RUTGERS
Center for Advanced Infrastructure and Transportation

QUARTERLY PROGRESS REPORT

Project Title:	Evaluation of Different Paint Systems for Over-Coating Existing Structural Steel
RFP NUMBER: 2014-15-12	NJDOT RESEARCH PROJECT MANAGER: Giri Venkiteela
TASK ORDER NUMBER: TO# 325 / RU Acct 4-38719	PRINCIPAL INVESTIGATOR: Perumalsamy Balaguru, Ph.D.
Project Starting Date: 09/01/2015 Original Project Ending Date: 08/31/2017 Modified Completion Date:	Period Covered: 1st Quarter 2016

Task #	Task Description	% of Total Budget	Approved Budget	% of Task This Quarter	To be Invoiced this Quarter	% of Task to Date	Total Billing to Date
LS	Literature Search	3.77%	$8,042	15.00%	$1,206	95.00%	$7,640
1	Identify potential test methods to be used for acceptance criteria	9.11%	$19,458	39.00%	$7,589	50.00%	$9,729
2	Develop guidelines for surface preparation and coating application	14.86%	$31,716	60.00%	$19,029	70.00%	$22,201
3	Develop interim Materials Approval Procedure for immediate deployment	26.47%	$56,517	10.00%	$5,652	10.00%	$5,652
4	Perform HATR tests using Infrared Spectrophotometry Scan	13.03%	$27,817	5.00%	$1,391	5.00%	$1,391
5	Validate interim Materials Approval Procedure (if directed by NJDOT)	19.83%	$42,338	0.00%	$0	0.00%	$0
6	Implementation and training plan	3.77%	$8,043	0.00%	$0	0.00%	$0
7	Recommendations and reporting	9.17%	$19,571	10.00%	$1,957	10.00%	$1,957
	TOTAL	100.00%	$213,502	17.25%	$36,824	22.75%	$48,570

Project Objectives:

The lack of alternative over coating paint systems presents a challenge in maintaining a state of good repair for bridges constructed using painted structural steel elements. The goals and objectives of this project are the following:

- Evaluate current NJDOT corrosion maintenance and paint system evaluation practices
- Identify alternatives to current epoxy mastic paint systems
- Identify and evaluate other states' practices
- Identify and evaluate over coating paint system formulations
- Develop a testing program to evaluate system performance
- Test systems using the testing program and make recommendations about each system based on the test results.
- If deemed necessary, re-develop the standard specifications to include other coatings of equal or superior performance.

Project Abstract:

The research plan is divided into a number of tasks. The first task is dealing with a comprehensive literature search. This task may be more important for this project as compared to a typical research project because a large volume of information is available in the literature. A number of studies have been conducted by various state transportation departments. These reports and the reports by FHWA have to be carefully analyzed with scientific papers before proceeding to the next step. Based on the results and evaluation of the information collected during the literature search, recommendation will be made to the research committee whether products other than epoxy mastic coating materials should be included in the approved materials list. The results of the limited literature search performed for this proposal indicate that other material compositions could provide equivalent or better performance without increase in cost. This observation needs to be confirmed by a comprehensive search and analysis of results. Using the results of literature search up to 5 scientific combinations or systems that are commercially available will be chosen for further evaluation. These products will be tested using the current guidelines and ASTM specifications and any additional tests that will provide information on the long-term durability of these coatings in adverse environmental conditions. Once the products that satisfy the requirements are chosen, a protocol will be developed for quality control testing for use by NJDOT. A list of tests and protocol will also be developed for manufacturers who want to submit their products for inclusion in the Qualified Products List (QPL) for use in NJDOT projects.

1. Progress this quarter by task:

Literature Search

The team is nearly complete with the literature search. During this quarter the team investigated state practices for overcoating and documented states that incorporate overcoating in their practices. The state also documented cleaning methods used by those states using overcoating techniques.

Identify potential test methods to be used for acceptance criteria

The team is researching test methods and related procedures that can be used to effectively test overcoating applications. The team is taking into consideration cost to procure testing apparatuses as well as specimen preparation, testing duration, power requirements and space usage. Upon finalizing a test method and procedure, the team will submit a technical memorandum.

Develop guidelines for surface preparation and coating application

The team is prepared a report outlining cleaning methods prescribed under SSPC. The methods are evaluated for developing a procedure to be used in overcoating applications.

In addition a report is being prepared (90% complete) that provides approved coatings in all the 50 states. This report will provide a list as provided by the state, common products and their test protocols if available.

Perform HATR tests using infrared spectrophotometry scan

The team began to identify the paints on the NJDOT QPL list for IR scan testing. The type of paints are consistent with those commonly used on NJDOT construction projects.

Validate interim materials approval procedure (if directed by NJDOT)

This task has not started.

Implementation and training

This task has not started.

Recommendations and reporting

This task has not started.

2. Proposed activities for next quarter by task:

Literature Search

The team will complete this task and submit a technical synopsis.

Identify potential test methods to be used for acceptance criteria

The team will submit a technical memorandum outlining the recommended test methods.

Develop guidelines for surface preparation and coating application

The team will complete and submit the report on cleaning methods and synopsis of state-approved overcoating methods.

The team will also select a test system and prepare a document to substantiate the selection.

Perform HATR tests using infrared spectrophotometry scan

The team will contact suppliers to order batches of selected paints for HTAR tests. The different batches will be ordered few weeks apart to capture the variations between different patches. IR scans will be run on those paints and the absorption versus wave length will be recorded.

Validate interim materials approval procedure (if directed by NJDOT)

No anticipated work next quarter.

Implementation and training

No anticipated work next quarter.

Recommendations and reporting

No anticipated work next quarter.

3. List of deliverables provided in this quarter by task (include deliverable date):

Literature Search

None at this time.

Identify potential test methods to be used for acceptance criteria

None at this time.

Develop guidelines for surface preparation and coating application

None at this time.

Perform HATR tests using infrared spectrophotometry scan

None at this time.

Validate interim materials approval procedure (if directed by NJDOT)

None at this time.

Implementation and training

None at this time.

Recommendations and reporting

None at this time.

4. Progress on implementation and training activities:
None at this time

5. Problems/Proposed Solutions:
None at this time

Yr 1 Budget	$152,286
Yr 2 Budget	$ 61,576
Total Project Budget	$213,862
Modified Contract Amount**:**	
Total Billing To Date	$48,570
Total Project - % Complete	22.75%

NJDOT Research Project Manager Concurrence: _____ Date: _____