

## LIST OF FY-2007 RESEARCH IDEAS

<u>Reference</u>	<u>Idea Title</u>	<u>Submitted by</u>	<u>Organization./Affiliation</u>
<b>Planning and Environment</b>			
EN-701	<b>Stilling Basin Design and Operation for Water Quality: Field Testing</b>	B. Holman	Roadside Environmental Unit
EN-702	<b>Platinum Markers as Indicators of Transportation Impact</b>	J. Mays	Natural Environment Unit
EN-703	<b>Aquatic Organism Passage Simulator</b>	R. Little	Roadside Environmental Unit
EN-704	<b>Functional Assessment for Culvert and Pipe Retrofits for Mitigation Credit</b>	R. Little	Roadside Environmental Unit
EN-705	<b>Benefits of Causeway Removal</b>	K. Herring	Natural Environment Unit
EN-706	<b>Integrating Roadway Vegetative Coverage with Highway Runoff Best Management</b>	M. Lauffer	Hydraulics Unit
EN-707	<b>Evaluation of Nutrient Loading Rates from Secondary Roadways in the Jordan Lake Watershed</b>	M. Lauffer	Hydraulics Unit
EN-7X1	<b>Embankment Infiltration and Moisture Distribution</b>	Daniels	UNCC
PL-701	<b>Business Process Management</b>	M. Al-Ghandour	Project Management Unit
PL-702	<b>The Effects of Hurricanes, Tornadoes and Snow on Air Quality</b>	R. Crummy	Western Planning Group
PL-7X1	<b>Assessing Demand for Dialysis Transportation in Rural and Small Urban Transit Systems in NC</b>	Lind and Sulek	NC A&T
PL-7X2	<b>Performance Based Budgeting for NC Transit Systems</b>	Cook and Lawrie	ITRE
PL-7X3	<b>Comprehensive Transportation Plan Multi-Modal Process Design</b>	Huntsinger	ITRE
PL-7X4	<b>Use of Transit Vehicles and School Buses in Emergency Evacuations</b>	Cook and Lawrie	ITRE
PL-7X5	<b>Evaluation of Four Shared Use Paths to Identify Effective Design Treatments and User Safety Considerations</b>	Cook, Meletioui, and Lawrie	ITRE
PL-7X6	<b>The Feasibility of Managed Lanes in NC</b>	J. Benjamin	NC A&T

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<u>Reference</u>	<u>Idea Title</u>	<u>Submitted by</u>	<u>Organization./Affiliation</u>
<b>Pavement and Maintenance</b>			
PV-701	<b>Dowel Bar Tolerances for PCCP Pavements</b>	S. Sweitzer	Construction Unit
PV-702	<b>Performance Based Analysis of Polymer Modified Emulsions in Bituminous Surface Treatments</b>	E. McGraw	State Road Maintenance Unit
PV-703	<b>Requirement of Tractor Trailers to Use Chains on I-40/I-26 During Snow and Ice</b>	B. Burch	Highway Division 14
PV-704	<b>Local Calibration for Flexible Pavement Design in MEPDG</b>	C. Morrison, R. Kim	Pavement Management Unit
PV-705	<b>Method of Determining Cost of Overweight Loads to Pavement and Bridges</b>	Corley-Lay, Denning, and Emerson	Pavement Management Unit
PV-706	<b>Development of Field Sweep Test as Performance Indicator for Surface Treatments</b>	J. Corley-Lay	Pavement Management Unit
PV-707	<b>Relationship between Pavement Macrotexture and Crash Incidence for NHS Routes</b>	J. Corley-Lay, A. Wyatt	Pavement Mgmt Unit & Traffic Safety Programs
PV-708	<b>Development of a QA/QC System for the Pavement Condition Survey</b>	J. Blackwelder, N. Mastin	Pavement Management Unit
PV-709	<b>Determination of an Appropriate Specification for Dowel Bar Alignment in PCC Pavement</b>	J. Corley-Lay	Pavement Management Unit
PV-710	<b>Development of Typical Truck Trip Profiles for Rural and Urban NC</b>	J. Corley-Lay	Pavement Management Unit
PV-711	<b>Effect of Prolonged Heating on the Asphalt-Aggregate Bond Strength of HMA Containing Liquid Antistrip Additives</b>	J. Cowser	Materials and Tests Unit
PV-712	<b>Effect of Lime and Liquid Antistrip Additives on Fatigue Life of NCDOT Mixes</b>	Cowser and Whittington	Materials and Testing Unit
PV-713	<b>Determining Mix Design Methodologies for Predicting Fatigue Using Tensile Strength Testing of Hot Mix Asphalt Mixes</b>	T. Whittington	Materials and Testing Unit
PV-714	<b>Effect of the Use of Higher Percentages of RAP in NCDOT Hot Mix Asphalt</b>	T. Whittington	Materials and Testing Unit
PV-715	<b>Subgrade Stabilization Alternatives to Lime and Cement</b>	N. Wainaina	Geotechnical Engineering Unit
PV-716	<b>Using the Maturity Method to Predict Concrete Strength</b>	O. Cordle	Materials and Tests Unit
PV-717	<b>Reflective Cracking from Concrete Pavement</b>	R. Blakley	Randolph County Maintenance
PV-718	<b>Effect of Gradation on Predicted Performance of Aggregate Base Course</b>	C. Su	Materials and Tests Unit
PV-719	<b>Compatibility Issues with Emulsions</b>	T. Whittington	Materials and Tests Unit
PV-720	<b>Field Test for Liquid Emulsion Used for Binding Asphalt or Aggregate to a Roadway</b>	M. Cowan	Highway Division 7

## LIST OF FY-2007 RESEARCH IDEAS

<u>Reference</u>	<u>Idea Title</u>	<u>Submitted by</u>	<u>Organization./Affiliation</u>
<b>Structures and Construction</b>			
ST-701	<b>Reducing Cut-Slope Erosion Through Prevention of Spring Sapping</b>	R. Callaway	Geotechnical Engineering Unit / WRO
ST-702	<b>Crack Free Mass Concrete Footings on Bridge in Coastal Environments</b>	G. Perfetti	Structure Design Unit
ST-703	<b>Lateral Flange Bending in Heavily Skewed Bridges</b>	G. Perfetti	Structure Design Unit
ST-704	<b>High-Strength Light-Weight Concrete for Bridge Design</b>	G. Perfetti	Structure Design Unit
ST-705	<b>Material Property and Quality Control Specifications for Elastomeric Concrete Used at Bridge Deck Joints</b>	R. Hancock	Construction Unit
ST-706	<b>Economic Impact of Overloaded Trucks on Bridges</b>	R. Simson	Scheduling Unit
ST-707	<b>Strengthening of Steel Bridges with High Modulus Carbon Fiber Reinforced Polymers</b>	H. Black	Bridge Maintenance Unit
ST-7X1	<b>Low Cost Dynamic Load Rating for Bridges</b>	Shenen Chen	UNCC
ST-7X2	<b>Design and Inspection of FRP Bridge Decks</b>	Rizkalla	NCSU
ST-7X3	<b>Energy Transmission Study for NCDOT Standard Penetration Testing (SPT)</b>	Anderson	UNCC

# LIST OF FY-2007 RESEARCH IDEAS

<u>Reference</u>	<u>Idea Title</u>	<u>Submitted by</u>	<u>Organization./Affiliation</u>
<b>Traffic and Safety</b>			
TR-701	Placement of Detection Loops on High Speed Approaches to Traffic Signals	R. Mullinax	ITS & Signals Unit
TR-702	Interstate Highway Accidents Attributed to Road Debris	C. McAdams	Cash Management/Program Analysis
TR-703	Prototype Low-Cost Real-Time Route Delay Wireless Network	E. Morrison	Research and Development Unit
TR-704	STAA Dimensioned Vehicles Involved in Fatal and A Injury Crashes Off NC's National Truck Network	T. Wyatt	Traffic Safety Unit
TR-705	Fatal and A Injury Crash Profiles in North Carolina 2000-2004	T. Wyatt	Traffic Safety Unit
TR-706	Motorcycle Operator Experience and Causal Profiles in Fatal and A Injury Motorcycle Crashes	T. Wyatt	Traffic Safety Unit
TR-707	Comprehensive Multivariant Comparison of North Carolina and Virginia's Traffic Fatalities, Vital Records, Demographics, and 4 E's	T. Wyatt	Traffic Safety Unit
TR-708	Traffic Operational Impacts of Contemporary Multi-Pump Island Fuel Centers	T. Wyatt	Traffic Safety Unit
TR-709	Identification of the Change in Adjacent Property Values that Result form the Implementation of a Median Divided Highway Facility	L. Cove and J. Dunlop	Congestion Management & Signing Unit
TR-710	Driveway Spacing, Including the Corner Clearance within the Functional Area of Roadway Intersections.	T. Becher, N. Phillips	Congestion Management Section
TR-711	Capacity and Safety Impacts of Single and Dual Lane Interchange Loop Ramps	N. Phillips	Congestion Management Section
TR-712	Field Evaluation of Traffic Models in North Carolina	N. Phillips	Congestion Management Section
TR-713	Internal Capture within a Multi-Use Developments	T. Becher	Congestion Management Section
TR-714	Internal Capture within a Super Store Development	T. Becher	Congestion Management Section
TR-715	Impact of School Buses Traveling on Interstate Facilities	N. Phillips	Congestion Management Section
TR-716	Capacity and Safety Impacts of Triple Left Turn Lefts	N. Phillips	Congestion Management Section
TR-717	Incorporating Pedestrian / Bicycle Crash Information into the Planning Process	J. Jaeger	Traffic Safety Unit
TR-718	Incorporating a Comprehensive Traffic Safety Review into Thoroughfare Plans	J. Jaeger	Traffic Safety Unit
TR-719	Effectiveness of Interagency Communication to Shorten Traffic Incidents and Secondary Crashes on Interstate Facilities	R. Stone	ITS Operations Unit
TR-720	Minimum Traffic Signal Spacing	D. Smith	Highway Division 3
TR-721	Field Evaluation of Access Points and Interchange Design in North Carolina	N. Phillips	Congestion Management Section
TR-7X1	Development of Novel Airbag Technology Based Next Generation Energy Absorbing Barrier for Enhanced Highway Traffic Safety	Gupta and Kelkar	NCA&T
TR-7X3	Cumulative Impacts of Development on Traffic Safety and Operations	Carter, Hunter, and Thomas	UNC-HSRC
TR-7X4	Comprehensive Evaluation of NC Coastal Evacuation Plans	Williams and Roupail	NCSU

**Total number of research ideas from all categories: 70**