methods such as:

- Simple Performance and Dynamic Modulus
- Flexural Beam Fatigue
- Superpave Shear Tester
- Indirect Tensile Tester
- Overlay Tester
- Asphalt Pavement Analyzer
- Dynamic Shear Rheometer
- Bending Beam Rheometer



- Gyrotory and Vibratory Compactors
- Asphalt Ignition Oven
- Marshall Stability/Flow and Compaction Equipment
- Thermal Expansion/Contraction of Portland Cement Concrete (PCC)
- Compression and Tension Testing of PCC
- Asphalt binder equipment for PG Grading and Multiple Stress Creep Recovery (MSCR)

Recent Projects PRP is involved in countless projects throughout the region that improve our roadways and runways. Examples for a variety of clients include:

- Northeast pooled-fund study on high recycled asphalt pavement (RAP) mixes (FHWA)
- Warm mix technologies for asphalt design
- Warm mix asphalt effect on RAP in hot mix asphalt
- Investigation and improvement to Florida DOT's FC-5 porous asphalt mixtures (FDOT)
- Use of performance tests for HMA QA/QC acceptance (NJDOT)
- Tire/pavement interface noise results using On-Board Sound Intensity (OBSI) in Massachusetts (MassDOT)
- Implementation of new pavement management system for New Jersey Department of Transportation (NJDOT)
- Pavement management system implementation for Howell Township and Mercer County
- Flexible overlays for PCC and composite pavements
- Modified asphalt binders to extend pavement life
- Reflective crack relief interlayer specifications for NJDOT
- Characterizing material properties of innovative hot mix asphalt for resurfacing the George Washington Bridge
- Slippage and debonding of hot mix asphalt pavements
- Fatigue properties of acid-modified asphalt binders
- Fuel-resistant asphalt for airfields
- Performance testing of aggregate and soil under high-volume roads
- Characterizing material properties of asphalt overlay and PCC for runways and airfields

Training and Technology Transfer PRP develops and hosts a number of training and technology transfer courses. Among them are:

- Level 1 and 2 Asphalt Technologist Certification for the New Jersey Society of Asphalt Technologists
- Material Inputs for the Mechanistic-Empirical Pavement Design Guide
- Mechanistic-Empirical Pavement Design
- Design and Construction of Stone Mastic Asphalt and Open-Graded Friction Course Mixes

Funding and Support USDOT, Federal Highway Administration, NJDOT, Florida DOT, Port Authority of New York and New Jersey, Federal Aviation Administration, and a number of industry partners are among PRP's recent research sponsors.

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PRP is accredited by the American Association of State Highway and Transportation Officials (AASHTO).

Rutgers, The State University of New Jersey, is dedicated by law and by purpose to serving all people on an equal and nondiscriminatory basis.