

NJDOT Bureau of Research
 QUARTERLY PROGRESS REPORT
 Date of report: January 18, 2010
 Reporting period: October 1, 2009 to December 31, 2009

Project Title:	Seismic Design Considerations		
RFP NUMBER: 2008-09	NJDOT RESEARCH PROJECT MANAGER: Nazhat Aboobaker		
TASK ORDER NUMBER/Study Number: Task Order # 32	PRINCIPAL INVESTIGATOR: Anil K. Agrawal		
Project Starting: 01/01/2008 Project Ending Date: 07/30/2010	Period Starting Date: 10/01/2009 Period Ending Date: 12/31/2009		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
<i>Phase I – Literature Search</i>				
Task 9: Seismic Soil Classification Map of NJ	32		100	32
Task 3: Importance Classification of New Jersey Bridges	3		100	3
Task 2: Development of Examples Illustrating Design Recommendations.	26	25	35	9.1
Task 1: Design Guidelines for New Bridges (SDC Maps)	9	10	100	9
Task 4: Development of Design Recommendations for Seismic Retrofit of Existing Bridges	26	10	10	2.6
Task 8: Final Report	4			
Implementation				
TOTAL	100%	35	345	64.7

Project Objectives:

Objectives of this project are:

- To develop a seismic soil map for the New Jersey State by analyzing soil boring data from Geotechnical Database Management System (GDMS).
- Develop seismic design category map for New Jersey using the seismic soil map.
- Develop liquefaction analysis map for the State of New Jersey using soil boring data from the GDMS and the seismic soil map.
- Develop examples illustrating applications of 2007 AASHTO Seismic Guide Specifications for Bridges.
- Develop criteria to classify bridges among critical and essential classes, and performance requirements for bridges in these classes.
- Modify guidelines for existing bridges to conform with design guidelines for new bridges as 2007 AASHTO Seismic Guide Specifications.

Project Abstract:

New Jersey Department of Transportation has recently adopted the 2007 AASHTO Seismic Guide Specifications for the design of new bridges. NJDOT has also adopted 2006 FHWA Seismic Retrofitting Manual for Highway Structures for the retrofit of existing bridges in New Jersey.

While 2007 Seismic Guide Specifications present minimum design specifications for ordinary new bridges, a majority of bridges in New Jersey are either critical or essential. Appropriate criteria for classification of bridge into these two categories and performance criteria for these two categories need to be developed for adopting 2007 Seismic Guide Specifications. NJDOT also maintains a vast amount of soil boring data into the Geotechnical Database Management System (GDMS). These data can be used to develop seismic soil map for New Jersey, which can simplify seismic design of both new and existing bridges. The soil boring data can also be used to develop liquefaction map for the New Jersey state so that repetitive liquefaction analysis can be avoided. This project will address these issues by achieving the objectives described earlier.

1. Progress this quarter by task:

Progress on Task 9: Task 9 has been completed. Following the discussion in the meeting in December 2009 with research panel, final revisions to the task report are being done.

Progress on Task 3: This task, including the technical memorandum, on the task has been completed during this quarter. During December 2009, research panel asked the justification for three importance classes for bridges (critical, essential and standard). The data for this decision will depend on outcome of Task 2 to determine the level of inelastic behavior in bridge components. Feedback on this aspect will be provided to NJDOT around March 2010.

Progress on Task 1: The research team has completed SDC maps for new bridges in critical, essential and ordinary bridge categories. Work on technical memorandum and revisions to some of the maps are underway.

Progress on Task 2: Four examples to illustrate the design of new bridges were selected previously. Two examples have been completed and submitted to NJDOT. The third example is going to be finished in January. NJDOT has to provide remaining two examples.

Progress on Task 4: Further progress on this task will be made after discussions with NJDOT in February.

2. Proposed activities for next quarter by task:

- Finalize Technical Memorandum on Task 1
- Finish Task 2
- Finish Task 4.

3. List of deliverables provided in this quarter by task (product date): Technical Memorandum of Tasks 3 and 9

4. Progress on Implementation and Training Activities: **None**

5. Problems/Proposed Solutions: **None**

6. Budget Summary:

Total Project Budget:	\$450,000
Modified Contract Amount	
Total Project Expenditure to Date	\$271,587 (Doesn't include pending invoices)
% of Total Project Budget Expended	60.35%