**Federal Contract # DTFH61-17D00001 – Task Order #2**

**LONG-TERM BRIDGE PERFORMANCE PROGRAM**

PROGRESS REPORT NO. 2

Report Period: November 1, 2017 – November 30, 2017

Prepared For:

**Federal Highway Administration**

Prepared By:



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

* 1. **Kickoff meetings between the contractor and FHWA**

The Rutgers team reached out to FHWA to set up a monthly conference call. The conference call will be held on December 19th.

* 1. **Develop LTBP Program bridge performance strategic research matrix**

Task 2.2: In November, work was begun on Task 2.2. This began with an internal kick-off meeting to organize and education the various individuals that will participate in the plan activities. In addition, work began on the initial stages of the following subtasks:

Task 2.2.2.1: Development of SRM Topics. Initial topics were developed and tabled for discussion with the research team.

Task 2.2.2.2: Development of Topic Organization and Hierarchy. Topic Organization was discussed along with Topic Hierarchy, and tables for further discussion with the research team.

Task 2.2.3.2: Study Selection Strategy and Task 2.2.3.4: Data Extraction Protocol. Initial work towards the development of data extraction form and desired content were drafted.

Task 2.2.3.3: Development of Study Quality Checklists. A draft quality scoring rubric was developed and discussed with the research team.

Project Engineer: 165 hours

Project Support: 13 hours

* 1. **Conduct training for all field personnel on LTBP Protocols**

After receiving approval on the draft outline of training curriculum from Dr. Zobel, the Rutgers team examined all the previous training materials and worked on revising the materials that required any revision.

* 1. **Development of data collection protocols and RABIT-CE operations manual**

The LTBP team initiated working on the different subtasks of Task 4, including long-term instrumentation protocol, legacy data mining (treated bridge deck), and RABIT-CE operational manuals. In the following, a detailed description for each subtask has been provided:

Task 4.2.1: Development of Short and Long Term Instrumentation Protocols: The previous protocols developed under LTBP program have been thoroughly reviewed and general work plan has been prepared for this subtask. Multiple conference calls have been made with Pennoni to finalize the work plan and reach a final subcontract agreement.

Task 4.2.2: Legacy Data Mining for Treated Bridge Decks: The previous protocols (Bridge Documentation (BD) & Legacy Data Mining (LD)), which were originally developed for untreated bridge deck, have been thoroughly reviewed. The required revisions, which are specified for treated bridge deck, were outlined. Multiple conference calls have been made with NJIT to finalize the work plan and reach a final subcontract agreement.

Task 4.2.3: Development of Operations Manual for Use, Maintenance, and Calibration of RABIT-CE NDE Data Collection System: As a starting point for the development of RABIT-CE operations manual, Rutgers team reviewed the operations manual developed under the Long-Term Pavement Performance (LTPP) program, and also the manual already drafted by Infratek Solutions. The LTPP manual was used as a guide in terms of outline and format. Multiple conference calls have been made with Infratek Solutions to finalize the work plan and reach a final subcontract agreement.

Staff Engineer: 16.5 hours

Project Support: 2 hours

* 1. **Legacy Data Mining data extraction**

The following tasks were accomplished for the month of November. The excel sheet that is being used to record all data from the bridge plan quantity take-off’s was given a complete overhaul to be more efficient and accurate for students collecting bridge data for LDM. This will ensure that less time will be needed to be spent on QA/AC when correcting and formatting data at the end of collection. Quantity take-offs of the bridge plans themselves have also begun. The actual extraction of data through these quantity take-offs will take the majority of the LDM project group’s effort in order to accomplish this task.

* 1. **Organize, conduct, and participate in LTBP workshops and meetings**

No work was performed for this task.

* 1. **Publications, website, communications, and technical assistance**

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

Staff Engineer: 8.25 hours

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

* 1. **Kickoff meetings between the contractor and FHWA**

The Rutgers team will conduct a meeting with FHWA on December 19th and submit the meeting minutes shortly after the meeting.

* 1. **Develop LTBP Program bridge performance strategic research matrix**

The Rutgers team is planning to investigate the automated routines for collecting literature source meta-data from online databases. This work falls under under Tasks 2.2.3.2 and 2.2.3.4. Further work to refine the task objectives, SRM topics, topic hierarchy (Tasks 2.2.1 and 2.2.1) will also be undertaken.

* 1. **Conduct training for all field personnel on LTBP Protocols**

The Rutgers team will finalize the revision of the training materials and submit them to FHWA.

* 1. **Development of data collection protocols and RABIT-CE operations manual**

During the next month work will continue on the development of the long-term instrumentation and legacy data mining (treated bridge decks) protocols together with the operations manual for Rabit CE.

* 1. **Legacy Data Mining data extraction**

The Rutgers team will continue with the quantity take-offs for the bridges, while also performing QA/QC to make sure that the content being recorded in the main excel file is of high quality. The team will continue to update the main excel sheet with minor improvements in order to increase efficiency.

* 1. **Organize, conduct, and participate in LTBP workshops and meetings**

No work is planned under this task for the next reporting period.

* 1. **Publications, website, communications, and technical assistance**

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. No work is planned related to the publications, website, or technical assistance portion of this task.

**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**

The following is a summary of how the work performed on the primary tasks of this task order contribute to meeting the FHWA, DOT, and LTBP program goals.

**Task 2 - Develop LTBP Program bridge performance strategic research matrix**

Fundamentally, the SRMs aim to link the LTBP program to the larger research community. By placing the LTBP efforts in this larger context, the program will be able to identify potential synergies and collaborative opportunities as well as any overlaps that may exist. This will both increase the cost effectiveness of the program as well as the program’s impact on bridge engineering practice through clearly showing how the LTBP program contributes to the overall bridge performance research landscape.

**Task 3 - Conduct training for all field personnel on LTBP Protocols**

At the heart of the LTBP program’s data collection effort is the requirement that data be obtained in a consistent and reliable manner across the breadth of the program. Variations in collection techniques or unreliable practices would pollute the data streams and greatly limit the ability of the program to meets its goal of improving our understanding of long-term bridge performance. Activities under this task aim to ensure that the data collection efforts of the LTBP program are executed by teams with the required expertise to obtain consistent and reliable data.

**Task 4 - Development of data collection protocols and RABIT-CE operations manual**

Similar to the training work being conducted under Task 3, this task is also involved in ensuring consistent and reliable data collection throughout the program. Specifically, this task will develop additional protocols and operations manuals that specify best-practice approaches for data collection.

**Task 5 - Legacy Data Mining data extraction**

In addition to ensuring consistent and reliable data collection efforts, the overarching goal of the program is also dependent upon the completeness of the data collection efforts. This task contributes to this through the collection of available legacy data. This data not only provides a means to ensure field data collection efforts are carried out efficiently (i.e. on bridges best suited to meeting the program’s goals) but also provides context to the data to help explain observed trends and correlations (and thus further our understanding of long-term bridge performance).

**E. Purchases and Rentals**

During this period, the Rutgers team purchased a Microsoft Project license for $75.

**F. Travel Details for Reporting Period**

No travel occurred during this reporting period.

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

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| --- | --- | --- |
| **Institution** | **Current Expenditures**  **10/1/2017 – 10/31/2017** | **Cumulative Expenditures**  **10/1/2017 – 10/31/2017** |
| Rutgers, the State University of New Jersey | $ 23,498.25 | $ 46,921.50 |