TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Date: ____October 1, 2012_____

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(238)***	**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:
Design and Fabrication Standards to Eliminate Fracture Critical Concerns in Steel Members Traditionally Classifi Fracture Critical

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:** 8/1/2011
Original Project End Date: **7/31/2014**	**Current Project End Date:** **7/31/2014**	**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
$790,000	**$162,105**	**22%**

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$45,614	**5.7%**	**43%**

Project Description:
The objective of this research project is to take advantage of the major advances that have occurred in the past 30 years in the following areas related to fracture control in steel bridges:

1. The very high toughness of high performance steel (HPS), which was not available 30 years ago, can be used to take brittle fracture off the table so to speak. Crack arrest and very large defect tolerance can be ensured in these steels. Similar strategies have been employed by other industries for several years.
2. Modern fatigue design and detailing can ensure fatigue cracking does not occur.
3. Modern fabrication, shop inspection and the AWS FCP, greatly reduces the likelihood that defects are not introduced during. Advancements in NDT techniques along with technologies not regularly used, such as phased array UT have the potential further reduce the chance of a defect being missed.

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

- The literature review continues.
- Final design of the test setup was completed.
- Preliminary large-scale specimen design was completed.
- Load frames are currently in fabrication and expected to be delivered in mid-October.
- Out-of-plane bracing for test specimens was fabricated and received.
- End bracing was designed and fabricated.
- Load frame knee bracing was fabricated and received.
- Plates to connect the hydraulic actuators to load frames have been ordered.
- New hydraulic hose and servo-valves to accommodate greater flow needs were ordered and received.
- New high capacity servo-valve manifolds and hydraulic service manifolds have been ordered and are currently being fabricated with an expected delivery in mid-to-late November.
- Small-scale material testing (CVN, CTOD) continues.
- The research team is working with various steel fabricators and DOT's to obtain "drops" of HPS from bridge projects around the US. The small pieces of HPS will be used for samples to be used in the small scale testing
- FE work continues.

Anticipated work next quarter:

- Continue the literature review.
- Continue to refine the testing plan.
- Finalize design of large scale specimens
- Take delivery of the large-scale testing fixtures.
- Take delivery of remaining hydraulic components and install system.
- Continue with small-scale material testing.
- Continue to work with DOT's to obtain more "drops".
- Continue FE work.

Significant Results:

During the past quarter, the major steps forward included:

1. Final design of the test setup was complete.
2. Preliminary design of the large-scale test specimen.
3. All bracing has been fabricated and received.
4. FE work continues.

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).

None this quarter

Potential Implementation:

None at this time. Too early in the research.