Request for Research Funding for FY 2024-2025			
Project Number (Research Center Use Only): D5-25-04			
Requesting Office	District Five	**Priority**	4 of 5 (projects may not have the same ranking – no ties)
Proposed Title	Assessing Climate Change Resilience of Infrastructure due to Changes in Water Table Elevation		
Justification	Current approximations of Seasonal High Water Table elevations are based on the USDA Soil Survey which gets updated infrequently. This piece of information is used to evaluate the stability of foundations during design, construction, and maintenance. If the water table elevation used is not accurate, it could jeopardize the structural integrity of bridge components, drilled shafts, gravity walls, MSE walls, etc. The aim of this study is to: • Develop more accurate current and future predictions of the Seasonal High Water Table elevation based on climate change and forecast for the future, given data trends. Available climate models for Sea Level Rise and rainfall events will be studied and combined with monitored data of Water Table in the State of Florida. • Assess the resilience of infrastructure, with an emphasis on deep foundations, due to changes in Water Table.		
Impact	Better predictions for Seasonal High Water Table elevation. This critical piece of information is used in foundation design for our infrastructure. Better understanding of the anticipated performance and resilience of infrastructure to these changes.		
Affected Offices/ Districts	District Five Materials and Research would be impacted due to requests for information and applicable data.		
Existing Work	There is currently a funded project for approximating Seasonal High Water Table, the proposed work will consider the effect of climate change and/or future prediction models and the impacts to resiliency of infrastructure.		
Keywords Used In Existing Work Search **(Cannot leave blank)**	Seasonal High Water Table, Resiliency, Climate Change, Stability, Deep Foundations		
Related Contracts (Give contract numbers)	BDX86		
Funding Request	$200,000	**Anticipated Duration**	2 years
Project Manager	Scott Kirts	**Contracting Method**	Contract with Embry Riddle
Equipment	N/A		
Urgency	2	Climate change is occurring faster than anyone could have anticipated, impacting sea level rise and increase/decrease in precipitation. Its effects on our infrastructure are largely unknown.	
Implementability	1	Seasonal High Water Table elevations are used as a design input in just about every construction project. Water Table elevation plays a major role in determining the factor of safety of foundations. Given the potential outcomes of this study, the water table predictions could change and therefore change infrastructure design in the immediate future and assess adequacy of current infrastructure.	

Project Benefits (Succinct, complete explanation)

More accurate predictions for Seasonal High Water Table elevation both now and in the future. Better assessment of current infrastructure capacity. Increased safety and longevity of planned infrastructure changes given potential outcomes of this study.

Project Benefits **(Select all that apply and explain)**	**Quantifiable Benefits (units, dollars, etc…if applicable)**	**Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits**
o Materials Enhancement	Not able to quantify	Potential design changes could impact materials used and how much. For instance, future foundations could be designed to go deeper or higher strength materials may be needed, depending on where the Seasonal High Water Table elevation is predicted to be.
o Financial Impact	Not able to quantify	Better design means less maintenance needed and more time in between replacement of infrastructure. Better assessment of current infrastructure capacity will improve readiness and planning of maintenance.
o Time Savings	Not able to quantify	Better design means less maintenance needed and more time in between replacement of infrastructure. Better assessment of current infrastructure capacity will improve readiness and planning of maintenance.
o Lives Saved/Injuries Prevented	Not able to quantify	Good design includes a factor of safety against failure which is predicated on knowing loading conditions. These conditions are impacted by the Seasonal High Water Table elevation.
o Other (Explain)		

*Comments should explain and support urgency, financial benefit, and implementability scores