

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

3/5/2024

	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	RP 24-01	2024 GDOT Employee Survey	Stephan Durham	UGARF	Brennan Roney	Alma Mujkanovic	Policy/Workforce	01/10/24	02/10/25	This project is to review and update GDOT Employee Survey; conduct survey; analyze results; present survey results to GDOT management; and develop reports for GDOT.
2	RP 23-25	Leveraging Probe Data for Improving Incident Management Practice in Rural Areas	Jidong Yang	UGARF	William Bradley Bilsback	Wei Li	Mobility	11/29/23	11/29/24	This proposed study aims to (1) acquire applicable probe data from applicable providers, and (2) spatially match the probe data to the OTD traffic count locations in the rural areas of Georgia for data fusion, (3) conduct a case study for a high-risk rural area in Georgia to showcase the feasibility of using the pooled data for improved incident management through predictive incident modeling.
3	RP 23-24	Digital Delivery: Roadmap for Implementing Building Information Model (BIM) for Infrastructure at GDOT	Baabak Ashuri	GA Tech	William Bradley Bilsback	Sam Woods	Policy/Workforce	01/22/24	10/22/25	The primary objective of this research is a “roadmap” to help strategically guide GDOT to “BIM maturity” (agency-wide digital delivery implementation). This roadmap would address the technology, process, and people to implement such a change including ultimate goals, intermediate objectives, and corresponding timelines. The benefit of this research is to formalize GDOT’s support of this initiative and provide a vision to guide the supporting, ongoing efforts.
4	RP 23-22	Safety Effectiveness of Inside Shoulder Widths on Freeways in Georgia	Jidong Yang	UGARF	Brennan Roney	Daniel Pass	Safety	10/12/23	10/12/25	This proposed project’s primary goal is to comprehensively evaluate the relationship between inside shoulder widths and safety performance on Georgia freeways.
5	RP 23-21	Measurement of cement content and layer thickness variation of cement stabilized base and subgrade using ground penetrating radar	Sonny Kim	UGARF	Sabbir Ahmed	Ian Rish	Mobility	10/12/23	02/12/26	This proposed project’s primary goal is to comprehensively evaluate the relationship between inside shoulder widths and safety performance on Georgia freeways.
6	RP 23-20	Develop an Off-System Bridge Managers Training Program to Increase Collaboration and Access to GDOT’s Resources Including LIBP and Promote Best Practices	Sonny Kim	UGARF	Brennan Roney	Kevin Schwartz	Asset Management	09/30/23	09/30/26	The primary objective of Part A of this project is to investigate the impact of heavy vehicle traffic on pavement and bridge structures in Georgia. The main objective of Part B of this project is to evaluate pavement and bridge structures using WIM data, conduct field investigations, and evaluate the reliability of existing pavement and bridge structures.
7	RP 23-19	Develop an Off-System Bridge Managers Training Program to Increase Collaboration and Access to GDOT’s Resources Including LIBP and Promote Best Practices	Stephan Durham	UGARF	Brennan Roney	Neoma Walker	Policy/Workforce	10/12/23	10/12/26	The main objective of the proposed project is to initiate, develop, and deliver a local-system’s training program by bringing together 159 counties’ bridge managers and other local government personnel, GDOT district offices, and GDOT’s Office of Bridge Design and Maintenance (OBDM) to: 1) educate local government managers and GDOT employees for GDOT’s LIBP, LOCBR, SFLB, and best practices, and 2) develop on-demand training modules that will allow for the continuity and improvement of off-system bridge management beyond the duration of this project.
8	RP 23-18	Coastal Flood Roadway Vulnerability Assessment	Matthew Bilsie	UGARF	William Bradley Bilsback	Troy Pittman, Wei Li	Asset Management	09/30/23	03/30/25	The primary goal of this research is to create a vulnerability assessment of Georgia’s coastal roadways to storm surge flooding and SLR.
9	RP 23-15	Effectiveness of Automated Speed Enforcement in School Zones and Guidance for Continuous Usage in Georgia	Sunanda Dissanayake	KSURSF	Sabbir Ahmed	Ron Knezevich	Safety	01/17/24	01/17/26	The main objective of this study is to evaluate the effectiveness of using automated speed enforcement practices in school zones of GA in improving safety and reducing the speeds of cross traffic through school zones. Additionally, the study will explore the public opinions of the practice via a survey.
10	RP 23-14	Fast and Efficient Welding Inspection of Structural Steel Using Adaptive Phased Array Ultrasonic NDT	Hossein Taheri	GA Southern	Sabbir Ahmed	Peter Wu	Mobility	02/12/24	02/12/27	The purpose of this study is to conduct a comprehensive assessment towards a technical guideline and recommendations for fast and efficient ultrasonic NDT methodology and procedure for full inspection of welding and weldment in steel structures based on PAUT technique.
11	RP 23-13	Develop Localized LRFD Procedure for Driven Piles with Dynamic Analysis for Georgia Bridge Foundations	Xiaoming Yang	GA Southern	Kamari Jordan	Ryo Farrow	Mobility	02/07/24	07/07/27	The objective of the project is to develop a local Load and Resistance Factor Design (LRFD) procedure, including a table of locally calibrated resistance factors, for the driven piles designed and verified with dynamic analysis methods.
12	RP 23-11	Roadway Runoff Impacts to Trout Streams Studies for MS4 Permit	George Fu	GA Southern	Bradley Bilsback	Brad McManus	Mobility	02/09/24	02/09/26	The objectives are to prepare and implement a study plan that evaluates the impacts of roadway runoff through GDOT outfalls to trout streams with the focus on impacts to temperature and DO levels, and to determine if GDOT roadway runoff discharges are impacting trout streams and if so, to determine BMPs that can be used to mitigate these impacts.
13	RP 23-10	Repair Guidelines for Impact-damaged Bridges	Lauren Stewart	GA Tech	Brennan Roney	Donn Digamon	Asset Management	02/13/24	05/13/27	This project is to address a critical issue for GDOT by providing repair guidance for impact-damaged bridges and will establish repair requirements /guidelines that will maximize the service-life of infrastructure and reduce the personnel time involved in reviews and approvals.
14	RP 23-09	Updating the GDOT’s Risk-based Programmed Contingencies Through Development of a Data-Driven Decision Tree Model	Baabak Ashuri	GA Tech	Brennan Roney	Daniel Pass	Mobility	01/31/24	05/01/26	This project is to develop and deliver the decision tree model and contingency tool to GDOT for updating the GDOT’s programmed contingency table.

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15	RP 23-08	Geotechnical asset management program in the State of Georgia – Phase I	Jorge Macedo	GA Tech	Sabbir Ahmed	Eugene Utsalo	Asset Management	01/22/24	04/22/27	The work performed in the proposed project will implement phase I of a GAM program for the state of Georgia, building up on the previously discussed framework proposed by Georgia Tech with inputs from the GDOT-OMAT office.
16	RP 23-07	Investigate the impact of rumble strips on motorcyclists	James (Yichang) Tsai	GA Tech	William Bradley Bilsback	Sam Harris	Safety	01/12/24	01/12/26	The goals of this research project are to investigate the effects of rumble strips on motorcycle crashes and to engage with motorcycle communities to promote communication about rumble strips and their impact on safety.
17	RP 23-06	A Decision-Making Guide to Consider the Implementation of Progressive Public-Private Partnership (Progressive P3) for Delivering GDOT's Major Projects	Baabak Ashuri	GA Tech	Kamari Jordan	Darryl Van Meter	Policy/Workforce	01/22/24	04/22/26	The primary objective of this research is to develop a decision-making guide to assist GDOT in considering, evaluating, and implementing progressive P3 as an alternative delivery tool for its major projects.
18	RP 23-05	A Decision-Making Guide to Explore the Benefits of Design-Build-Maintain (DBM) and Design-Build-Operate-Maintain (DBOM) Alternative Delivery Systems to Assist GDOT in Anticipation of Emerging Technologies Deployed in GDOT's Network	Gordon Kingsley	GA Tech	Kamari Jordan	Darryl Van Meter	Policy/Workforce	01/19/24	04/19/26	The objective of this research is to create a guidebook for evaluating when to use DBM and DBOM project delivery approaches and to develop evaluation strategies and performance metrics for observing the value-added contributions of new and emerging technology to project delivery.
19	RP 23-04	Development of an ML-based Georgia Pavement Structural Condition Evaluation System	James (Yichang) Tsai	GA Tech	Kamari Jordan	Ernay Robinson Perry	Asset Management	01/22/24	01/22/26	The objective of this research is to develop a machine learning-based Georgia Pavement Structural Condition Evaluation System (ML-GPSCES) that reliably and accurately evaluates and categorizes pavement structural health conditions by processing and analyzing data collected by GDOT using advanced sensing technologies, including TSD, GPR, and 3D laser technology.
20	RP 23-03	Developing sight distance guidelines for U-turn maneuvers	James (Yichang) Tsai	GA Tech	Sabbir Ahmed	Sam Harris	Safety	01/22/24	01/22/26	The goals of this research project are to develop a structured set of guidelines and specifications for appropriate sight distances for U-turn maneuvers, tailored for Georgia roadways that can be included in the GDOT policy for traffic operations, design, and safety.
21	RP 23-02	Ensuring Fair and Equitable Funding of Rural Transit in Georgia after the 2020 Census	Laurie A. Garrow	GA Tech	Sabbir Ahmed	Patricia Smith	Policy/Workforce	01/12/24	04/12/25	The objective of this research is to calculate 5311 and 5304 funding appropriations at a county level for FY24-FY30.
22	RP 22-33	Experimental Tests for an Effective Barrier Design to Exclude Diamondback Terrapins (Malaclemys terrapin) from Roads	Kimberly M. Andrews	UGARF	Kamari Jordan	Christopher Goodson	Safety	03/08/23	12/08/24	The objective of this project is to construct transportable fencing pieces made of different materials that can be adjusted to test different dimensions and design features. We anticipate that testing will occur primarily or entirely using wild-caught animals that are tested at the capture location and released immediately following the trial.
23	RP 22-30	BikewaySim: Using Changes in Revealed Impedance to Assess Perceived Safety Benefits of New Cycling Infrastructure	Kari Watkins	GA Tech	Kamari Jordan	Sam Harris	Safety	10/17/22	10/17/24	This research aims to provide GDOT with a tool to analyze how the implementation of bicycle infrastructure on GDOT-owned roads contributes to bikeability and reduces bicycle route impedance (i.e. the accessibility of cycling), so that alternatives that stand to have the greatest impact are prioritized.
24	RP 22-27	Development of Safety Performance Functions for Urban and Suburban Multilane Highways in Georgia	Jidong Yang	UGARF	Kamari Jordan	Daniel Pass	Safety	10/28/22	10/28/24	This project aims to develop Georgia-specific Safety Performance Functions for various multilane roadway types (depending on the data availability) that exist in urban and suburban settings of Georgia.
25	RP 22-26	VISSIM™ Simulation Calibration Procedure	Michael Hunter	GA Tech	Brennan Roney	Andrew Pearson	Safety	10/17/22	04/17/24	The objective of this project is to develop a VISSIM™ calibration procedure and alternative calibration methods using a range of parameter sets, for GDOT simulation projects.
26	RP 22-25	A Playbook for CM at Risk Adoption in Transportation Projects	Pardis Pishdad-Bozorgi	GA Tech	Kamari Jordan	Darryl VanMeter	Policy / Workforce	10/17/22	10/17/24	"This research aims to identify the procurement, contracting, and execution best practices for CM/GC implementation for DOT projects, and develop a set of educational resources for training the team on the nuances of CM/GC relative to cultural, organizational, communicational, and contractual aspects."
27	RP 22-24	Post-let Environmental Analysis and Permitting for Alternative Delivery Projects	Gordon Kingsley	GA Tech	Kamari Jordan	Elizabeth Wygand, Darryl VanMeter	Policy/Workforce	10/01/22	01/01/25	The primary objective of this research is to assist GDOT in its efforts to streamline post-let environmental analysis and permitting processes for its alternative delivery projects.
28	RP 22-23	Rebalancing Contracting Terms to Ensure Success for the GDOT's Alternative Delivery Projects and Better Reflect Real-Time Market Conditions	Baabak Ashuri	GA Tech	Kamari Jordan	Darryl VanMeter	Policy/Workforce	10/06/22	01/06/25	The primary objective of this research is to assist GDOT in its efforts to enhance competition in the Georgia transportation infrastructure market through rebalancing contracting terms and conditions.
29	RP 22-22	A Scheduling Assistant Toolkit for GDOT's Effective Planning of Transportation Projects.	Pardis Pishdad-Bozorgi	GA Tech	Kamari Jordan	John Hancock; Beau Quarles	Mobility	10/17/22	05/17/25	"This research aims to capture true productivity rates for certain project activities (e.g., asphalt, GAB, grading/earthwork) through benchmarking selected GDOT projects, and to identify a set of best practices for GDOT to continuously collect and capture true productivity rates in future projects, and to develop a scheduling assistant toolkit for determining a recommended degree of overlapping among project activities."
30	RP 22-21	Phase III: Investigation and Guidelines for Best Practices of Thermal Control for Mass Concrete Construction Projects	Yong Cho	GA Tech	Kamari Jordan	Beau Quarles, Steve Gaston, Michael Garner	Mobility	09/16/22	03/16/25	The proposed research will expand the applicability of decision-making tools to various concrete mixes, including accommodating temperature differential and cost implications.

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31	RP 22-20	Quality Manual for Steel Bridge Fabrication	Ryan J Sherman	GA Tech	Kamari Jordan	Peter Wu	Mobility	11/02/22	11/02/25	The objective of this project is to develop a detailed GDOT Quality Manual for Steel Bridge Fabrication.
32	RP 22-19	Remote Bridge Health Monitoring for Scouring Using Cost-Efficient Sensing Technology	Tien Yee	KSURSF	Kamari Jordan	Rabindra Koirala, Toan Nguyen	Asset Management	11/28/22	11/28/25	The primary objective is to develop a system that links field sensors to form a sensing network for bridge health monitoring, particularly for scour monitoring.
33	RP 22-18	Structural Monitoring of Steel-Member Bridges with Fatigue Life Prognosis due to Dynamic Vehicular Loads	Yang Wang	GA Tech	Kamari Jordan	Rabindra Koirala, Kevin Schwartz	Asset Management	11/02/22	11/02/25	This project will develop an integrated hardware and analytical framework that enables real time bridge structural monitoring and fatigue life prognosis.
34	RP 22-17	Nondestructive/Noncontact Inspection Protocols and Technologies for Aging Mechanically Stabilized Earth and Modular Block Retaining Walls	Marcel Maghiar	GA Southern	Brennan Roney	Doug Franks,	Asset Management	04/14/23	10/14/25	The objectives of this proposed research are to investigate the currently available inspection procedures and technologies for MSEWs and MBWs; and select and verify nondestructive / noncontact inspection techniques for the evaluation of MSEWs and MBWs; and develop an appropriate inspection protocol using nondestructive / noncontact technologies that will provide the results in a standardized format that is compatible with the GDOT Transportation Asset Management (TAM) system.
35	RP 21-09	Non-Motorized Count Program and Risk Factors Assessment	Michael Rodgers	GA Tech	William Bradley Bilsback	Sam Harris	Safety	03/15/22	03/15/25	To create activity estimates of non-motorized travel and use existing GDOT datasets to assess the risk factors associated with bicycle and pedestrian crashes with the intent to give GDOT more tools for assessing safe design practices.
36	RP 21-08	Study on Spectrum Options for GDOT's Connected Vehicle Infrastructure	Seungmo Kim	GA Southern	William Bradley Bilsback	Alan Davis	Safety	04/27/22	04/27/24	To investigate the feasibility of operating the existing DSRC devices in unlicensed bands, e.g., industrial, scientific and medical (ISM) bands and to analyze the technical impacts of the transition from DSRC to C-V2X in the spectrum of 5.895-5.925 GHz, compliant with the recent regulatory change by the FCC.
37	RP 21-06	Effective Management and Emerging Best Practices of Geotechnical and Utilities Risks in Alternative Delivery	Baabak Ashuri	GA Tech	William Bradley Bilsback	Darryl VanMeter	Policy/Workforce	03/07/22	03/07/24	This project is to enhance the capabilities of the GDOT's Office of Innovative Delivery to facilitate the smooth and cost-effective delivery of major design-build (DB) and public-private partnership (P3) projects through designing effective, smart risk management strategies to cope with uncertain geotechnical conditions and utilities accommodation issues.
38	RP 21-05	Practical Assessment of Non-Destructive Testing (NDT) Techniques for on-site Application on GDOT Construction Projects	Hossein Taheri	GA Southern	William Bradley Bilsback	Christopher J Collins	Mobility	04/01/22	04/01/25	This research's overarching objective is to develop a systematic methodology of employing Ground Penetrating Radar (GPR), including instruments, subsequent data processing, and interpretation that can be used regularly and reliably as part of roadway pavement construction projects.
39	RP 21-04	Pragmatic Precast/Prestressed Girder Acceptance Criteria	Lauren Stewart	GA Tech	Brennan Roney	Jason Waters/Peter Wu	Mobility	03/30/22	07/30/25	The objectives are to collect and quantify the types and occurrences of girder nonconformance in GDOT; To thoroughly review and synthesize quality requirements; To utilize computational models to determine tiered acceptance thresholds; To assess which nonconformance issues are associated with service life reduction, making contracting recommendations for appropriate contracting structures (e.g., penalties) for nonconforming elements; and To summarize research findings in a pragmatic form by providing recommendations for a tiered acceptance system via a draft GDOT quality manual for precast/prestressed girders.
40	RP 21-03	Enhancing the GDOT's Maintenance Decision Trees Considering the Effectiveness of Various Treatment Options in Different Geographical Locations and Over Time.	Brian C. Moore	KSURSF	Brennan Roney	Andy Doyle, Ernay Robinson	Asset Management	04/28/22	07/28/24	Enhance the GDOT's maintenance decision trees through: (a) empirically analyzing the effectiveness of various treatment options in different geographical locations and climate conditions across the state; (b) improving lifecycle cost estimates for the treatment options; and (c) conducting tradeoff analysis among various maintenance strategies, in order to determine the optimal strategy that can be implemented over time.
41	RP 21-02	Strategic Prioritization in Bridge Asset Maintenance Through Data-Driven Long-Term Asset Valuation with Additional Emphasis on Promoting GDOT's Partnerships with Counties	Mi Geum Chorzepa	UGARF	Brennan Roney	Rabindra Koirala, Kevin Schwartz	Asset Management	03/07/22	03/07/25	The main objective is to create a life-cycle assessment tool for GDOT districts and counties. The research will study correlations observed. In addition, guidelines, manuals, and training programs will be developed to support governments and assist in creating a local bridge maintenance priority list, and establishment of a "bridge life plan" tool.
42	RP 20-18	Recommendations for Extension in Service Life of ASR-Affected Concrete.	Kimberly Kurtis	GA Tech	Brennan Roney	Peter Wu	Mobility	08/18/20	08/18/24	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.

