

Request for Proposal

Liquefaction Potential & Post-Earthquake Stability Assessment (CEEn-2016CPST-013)

1. Introduction

- Liquefaction Potential & Post-Earthquake Stability Assessment
- Project ID: CEEn-2016CPST-013
- AECOM is one of the world's top multi-discipline engineering design firms. Focusing on using engineering solutions to solve complex challenges, AECOM has expertise in every field of civil engineering, as well as understanding as to how these challenges and solutions affect people around the globe.
- In order to accommodate the new Bus Rapid Transit (BRT) route in Provo and Orem, UT, many roads and bridges must be adjusted. One of these bridges in Provo is being widened to add more lanes. AECOM's geotechnical group in Salt Lake City is responsible for the foundation design of the bridge and an analysis of any seismic hazards at the site. The Capstone project will present a soil profile and evaluate any earthquake liquefaction potential at the site.

2. Project Description and Scope of Services

- Project Outline
 - New BRT route in Provo and Orem requires reconstruction of many roadway, pavement, and bridge facilities
 - AECOM has been hired to perform geotechnical engineering analysis and design along the route
 - This includes subsurface exploration, borrow and excavation, embankments, retaining walls, foundation design and seismic hazard analysis
 - Capstone Team has been given the task of seismic hazard analysis, more specifically, liquefaction potential evaluation
 - The analysis is only to be done at one site, located at on University Pkwy. in Provo, between Freedom Blvd. and 550 West, where the road crosses over the Provo River. The site will be referred to as the Provo River Bridge Site
 - The potential for strong ground motion at the Provo River Bridge site is anticipated to be high due to the site's proximity to known nearby faults

- Description of requirements
 - Provided materials are as follows:
 - AECOM boring logs (SPT and CPT)
 - RB&G boring logs (SPT)
 - Map of boring log locations
 - Provo River Bridge structural plans (for reference, not needed in liquefaction potential analysis)
 - From these materials, it is desired that a cross section of the soil stratigraphy of the site be produced
 - Correlations from the boring logs will be made to determine the material type at depth
 - Drilling notes and observations should also be used in determining the soil profile
 - An analysis of the liquefaction potential of the site must be completed
 - Research will need to be done to learn an appropriate procedure for these calculations
 - Correlations will need to be made to the SPT and CPT borings
 - An analysis of the lateral spread hazard based on the liquefaction potential results may be added to the scope of work if there is time remaining

- Final product must meet or exceed project criteria as desired above

3. Outcome and Performance Standards

- Include the following statement in this section of the proposal
 - “Our student team will provide the work for this Capstone project “as is”. Our results cannot be construed as work provided by licensed professionals and cannot be used as “stamped deliverables” without first being reviewed, approved and stamped by a qualified license professional engineer.”

4. Deliverables

- Deliverable specifications
 - Soil cross section drawings
 - Should have multiple drawings showing the soil stratigraphy of the site
 - Drawn professionally, using software such as AutoCAD
 - Reference SPT and CPT logs, but also use engineering judgement to determine how the cross sections are laid out
 - Report on the liquefaction potential of the site
 - Use the previously mentioned soil cross sections as the basis for liquefaction calculations
 - Results will be included in the final report
 - Make inferences to the meaning of your findings, also use judgement to make any recommendations based on results
- Minimum required deliverables
 - Short monthly status reports documenting challenges, solutions & progress
 - Answers to 4 questions
 - What challenges have your team encountered in your Capstone project?
 - What actions did your team decided to do to overcome these challenges?
 - Any progress in overcoming these challenges?
 - Summarize the current status of your Capstone Project
 - Did challenges negatively impact the progress of your project?
 - A final report with results of your analysis for the project that include economic and environmental considerations
 - If planned ahead and done properly, proposal and monthly status reports can provide a significant portion of the information for the final report
 - i.e. Incorporate status reports in final report as project progresses to reduce work load on final report
 - A poster reflecting a summary of your project to be presented to student, faculty and other interested individuals in the final undergraduate seminar
 - A presentation summarizing your project to be presented to your sponsor
- Before the end of winter semester both a presentation to sponsors and poster session for students, faculty and other interested people will be organized.
- All deliverables are tentatively due Monday April 10th.

5. Contractual Terms and Conditions

- Contract type: Non-monetary compensation with all project work on a “best effort” basis
- Term: Team members are to spend 8 hours/week/student with at least 3 hours/week working together. Class time or time spent on class assignments counts toward these hours
- Each project team consists of
 - A project manager/mentor: A graduate student who does not perform technical work on the project. He/she guides, facilitates and directs the team toward successful completion of the project by achieving customer objectives, adhering to schedule/time/cost, and promoting team unity.
 - A project team lead: An undergraduate student team member who serves as the team’s spokesperson and liaison among the team, its project manager, sponsor, faculty advisor and Capstone Committee advisors
 - Two project team members/task leads who may be assigned to take lead on certain aspects of the project in addition to the project team lead. All team members, including project team lead, are to assist one another on each member’s specific task assignments
 - One can take lead on analysis or data gathering, another on design/drawings, data interpretations etc.

6. Grading Procedure

- Project work to be graded by graduate student mentors/project managers with potential additional inputs from sponsors, Capstone Committee members and faculty advisors
- Grading criteria
 - Team work and unity
 - Project proposal
 - Project Management Plan (PMP)
 - Monthly status report
 - Final report, poster, and presentation
 - Customer satisfaction in satisfying project objectives and required deliverables

7. Submittal Requirements for the Proposal

- RFP availability: Monday, October 24, 2016 at 4:00 pm MDT
- Proposal deadline: Monday, November 7, 2016 at 4:00 pm MDT
 - Three copies of proposals in accordance with guidelines & formats specified in the proposal template (to be available by Monday 10/24/2016)
- Minimum requirements for the proposal (each section must start on a new page. Details and formats will be provided in the standardize proposal template)
 - Cover page
 - Letter of submittal / introduction
 - Executive summary (one page or less)
 - Work plan
 - Proposed approach, including innovative ideas, to complete the project
 - Weekly project work schedule for individual team members
 - Weekly team work/meeting schedule
 - Section identifying necessary tools, data, equipment, etc. with brief explanations
 - Project schedule including important milestones
 - Engineering budget: Estimated hours for each phase/element of the proposed work plan
 - Outcome and Performance Standards
 - List of outside consultants (faculty, Capstone Committee member etc.) necessary for this project
 - Statement of qualifications
 - Background, experience, education and organizational structure of the team
 - Team member assignments
 - Team member collaboration plan: (How will team work together seamlessly)
 - Appendices
 - Appendix A: 1 page resume for each team member
 - Appendix B, C, etc. as necessary
- Review committee reserves the right to reject any proposal or presentation that is not submitted in a timely fashion or in accordance with instructions and requirements in this RFP

8. Contacts

- Graduate Student Mentor: Tyler Coutu
 - Phone: 651-302-3425
 - Email: tbcoutu@gmail.com
- Sponsoring agency, AECOM Contacts
 - Robert Snow, Geotechnical Engineer
 - Phone: 801-904-4048
 - Email: robert.w.snow@aecom.com
 - Amy Fredrickson, Graduate Geotechnical Engineer
 - Phone: 801-904-4053
 - Email: amy.fredrickson@aecom.com

9. Proposal Evaluation Criteria

- Proposal will be evaluated by graduate student mentor/project manager in accordance with the following rubric, with inputs from project sponsor, Capstone Committee member and potentially faculty advisor.

Timeliness - 1 pt off per full hour late, up to 5.	5
Grammar/Spelling - 1 pt off per blatant error, up to 5.	5
Cover Page - Title, Data, Sponsor, Team Name, Team Members, Department of Civil & Environmental Engineering, Ira A. Fulton College of Engineering and Technology, Brigham Young University - 1 pt per piece of information included.	6
Cover Letter - brief letter of introduction that 1) states your intent to propose and 2) how you may be contacted.	6
Executive Summary 3/4 to 1 page that summarizes the contents of your proposal	12
Team Abilities Summary as a team of 1) relevant courses and experience, 2) abilities to complete the work on time and in a professional manner, 3) including use of specific engineering tools/software. Include résumés.	12
Key Personnel - 1) Identify which individuals will focus on which pieces of your potential tasks, and 2) some kind of organizational chart or visual describing how you will work together as a team.	12
Project Understanding - 1) Did they address specific items mentioned in the RFP? 2) Do they repeat basic background in somewhat new terms to <i>demonstrate their understanding</i> of the project? 3) Do they mention key deliverables they may need to provide? 4) Did they articulate a <i>specific</i> approach for developing design alternatives and deliverables? 6 pts max per piece.	24
Formatting - Does it look professional? Consistent?	6
Concise vs. Wordy , Meaningful vs. Fluffy, repetitive wording. 6 pts means concise, and accurate, and specific. 1 pt means often confusing, wordy, or vague.	6
Clear and professional flow of writing and style. 6 pts means that you would feel comfortable handing this in if it were your own; it is easy to read and understand; feels professional; 1 pt means it feels like it was cut-pasted, rushed, and done with little thought; hard to read; feels like a high school essay.	6
Total	100