

**Federal Contract # DTFH61-17D00001 – Task Order #1**

**LONG-TERM BRIDGE PERFORMANCE PROGRAM**

PROGRESS REPORT NO. 10

Report Period: July 1, 2018 – July 31, 2018

Prepared For:

**Federal Highway Administration**

Prepared By:



## **A. Account of work performed in this period**

### **1. Coordination and Meetings Between the Contractor, FHWA LTBP Team, and State Highway Departments**

The Rutgers team had a few correspondences with the FHWA team over the phone or by email.

Co-PI: 1 hour

PI: 21 hours

### **2. Data Gap Analysis**

Data gap efforts in July were focused on providing detailed implementation guidance regarding the most significant data gaps identified in previous months. The topics were selected based on the severity of the identified data gap and the relative effort/cost anticipated to address it. The goal was to provide a path to high impact in expanding the effectiveness of the data collection protocols relative to the resource investment (time and otherwise). The recommendations provided in a previously submitted report were expanded for construction and maintenance data gaps and each high priority performance issue was addressed.

This work first consisted of a detailed review of the most recent legacy data mining efforts with the goal being to identify the documentation types available by field type and by state. The legacy data mining requested a total of 14 types of documentation for each bridge. The documentation received was broken down by documentation type (total percentage received), total documents received by field and state, and further by percentage of construction and maintenance documentation by state. Following this review, the recommendations for construction related data and maintenance and preservation related data were expanded. Of the 431 bridges requested, only 6.5% contained some form of construction related information. From this work, the most promising approach for the collection of construction related data seems to be the collection and structuring of state specific standards and specifications. Many states routinely publish their construction and materials standards and specifications as well as certified material lists, etc. So although this information is not being routinely documented and saved in a transferrable format for each specific bridge, the publicly available standards and specifications may still be used to establish trends by state. Of the 431 bridges requested, approximately 60% of the bridges contained some form of maintenance information. A detailed review of the specific maintenance documentation received indicated a wide variation in data, both in terms of completeness and form across the various states. During this review it was noted that several states use a maintenance database to record actions, which may contain significantly more usable data (in a far more usable form) than provided by the contractors tasked with performing the legacy data mining activities. Following this, a detailed literature review was performed regarding (1) the current state of practices in bridge maintenance database use and (2) the state of the art in structuring a framework for categorizing common maintenance related actions across the states. This resulted in several specific recommendations to update and restructure the current maintenance data collection protocols.

PI: 102 hours

Co-PI: 11 hours

Program Manager: 55 hours

Project Engineer: 153.82 hours

Technician: 69.92

Project Support: 33 hours

### **3. Communication**

The Rutgers team prepared the electronic version of the monthly progress report and submitted it to FHWA. Moreover, the Rutgers team updated the MS Project file showing the project milestone and submitted it to FHWA.

Co-PI: 10 hours

## **B. Work to be accomplished during the next period**

### **1. Coordination and Meetings Between the Contractor, FHWA LTBP Team, and State Highway Departments**

The Rutgers team will meet with reach out to FHWA to set up a meeting for the month of August.

### **2. Data Gap Analysis**

Work in August is anticipated to focus on (1) prioritizing the implementation guidance recommendations, (2) provide further implementation guidance for each high priority performance issue, and (3) investigate the possibility of performing a pilot study in which several maintenance records received in the LDM efforts are used to test the viability of the new data collection fields and structuring for maintenance relate data.

### **3. Communication**

The Rutgers team will prepare the electronic version of the monthly progress report and will submit it to FHWA. Moreover, the Rutgers team will submit the updated MS Project file to FHWA.

**C. Problems/Recommended Solutions**

No problems encountered during this period.

**D. How the results of the work performed supports one or more of the FHWA, DOT and LTBP Goals**

All of the work conducted under this task order aims to ensure that the LTBP program collects the data required to realize the following four use cases: (1) Advance research in bridge deterioration and predictive modeling, (2) Advance research in cost analysis, (3) Support improved bridge design methods, and (4) Quantify the effectiveness of bridge maintenance, preservation, repair, and rehabilitation strategies. These use cases encapsulate the overarching goals of the LTBP program and its vision for positively impacting the practice of bridge engineering.

**E. Purchases and Rentals**

Nothing was purchased or rented during this period.

**F. Travel Details for Reporting Period**

None.



**G. Current and Cumulative Expenditures (cost shown includes benefits and overhead)**

<b>Institution</b>	<b>Current Expenditures 7/1/2018 – 7/31/2018</b>	<b>Cumulative Expenditures 10/1/2017 – 7/31/2018</b>
Rutgers, the State University of New Jersey	\$ 53,491.00	\$ 271,339.62
Bridge Intelligence LLC	\$ 2,860.00	\$ 17,920.53
New Jersey Institute of Technology	\$ 13,691.62	\$ 48,061.34

## **H. Subcontractor's Progress Report**

**Sub-recipient Name:** Bridge Intelligence LLC

**Subaward No:** 00000286

**Principal Investigator:** Hooman Parvardeh

**LTBP TSSC**

**Federal Contract # DTFH61-17-D00001**

**PROGRESS REPORT NO. 7**

**For the Period from 7/1/2018 through 7/31/2018**

## A. Accomplishments/Work Performed

The following is a complete account of all accomplishments and work performed on each task during this reporting period.

### Task 1: (Coordination and Meetings between the Rutgers and FHWA LTBP Team)

During this period, corresponded with two emails regarding communications with the FHWA team.

Number of hours during this period: 1 hours

This task is approximately 50% complete.

### Task 2: (Data Gap Analysis)

During this period, Mr. Parvardeh reached out to two states regarding maintenance data. These two states were Kentucky and Delaware. Kentucky uses BrM to collect their maintenance data and Delaware uses IBM Maximo. This is still early stage discussion.

Number of hours during this period: 11 hours

This task is approximately 55% complete.

### Task 3: (Communication)

During this period, Mr. Parvardeh performed the following tasks:

- Prepared and submitted monthly progress report to FHWA
- Updated the MS project file and submitted it to FHWA

Number of hours during this period: 10 hours

This task is approximately 60% complete.

## B. Work Anticipated During the Next Period

During the next period, Mr. Parvardeh will perform the following tasks:

- Set up, prepare, participate in the monthly conference call
- Prepare and submit minutes for the monthly conference call
- Support the LTBP Data Gap Analysis effort
- Prepare and submit monthly progress report

## C. Changes /Problems

None.

## D. Participants & charged Level of Efforts

Personnel Name	Role/Contribution	Total Hours	Billed Cost
Hooman Parvardeh	Principal	22	\$ 2,860.00

Below is a breakdown of level of effort per task:

Task 1	Task 2	Task 3
1 hr	11 hrs	10 hrs

## E. Travel

None.



**Sub-recipient Name:** New Jersey Institute of Technology

**Subaward No:** 00000290

**Principal Investigator:** Matthew P. Adams

**LTBP TSSC – Task Order 1**

**Federal Contract # DTFH61-17-D00001**

For the Period from 7/1/2018 through 7/31/2018

## A. Accomplishments/Work Performed

The following is a complete account of all accomplishments and work performed on each task during this reporting period.

### Task 2 Data Gap Analysis

The research group from NJIT met with several of the Rutgers University research group members to discuss methods to collect deterioration data on concrete bridge decks. The NJIT provided further information on petrography, the results that can be determined from using such analytical investigation methods, and the approximate costs for the work. The research team also provided further review on gaps in the literature surrounding corrosion damage and initiation.

Number of hours during this period: 139.75

## B. Work Anticipated During the Next Period

For the next period, the team at NJIT will continue to assist and work on directed documents as directed by Rutgers and FHWA.

## C. Changes /Problems

None.

## D. Participants & charged Level of Efforts

Personnel Name	Role/Contribution	Total Hours	Billed Cost
Aaron Strand	Technician	69.9	\$69/hour
Matthew Adams	Project Engineer	34.9	\$127/hour



Matthew Bandelt	Project Engineer	34.9	\$127/hour
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## E. Travel

None.