

LIST OF FY-2009 RESEARCH IDEAS

| <u>Reference</u> | <u>Idea Title</u> | <u>Submitted by</u> | <u>Organization Or Affiliation</u> |
|---------------------------------|---|--|---|
| Planning and Environment | | | |
| 9101 | Trend Analysis of Submerged Aquatic Vegetation in Currituck Sound | B. Ellis | PDEA-Natural Environment |
| 9102 | Propagation and Culture of Federally Listed Freshwater Mussel Species | J. Mays | PDEA-Natural Environment |
| 9103 | Carolina Northern Flying Squirrel Habitat De-fragmentation | A. Burroughs | PDEA- Natural Environment |
| 9104 | Deer Vehicle Collision Reduction in North Carolina | A. Burroughs | PDEA- Natural Environment |
| 9105 | Modeling of On-Board and Drive-By Tire/Pavement Noise in North Carolina | G. Smith | PDEA-Human Environment |
| 9106 | Pollutant Removal Effectiveness of a Stormwater Wetland Retrofit | M. Lauffer | Hydraulics |
| 9107 | Characterization of Atmospheric Nitrogen Loading in the Highway Environment | M. Lauffer | Hydraulics |
| 9201 | Financial Innovation for NC State Transportation Improvement Program (STIP) | C. Leggett, M. Al-Ghandour, B. Tasaico | Program Development |
| 9202 | Determining Vehicle Miles of Travel (VMT) within City/Urban Areas | L.C. Smith | Geographic Information Systems |
| 9203 | Does Context Sensitive Solutions (CSS) Add or Save Project Cost and Delivery? | M. Al-Ghandour, W. Davis | Program Development, Transportation Planning |
| 9204 | Preliminary Engineering Cost Trends for Highway Projects | C. Leggett | Program Development |
| 9205 | Does "Dynasim", Computer Simulation Software, Help the Public to Understand the North Carolina Turnpike Authority Projects? | M. Al-Ghandour | Program Development |
| 9206 | Economic Effects of Access Management in North Carolina | D. Wasserman, A. Wyatt, E. Lewis | Transportation Planning, Traffic Engineering, PDEA- Human Environment |
| 92X1 | Traffic Load Spectrum Patterns for North Carolina | Y. Wang, G. Wang | |
| 92X2 | Visualization for Land Use and Transportation Plans | J. Huegy | |
| 92X3 | Freight Mobility, Logistics and Economic Growth Facilitated by Strategic Asset Management | G. List | |
| 92X4 | Off the Hook, Adjudication Outcome and Subsequent Driving Behavior | C. Martell | |
| 92X5 | Development of Model Enabling Legislation for Regional Transportation Authorities | T. Cook, J. Lawrie | |
| 92X6 | Measuring Accessibility Trends Across the State of North Carolina | M. Duncan | |
| 92X7 | Assessment of GPS Technology Implementation on NC MTA Bus Transit | C. Yu | |

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|------------------------------------|--|------------------------|------------------------------------|
| Pavement and Maintenance | | | |
| 9301 | Evaluation of Segregation of AntiStrip Agent within Storage Silo | J. Corley- Lay | Pavement Management |
| 9302 | Use of Slurry from Concrete Pavement Profiling to Improve Soil Properties | J. Corley-Lay | Pavement Management |
| 9303 | Performance Improvement from Deep Layers of Subgrade Stabilization | J. Corley-Lay | Pavement Management |
| 9304 | Strain Limit to Prevent Fatigue Cracking in Asphalt Pavement | J. Corley-Lay | Pavement Management |
| 9305 | Development of a Field Test for Bituminous Surface Treatment Performance | J. Corley-Lay | Pavement Management |
| 9306 | Use of Goniometer to Determine Suitability of Emulsion Type for Different Aggregates | J. Corley-Lay | Pavement Management |
| 9307 | Long Term Performance Evaluation of Warm Mix Asphalt Mixtures | T. Whittington | Materials & Test |
| 9308 | Validation of APA Design Criteria for Field Surface Mixtures | T. Whittington | Materials & Test |
| 9309 | Field Sweep Test for Bituminous Operations | E. McGraw | State Road Maintenance |
| 93X1 | Asphalt Pavement Rutting Investigation in Eastern NC | G. Wang | |
| 93X2 | Link Distress Prediction Equations in MEPDG to Construction Quality | Y. Wang, G. Wang | |
| 93X3 | Utilization Levels and Depreciation of NCDOT Equipment | C. Frey, W. Rasdorf | |
| 93X4 | Laboratory Study on Use of Waste Polythene Scrap in HMA | G. Wang | |
| 93X5 | Investigation of Highway Asset Inventory and Data Collection Methods | R. Kim | |
| Structures and Construction | | | |
| 9401 | Why is There a Bump at the End of the Bridge? | T. Hearne | Geotechnical Engineering |
| 9402 | Characterization of Slope Sensitivity to Mid Slope Erosion | R. Callaway | Geotechnical Engineering |
| 94X1 | Innovative Bridge Abutment Technology for Western North Carolina Bridge Replacements | K. Warren, B. Anderson | |

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|---------------------------|--|-------------------------|--|
| Traffic and Safety | | | |
| 8504 | Superstreets and Directional Crossovers: Operation and Safety Benefits | J. Dunlop | Congestion Management & Signing Section |
| 9501 | Developing NC Roundabouts Crash Prediction Models: Safety Assessment | M. Al-Ghandour | Program Development |
| 9502 | Go Cart and Joy Ride on I-40: Automated Highway Systems (AHS) | M. Al-Ghandour | Program Development |
| 9503 | Relevancy of Data Entered into Riskmaster | B. Andrews | Safety and Loss Control |
| 9504 | Experimental Sign Retroreflectivity Measurement Facility | R. King | Traffic Engineering-Signing |
| 9505 | Procedure for Curve Warning Signing, Delineation and Advisory Speeds for Horizontal Curves | B. Mayhew | Traffic Engineering-Safety |
| 9506 | Comprehensive Safety Document Process | C. Oliver, B. Mayhew | Traffic Engineering- Safety |
| 9507 | "Seeing the Light Again" - NC Roadway Lighting Needs Assessment, Lighting Maintenance Prioritization Tool, and Performance Measures Update for North Carolina | A. Wyatt, J. Stancil | Traffic Engineering, Roadway Design |
| 9508 | A Process for Evaluation and Mitigation of Safety Impacts of Site Developments | B. Mayhew | Traffic Engineering-Safety |
| 9509 | Procedure for Identification and Investigation of Horizontal Curves with Insufficient Superelevation Rates | D. Phipps, B. Mayhew | Traffic Engineering-Safety |
| 9510 | Resource Paper- Impact of Unlicensed Drivers on Highway Safety | C. Braam | Traffic Engineering-Safety |
| 9511 | Traffic Operational and Safety Evaluation of Access Management Case Studies | A. Wyatt | Traffic Engineering-Operations |
| 9512 | Infrastructure Investment Protection with High Density Surveys (HDS) | A. Wyatt, C. Brown | Traffic Engineering, Locations & Surveys |
| 9513 | Median Barrier Placement on Six Lane, 46 foot Median Divided Freeways | J. Bennett | Roadway Design |
| 95X1 | Evaluation of Selected Shared-Use Paths to Identify Effective Design and Operational Treatments and User Safety and LOS Considerations | N. Roupail, and T. Cook | ITRE |
| 95X2 | Assessing Operational, Pricing, and Intelligent Transportation System Strategies for the I-40 Corridor Using DYNASMART-P | B. Williams, et al | NCSU |
| 95X3 | Comprehensive Evaluation of North Carolina Coastal Evacuation Plans | B. Williams, et al | NCSU |

Total number of research ideas from all categories: 54