

Semi-Annual Progress Report

Project Number and Title: 3.7 Development of general guidelines on the effects of bridge span range and skew angle range on integral abutment bridges (IAB's)

Research Area: Trust 3: New systems for longevity and constructability

PI: Susan Faraji University of Massachusetts Lowell

Reporting Period: 01/01/2019~03/31/2019

Date: 3/29/2019

Overview:

Overview and summary of the activities performed over the past three months:

. I have been in contact with the Vermont Agency of Transportation, via, first, telephone calls and email exchanges, and then a conference call to discuss their research needs regarding IABs.

The conference call took place on January 28, 2019. The participants in the conference call were:

Dr. Emily Parkany, P.E. | Research Manager Vermont Agency of Transportation

Mr. James Lacroix, State Bridge Design Engineer Vermont Agency of Transportation

Ms. Kristin Higgins, Structures Manager Vermont Agency of Transportation

Dr. Ian Anderson, Research Engineer Vermont Agency of Transportation

Mr. Lacroix also serves as the project's champion.

The telephone calls and the email exchanges with Dr. Parkany and Mr. Lacroix are ongoing.

. I have been in contact with the Maine DOT, via, first, telephone calls and email exchanges, and then a conference call.

The conference call took place on February 6, 2019. The participants in the conference call were:

Mr. Dale Peabody, Maine DOT Director, Transportation Research

Mr. Garrett Gustafson, Senior Structural Engineer, Maine DOT

Ms. Laura Krusinski, Geotechnical Engineer, Maine DOT

The telephone calls and the email exchanges with Mr. Peabody are ongoing.

. I have been in constant contact with Massachusetts DOT, via telephone calls, email exchanges, and meetings with Mr. Alexander Bardow, State Bridge Engineer for the Massachusetts DOT.

. I have continued reviewing the most recent research papers on Integral Abutment Bridges (published over the past 10 years).

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. I have been reviewing the design guidelines for integral abutment bridges that have been provided to me by the Mass DOT, VTRans, and Maine DOT.

. I have been in communication with ADAPT Corporation and Intergraph Corporation, discussing with them the use of their software programs for the modeling of the bridges which I will be doing.

The above activities promote the achievement of the goals of the original proposed research project, along with the modifications based on the requests of the advisory board members and the research needs of a number of DOTs.

The goal of this research is to increase the longevity and improve the constructability of integral abutment bridges.

The conduct of this research will provide professional development opportunities leading to the publication of papers, presentations, training of students and new course offerings.

Participants and Collaborators:

. The organizations that are involved as partners in the project are the Vermont Agency of Transportation, the Maine DOT, and the Massachusetts DOT.

. The other collaborators and contacts that have been involved in the project include the software companies, ADAPT Corporation of Redwood City, California, and the Intergraph Corporation of Madison, Alabama.

. I am in the process of recruiting and interviewing candidates for the project's two student positions, one to be a UMass Lowell undergraduate in civil engineering and one to be a UMass Lowell doctoral student.

Changes:

. Not yet having engaged students to work on the project has slowed progress down somewhat. This will be resolved soon. As said above, I am in the process of recruiting and interviewing candidates for the project's two student positions.

. The order of priority of the topics to be studied has changed from that of the original proposed research project, based on the requests of the advisory board members and the research needs of a number of DOTs.

Planned Activities:

I plan to conduct the following tasks in the next 6 months.

. A study of how the Roadway Profile Grade affects the performance of IAB bridges.

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The study will be done using the GTStrudl finite element software. The bridge that will serve as the sample bridge for this study (Bridge 38 in the town of Bethel, Vermont) has been selected by Vermont Agency of Transportation.

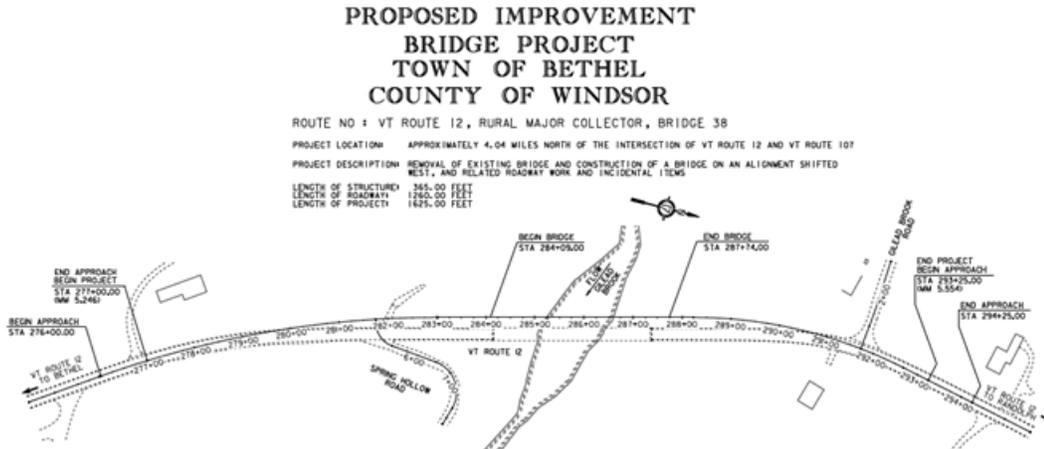


Fig.1 Sample Bridge (Bridge 38 Bethel Vermont)

. A study of the design of integral abutments with short piles. A sample bridge will be provided by Massachusetts DOT.

. A study of the issues related to the effect of skew on integral abutment bridges. A sample bridge will be provided by Vermont Agency of Transportation. More detail will follow.