

Request for Research Funding for FY 2021-2022

Requesting Office	CO - Office of Maintenance & State Materials Office	Priority	1 of 2
Proposed Title	Best Practices for Steel Bridge Coating and Recoating Warranty Contract Requirements		
Justification	The substandard quality of coatings on steel bridges generally results in shorter service lives than anticipated, which results in having to recoat bridges at shorter intervals than expected. FDOT spends millions of dollars every year coating and recoating steel bridges. These projects have historically failed to reach their expected service lives, which is generally not discovered until many years after the projects are completed. Using a warranty approach with a short bonding period and performance measures that are achievable, will encourage contractors to perform higher quality work that will ensure the anticipated service life of coatings without significantly increasing the cost of doing the work.		
Impact	FDOT typically spends approximately \$25,000,000 per year recoating steel bridges. The State Materials Office estimates that steel coatings last about half as long as they should if properly applied, As a result of the implementation of this research the cost of recoating steel bridges will decrease beginning in the 10 to 15-year period after this research is implemented, and will save the Department an estimated \$10,000,000 per year in present worth thereafter.		
Affected Offices	The State Materials Office will be primarily responsible for overseeing the research and implementation, along with District Maintenance and Construction Offices, during the implementation phase. The affected Offices are the District Maintenance Offices responsible for maintaining steel bridges and their coating systems, the Office of Maintenance who oversees the maintenance and funding of steel bridges and their coating systems, the Work Program Office who programs the funding for bridge coating and recoating projects, the District Construction Offices who oversees the application of steel coating systems, and the State and District Structures Design Office who will specify the use of this new contracting methodology.		
Existing Work	<p>A TRID search was conducted to identify previous research in the area of coating warranties for steel bridges. Four references were identified, three journal articles and one research report. The articles described specific practices in Michigan (1998), a specific project example in Maryland on the Chesapeake Bay Bridge (1998), and the general lack of the use of warranties by State DOT's in 2000. The research report was conducted by Purdue University for Indiana DOT to provide a comprehensive assessment of methods to improve quality of steel coatings, including a section on the benefits and problems with warranties and how to specify them for improved effectiveness.</p> <p>No references were found describing current practice within the last 20 years. Although not in the TRID database yet, a Domestic Scan 15-03 "Successful Preservation Practices for Steel Coatings" was recently completed by NCHRP. Recommendations from that Scan led to this proposal. None of the previous efforts contained a comprehensive nationwide summary of state DOT best practices. The proposed research will fill that need and provide critical information on the successful use of warranties and specifications to make their use more effective and promote the use of best practices in administering warranty contracts.</p>		
Keywords Used In Existing Work Search (Cannot leave blank)	Coating Performance Measures, Coating Warranty Contract requirements, Bonding Period, Value of Bond, Warranty Period		
Related Contracts (Give contract numbers)	Domestic Scan 15-03 "Successful Preservation Practices for Steel Coatings"		
Funding Request	\$200,000	Anticipated Duration	24 months
Project Manager	Jeffrey Pouliotte (Office of Maintenance) and Chase Knight (State Materials Office)	Contracting Method	RFP

Urgency	Score 1	FDOT spends millions of dollars every year coating and recoating steel bridges. These projects have historically failed to reach their expected service lives, which is generally not discovered until many years after the projects are completed. Encouraging the contracting community to strictly adhere to specification requirements will result in longer lasting, better quality coatings, which will reduce future bridge maintenance costs, and help preserve the nations steel bridge infrastructure.
Implementability	Score 1	Once the project is completed, the plan is to develop two pilot projects using the new contract requirements, one for a bridge recoating project and one for a new bridge coating project. The cost of the pilot projects will be borne by the Department. Evaluate the success of these projects on the basis of the contractors ability to meet performance measures, determine the relative increased cost of using this contracting method, determine annual cost differentials using life cycle cost analysis, and determine areas of improvement that can be made in the contracting method. Based on this information the Department will make needed revisions and finalize the contracting process.

Project Benefits (Succinct, complete explanation)

The substandard quality of coatings on steel bridges generally results in shorter service lives than anticipated and having to recoat bridges at shorter intervals than expected. The goal of this research is to identify reasonable service life periods for typical bridge coating systems exposed to various in-service exposure conditions. The research will develop or specify short term performance measures that will be used to establish warranty periods that would ensure the pre-determined service life of the typical coating systems within the shortest possible warranty periods. Based on those warranty parameters, the research will develop Warranty Contract Requirements (utilizing information taken from Domestic Scan 15-03 “Successful Preservation Practices for Steel Coatings”) that will encourage contractors to perform higher quality work that will ensure the anticipated service life of coatings, without significantly increasing the cost of doing the work. This will result in longer lasting coating systems that will save money by extending the time between recoating, reduce user costs, and extend the service life of FDOT’s steel bridge inventory.

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
○ Materials Enhancement	Longer lasting steel bridge coating systems through correct application saves money	Although this research will not result in the use of new materials, the implementation of material performance measures during application will result in better material performance.
○ Materials Savings	Less applications = reduced cost	Materials should last approximately 40% longer.
○ Time Savings	Longer lasting coatings and reduced user costs	The time between coating applications will be extended by approximately 40%, which will also reduce users cost to the travelling public by having fewer construction delays statewide.
○ Lives Saved/Injuries Prevented	Improved safety for workers by reducing the number of recoating projects reduces medical costs and legal fees	Extending the time between recoating of steel bridges will reduce the time people have to work and sit in traffic and on scaffolds, which should result in less accidents and injury, and reduce people’s exposure to toxic fumes and dust from coating operations.
○ Other (Explain)	Longer lasting bridges saves funding for other projects	One of the benefits of the implementation of this research is longer lasting coating systems on steel bridges, which will extend the service life of the bridge.

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