TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Date: _September 30, 2020_

Lead Agency (FHWA or State DOT): _____Indiana DOT_____

INSTRUCTIONS:
Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)* ***TPF 5-436***	**Transportation Pooled Fund Program - Report Period:** ☐Quarter 1 (January 1 – March 31) ☐Quarter 2 (April 1 – June 30) XQuarter 3 (July 1 – September 30) ☐Quarter 4 (October 1 – December 31)

Project Title: **Development of Criteria to Assess the Effects of Pack-out Corrosion in Built-up Steel Members**		
Name of Project Manager(s): **Tommy E. Nantung**	**Phone Number:** **(765) 463-1521 ext. 248**	**E-Mail** tnantung@indot.in.gov
Lead Agency Project ID:	**Other Project ID (i.e., contract #):**	**Project Start Date:** 9/1/2019
Original Project End Date: **8/31/2022**	**Current Project End Date:** **8/31/2022**	**Number of Extensions:** None

Project schedule status:

X On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget**	Total Cost to Date for Project	Percentage of Work Completed to Date**
$760,000	**$93,673**	**30%**

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$28,531	**3.8%**	**25%**

**This total budget is based on funds that are shown as "committed" on the TPF website.

Project Description:
This study proposes to:

1) To develop AASHTO ready specifications for the evaluation of the effects of pack-out corrosion in built-up steel tension, compression, and flexural members.
2) Provide guidance on the need for repairs and corrosion rates that can be expected in various environments in order to assist owners in programming when repairs may need to be made.
3) Identify the most effective methods of repairs and provide suggesting verbiage that could be used when preparing special provisions for repairs.
4) Develop several case-study examples, including calculations that will be used for training users on the methodologies to be developed. It is anticipated that the research team will host a number of webinars or on-site training sessions to ensure technology transfer and implementation.

Progress this quarter (includes meetings, work plan status, contract status, significant progress, etc.):

- Good progress has been following the total lab shutdown that ending in mid-July. Progress has been made in the analytical modeling studies which will serve to develop the laboratory testing program. The modeling has resulting the design of flexural specimens in which pack-out distortion will be simulated on the cover plates. The girders will be fabricated from rolled shapes with distorted cover plates attached with common bolts.
- A method to introduce the distortions from pack-out has been effectively perfected using hydraulic jacks and wedges. This allows precise distortions to be introduced into the cover plates. While the actual section loss must be simulated with grinding/machining, the distortion itself can now be accurately produced.
- Using expansive epoxy materials, the "prying" forces which occur between plies can be simulated as confirmed by initial trial tests conducted in late 2019.

Anticipated work next quarter:

- Continue with the finite element studies and develop the experimental program;
- A final geometry of a prototype specimen will be testing in the Bowen Laboratory. The shape will consist of a single rolled W24x68 with a 3/8 cover plate with and without simulated pack-out distortion will be tested in flexure. These initial results will prove very useful in calibration of the FEA models.
- Continue the development of the large-scale experimental program.
- Obtain additional members with pack-out corrosions. If a state has such members available or coming out of service in the near future, the RT requests that they contact Robert Connor to discuss the potential for obtaining the members for the research.
- Schedule the project kick-off meeting in the fall of 2020.

Significant Results:

1. None to date

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the Agreement, along with recommended solutions to those problems).

1. The COVID-19 restrictions resulted in Purdue University shutting down entirely in Mid-march 2020. All access to laboratory facilities were halted effectively bringing all research to a standstill. In mid-July 2020, the laboratory began to open back up for research. While progress has of course been significantly delayed, the Research Team is working as efficiently as possible to regain lost time.

Potential Implementation:
None to date