

GEORGIA DOT RESEARCH IN PROGRESS
Office of Performance-based Management and Research

10/14/2021

Research Project Number	Project Title	Principal Investigator	University / Consultant	GDOT Research Manager	GDOT Technical / Implementation (T/I) Manager	Research Technical Advisory Group (RTAG)	Starting Date	Completion Date	Objective	
1	20-25	Virtual Public Involvement (VPI) Guidance for Encouraging Public Participation and Soliciting Feedback During the Transportation Planning Process.	Baabak Ashuri	GA Tech	Sunil Thapa	Douglas Chamblin	Policy/Workforce	12/18/20	09/18/22	Develop a standard VPI process on ArcGIS Hub, the predetermined platform by GDOT, that can be institutionalized in GDOT, and which encourages public participation and solicits feedback during the transportation planning and project development process.
2	20-24	AERMOD, RLIN, and RLINEXT Case Study Analyses in Atlanta, Georgia.	Randall Guensler	GA Tech	Sarah Lamothe	Sarah Lamothe	Policy/Workforce	11/05/20	11/05/21	Perform AERMOD microscale dispersion modeling for an entire Atlanta I-75/I-575 Northwest Corridor (NWC) subarea, including freeway corridors, managed lanes, connecting arterials, and intersections serving the NWC system.
3	20-23	Development of an Apple App for GDOT AASHTOWare Project.	Tyler Ley	OSU	Sunil Thapa	Christopher J Collins	Mobility	09/18/20	04/18/22	Develop a mobile App to work with CTAG that can help the GDOT engineers with archiving, tracking, and sharing the concrete sample data.
4	20-21	A Forecast of State Motor Fuel Revenues: The Effect of New Technologies and the State Vehicle Fleet Mix on Georgia Motor Fuel Receipts.	Laura Wheeler	GA State	Sunil Thapa	Joshua Waller; George Christensen	Policy/Workforce	09/01/20	03/01/22	Produce a Georgia-specific forecast of state motor fuel receipts. The forecast will be produced assuming several alternative scenarios of vehicle mix, state population, and fuel prices for the 2021-26 and 2021-40 periods.
5	20-20	Tacit Knowledge Model to Support Knowledge Capture and Transfer in GDOT.	David A. Guerra-Zubiaga	KSU	Sunil Thapa	Provita Mungin	Policy/Workforce	08/26/20	08/26/23	Create a tacit knowledge model and to identify, organize, and categorize tacit knowledge to reuse complex experiences gained from previous projects in GDOT.
6	20-19	Recommendations for Future Specifications to Ensure Durable Next Generation Concrete.	Kimberly Kurtis	GA Tech	Wei Li	Peter Wu	Mobility	08/25/20	08/25/23	Review current best practices for developing and implementing performance-based specs for concrete for transportation projects; to review available test methods and criteria for performance; to quantify savings to the state comparing prescriptive and performance specs; and to generate guidelines for incorporating PBS as an option in Sections 430, 439, and 500.
7	20-18	Recommendations for Extension in Service Life of ASR-Affected Concrete.	Kimberly Kurtis	GA Tech	Wei Li	Peter Wu	Mobility	08/18/20	08/18/23	Provide a review of and best practices of current ASR-affected concrete technology; develop condition assessment approaches and determine further reaction and damage potential; and develop combined material and structural repair strategies to extend the service life of ASR-affected technologies.
8	20-17	Enhancing the Accuracy of Construction Cost Estimates for Major Lump Sum (LS) Pay Items and Generating a More-Accurate List of Pay Items Throughout the Design Development Process.	Baabak Ashuri	GA Tech	Wei Li	Sam Woods; Erik Rohde	Mobility	07/02/20	07/02/22	Enhance the accuracy of Lump Sum (LS) pay item estimates throughout various stages of design development; and create a more-accurate list of projects pay items and associated quantities, especially during early phases of design development.
9	20-16	Development of Training Modules to Increase Usage and Understanding of Agency-Wide Software Programs.	Stephan Durham	UGA	Brennan Roney	John Hancock; Beau Quarles	Mobility	08/27/20	11/27/22	Develop a training program using modules for the GDOT staff in learning and fully implementing agency-wide software programs.
10	20-15	Recommendations for Nondestructive Testing (NDT) of Concrete Components for Performance-Based Specifications.	Laurence J. Jacobs	GA Tech	Wei Li	Peter Wu	Mobility	08/20/20	08/20/22	Document the availability and the use of concrete NDT tools by transportation agencies; study the critical concrete material properties and suitable acceptance criteria for performance-based concrete material specifications; understand the underlying physics and sensitivity of candidate NDT tools; and validate the most promising NDT tools.
11	20-14	Guidelines for Incorporation of Cement Stabilized Reclaimed Base (CSRB) in Pavement Design.	Jayhyun Kwon	KSU	Brennan Roney	Ian Rish / Phillip Snider	Mobility	08/26/20	08/26/22	Improve the reliability of the current GDOT pavement design procedure for CSRB and to provide a recommendation for the steps necessary for the verification and calibration of CSRB into MEPDG.

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12	20-13	Community-Augmented Rapid-response to Events (CARE) Integrated Crisis Communication System.	John E. Taylor	GA Tech	Wei Li	Emily Fish	Asset Management	08/18/20	08/18/23	Establish a crisis rapid-response communication system, which is augmented with location-specific social and community data and integrated with current GDOT crisis identification and response communication processes.
13	20-12	Incorporating Resilience Considerations in Transportation Planning, TSMO and Asset Management.	Adjo Amekudzi-Kennedy	GA Tech	Wei Li	Habte Kassa	Asset Management	08/25/20	08/25/23	Develop and apply approaches for implementing resilience efficiently across Georgia's transportation system the organization, Georgia Department of Transportation, its institutions – policies, business processes, plans and procedures, and the physical transportation system, including its smart components.
14	20-11	Towards the Implementation of a Geotechnical Asset Management Program in the State of Georgia.	Jorge Macedo	GA Tech	Wei Li	Kalen Jones; Mary Cooley	Asset Management	08/18/20	02/18/23	Create a Geotechnical Asset Management (GAM) system for the state of Georgia to effectively track current and future geotechnical assets, reduce ongoing maintenance costs, and improve the decision making for upgrade and replacement.
15	20-10	Development of Drone-Assisted Pavement Profile Mapping: Near-Surface Void Detection Application.	Javier Irizarry	GA Tech	Brennan Roney	Erany Robinson-Perry	Asset Management	08/13/20	02/13/22	Develop and test a drone-assisted workflow to be employed in planning road pavement maintenance work as well as post-maintenance work quality assessment with the specific aim of identifying near surface voids.
16	20-09	Development of Drone-Assisted Highway Mowing Operations Planning, Monitoring, and Verification Capabilities.	Javier Irizarry	GA Tech	Brennan Roney	Erany Robinson-Perry	Asset Management	08/18/20	02/18/22	Develop and test a drone-assisted workflow to be employed in planning, monitoring, and performance verification of maintenance tasks to provide GDOT personnel with periodic status reports of work performed by mowing contractors.
17	20-01	Real-Time Network Assessment and Updating Using Vehicle-Locating Data.	Iris Tien	GA Tech	Wei Li	Emily Fish	Mobility	07/02/20	04/02/22	Use collected data to inform the relevant parties of state of the network, particularly with regards to what is passable and what is not, with data that is continually updated in real-time. The project will aggregate information from multiple vehicles and translate it into something that is more useful for someone to use that open route.
18	19-14	Evaluation of Guardrail Performance in High-Risk Accident Zones on Georgia Roadways and Identification of Alternative Barriers.	Xiaoming Yang	GA Southern	Brennan Roney	Frank Flanders	Safety	08/11/19	11/11/21	Identify designated number of representative high accident zones in Georgia and evaluate type and effectiveness of barrier system deployed in that area.
19	19-11	Safety and Illumination of Rural and Suburban Roundabouts (Phase II).	Michael Rogers	GA Tech	Sunil Thapa	Robert Graham	Safety	09/06/19	12/06/21	Provide project-level guidance on the type and extent of active illumination and/or passive retroreflective treatments for roundabouts and approaches.
20	19-06	LRFD Procedure for Piles with Pilot hole in Rock.	Soonkie Nam	GA Southern	Brennan Roney	Ryo Farrow	Policy/Workforce	09/16/19	04/16/22	Identify and document the relationship between the load capacity of piles installed with pilot holes into rock and their design parameters and develop a reliable LRFD design procedure.
21	19-05	Phase 2: Enhancement and Restoration Interventions for Bird-Long Island Shoreline Alternatives: Design and Modeling for Stewardship.	Jon Calabria	UGA	Brennan Roney	Jim Pomfret	Asset Management	07/30/19	12/15/21	Examine several design alternatives and interventions to manage ecological and cultural resources on Bird-Long Island by using data gathered during Phase I.
22	19-04	Phase II: Investigation and Guidelines for Best Practices of Mass Concrete Construction Management.	Yong Cho	GA Tech	Wei Li	Donn Digamon	Mobility	07/26/19	07/26/22	Improve and validate the mass concrete thermal management methods (e.g., passive or active cooling) and decision-making tools developed from the Phase I research against GDOT's real-world mass concrete construction projects.
23	19-03	Sustainable Waste Management through the Beneficial Use of Dredge Materials in Partnership with the City of Savannah.	Celine Manoosingh	GA Southern	Sunil Thapa	Ralph Daniell	Policy/Workforce	08/26/19	03/26/23	Assess feasibility of dredge material for applications of interest to GDOT and the City of Savannah.

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24	19-01	Improved Disaster Management through Automated Damage Assessment Using Unmanned Aerial Vehicles (UAVs).	Rami J. Haddad	GA Southern	Brennan Roney	Emily Fish	Safety	11/18/19	11/18/21	Develop an automated damage assessment system for the state's emergency management system.
25	18-07	Best Practices and Specifications for Massive Concrete Drilled Shafts.	Lauren Stewart	GA Tech	Wei Li	Steve Gaston	Policy/Workforce	09/25/18	02/25/22	Understand implementation and performance issues; quantify thermal conditions; utilize ongoing thermal research and other states' best practices for application and demonstration; and recommend practices for GDOT.
26	18-05	Updated Layer Coefficients for GDOT Flexible Design.	Sonny Kim	UGA	Sunil Thapa	Ciprian Donisa	Mobility	10/25/18	03/25/22	Evaluate layer coefficients of pavement materials in use and provide updated values for those materials; and to develop SOP to estimate layer coefficients for new materials.
27	18-01	Development of GDOT Ultra-High Performance Concrete for Bridge Deck Closure Pours.	Lauren Stewart	GA Tech	Wei Li	Dexter Whaley	Asset Management	04/05/18	04/05/22	Develop an ultra-high-performance concrete based on locally available materials with sufficient direct tensile strength, ductility, and toughness under tensile loads.
28	17-19	Critical Assessment of High-Friction Surface Treatment (HFST)'s Long-term Performance in Georgia under Different Roadway Conditions.	James (Yichang) Tsai	GA Tech	Brennan Roney	Ian Rish	Asset Management	10/05/17	04/05/22	Develop a guidance document that addresses the components needed for a proactive HFST monitoring and maintenance program.