

Request for Research Funding for FY 2019-2020

Requesting Office	State Materials Office	Priority	10 of 11 (projects may not have the same ranking – no ties)
Proposed Title	Develop the procedures for welding, testing, and fabricating weathering stainless-steel to merge the scope of the current AASHTO/AWS D1.5. Bridge Welding Code with the AWS D1.6 Stainless Steel Code.		
Justification	<p>The FDOT has looked at several ways to mitigate corrosion and extend the time interval until maintenance on all Florida bridges. Previous research led FDOT to implement policy toward the fabrication of steel bridges using uncoated weathering steel, wherever applicable. Weathering steel has been implemented across the State, however, standard weathering steel cannot be used in the vicinity of coastal areas. Weathering stainless-steel can fill this gap. Recently AASHTO adopted a weathering stainless steel for bridge applications: A709 50CR, but there are still gaps that exist between the governing documents relating to the procedures used during the welding process. One of the gaps is that the AASHTO/AWS D1.5 Bridge Welding Code does not address stainless steel as an option for bridge material. Another is AWS D1.6 Stainless Steel Code does not address a bridge application.</p> <p>Weathering stainless-steel bridges have been successfully built in Oregon, Virginia, Iowa and Canada. Structures Design, State Materials and industry have had a preliminary discussion on how to execute a weathering stainless-steel bridge. If Florida is to consider building a stainless-steel bridge, provisions on how to successfully fabricate and repair stainless steel should be developed.</p>		
Impact	A Florida Method – usable for all stainless-steel base metals used for bridge fabrication. This would attempt to address the gaps in the current AASTHO AWS D1.5 Bridge Welding Code. Other State DOT’s ran into unforeseen setbacks and financial increases to the project. This method would attempt to present a planned approach to welding stainless steel bridge projects.		
Affected Offices	The State Materials Office, Maintenance, Structures Design, & Construction		
Existing Work	There is existing work on stainless-steel concrete reinforcement and stainless-steel stay cables. However, there is no existing research regarding a method on how to modify AWS D1.5 to address welding stainless-steel for bridge applications. TRB Contract 12-107 was proposed in 2015, but ultimately terminated by the AASHTO special committee.		
Keywords Used In Existing Work Search (Cannot leave blank)	A709, 50CR, Stainless, Weathering, Welding, Bridge, D1.5,		
Related Contracts (Give contract numbers)	TRB 12-107 (Terminated 2015)		
Funding Request	\$100,000	Anticipated Duration	1 Year – Duration and cost estimate assumes background, method of development, comparison to existing bridge welding code, and presentation of final method.
Project Manager	Tim McCullough	Contracting Method	RFP to all registered vendors
Urgency	3	This idea was highlighted as a need based on gaps in the current Bridge Welding Code.	
Implementability	5	<p>Implementation:</p> <ol style="list-style-type: none"> 1. Demonstrate a compatibility with the existing Bridge Welding Code 2. Meet with Construction to Verify the Method 3. Pursue as a Florida Method 	

		4. Pursue a request to put it in the Specifications and/or Materials Manual
<p>Project Benefits (Succinct, complete explanation)</p> <p>The research would attempt to present thorough methods on how to weld Stainless-Steel base metals that are currently not addressed in the AASHTO Bridge Welding Code; to avoid costly repairs, and engineering decisions that may delay a construction project.</p>		
<p>Project Benefits (Select all that apply and explain)</p>	<p>Quantifiable Benefits (units, dollars, etc...if applicable)</p>	<p>Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits</p>
<p><input type="radio"/> Materials Enhancement</p>	<p>Life Cycle Cost</p>	<p>The life cycle cost of the bridge can be reduced by using weathering stainless steel bridges in areas where it may be too aggressive for traditional weathering steel, coated steel or reinforced concrete bridge applications.</p> <p>The development of the method will also help keep costs down during the fabrication process by addressing the two welding codes prior to implementation on a project.</p>
<p><input type="radio"/> Materials Savings</p>		
<p><input type="radio"/> Time Savings</p>		
<p><input type="radio"/> Lives Saved/Injuries Prevented</p>		
<p><input type="radio"/> Other (Explain)</p>		

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