

PEER Blind Prediction Contest of Shaking Table Test on a Shallow Foundation in Liquefied Soil

1. All information and details regarding the blind prediction contest can be found in the following web site: <https://peer.berkeley.edu/news-and-events/blind-prediction-contest-2018>
2. Contestants may consist of individuals or teams.
3. An individual can only be involved in a single team.
4. If an individual is part of a team, the individual cannot participate in the competition separately as an individual.
5. The individual or team must use the contest submittal spreadsheet and input values as follows:
 - a. Time histories of absolute settlement values at four free-field locations shown on Fig. 1 using red circles named FF1, FF2, FF3, and FF4. They are all located at the ground surface ($z=0$, see Fig. 2 for the definition of z). Their exact locations at the ground surface within the laminar soil box are indicated in Fig. 1.
 - b. Absolute settlement values at four foundation locations shown on Fig. 1 using blue squares named FD1, FD2, FD3, and FD4. They are all located at the foundation surface. Their exact locations at the foundation surface ($z=0$) are indicated this figure. FD1 and FD4 are located 3.81 cm from the foundation edge, while FD2 and FD3 are located 7.62 cm from the foundation edge.
 - c. Sign convention for all the settlement predictions are presented in Fig. 2.
 - d. If a team decides to use two-dimensional (2D) model for this blind prediction, the number of free-field settlement predictions is reduced to two. Similarly, the foundation settlement predictions is reduced to three.
 - e. In addition to the settlement time histories, the teams should report the permanent settlements calculated at 80 seconds at each location. The predicted permanent settlements will be used to evaluate the results as described in items 10 and 11 in this document.
 - f. The predicted settlement values should be reported in centimeter units to one (1) place beyond the decimal point.
6. Acceleration measured on the table is provided to the contestants in units of g without filtering. This acceleration should be used as input to the developed analytical models.

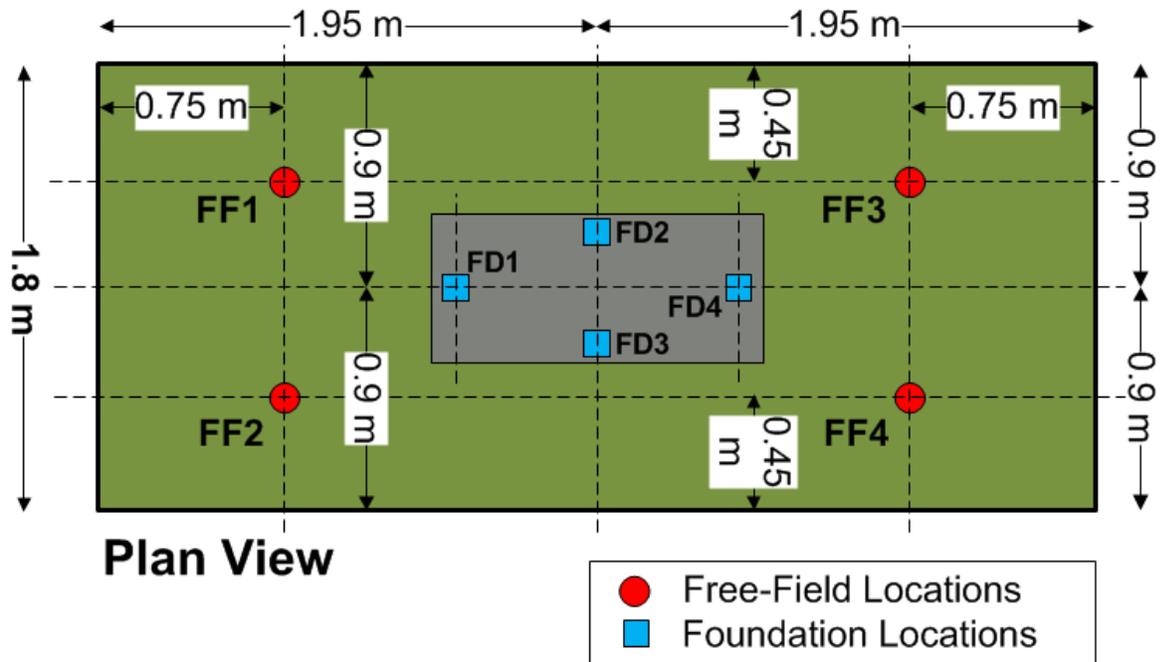


Fig. 1: Locations of prediction points

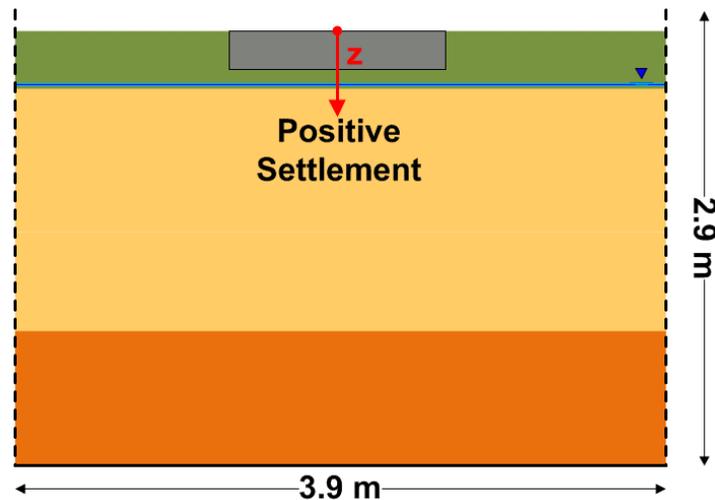


Fig. 2: Sign convention for settlement values

7. Except for top three winners, all submittals will be kept anonymous.
8. Contestants should submit their results by December 16, 2018. Winner will be notified by December 21, 2018.
9. Along with the predictions, contestants should submit a technical report of 3-5 pages electronically as a pdf document in ASCE journal format. Contents of the report may include text, figures and tables that describe the model, utilized software platform,

materials, elements, solution algorithms, assumptions, discussion of the analysis results, and summary of key results beyond those in the spreadsheet. ASCE Journal format can be downloaded from the Submission Format tab.

10. The following system will be used to quantify the blind prediction accuracy. Teams or individuals are requested to predict eight quantities, which are permanent settlements, (or five if modeled in 2D) listed in the provided spreadsheet (submittalspreadsheet.xlsx). The prediction error is quantified using the root-mean-square error (RMSE) as follows:

$$RMSE = \frac{\sqrt{\sum(x_i - x)^2}}{n}$$

where x_i is the predicted value, x is the measured value and n is the number of predictions. The measured permanent settlements are recorded at 80 seconds.

11. The following system will be used to judge the winner. Teams or individuals are requested to predict the eight quantities (permanent settlements) listed in the provided spreadsheet (submittalspreadsheet.xlsx). Error is defined using RMSE described above.
- The team or individual with the lowest RMSE will be ranked 1st and declared as the winner of the blind prediction.
 - The team or individual with the second lowest RMSE will be ranked 2nd
 - The team or individual with the third lowest RMSE will be ranked 3rd

Award will be given in a special ceremony at the 2019 PEER Annual Meeting.

12. A representative of the winning team will be invited to the 2019 PEER Annual Meeting that will be held in the UCLA campus, January 17-18, 2019, with reasonable amount of travel expenses covered. The representative will be asked to make a short presentation on the techniques used (model and analysis) in making the winning predictions.
13. Questions about the blind prediction contest or details of the ground and foundation model or input ground motion can be submitted to (e-mail address: peer_center@berkeley.edu) until November 9, 2018. Questions and answers will be posted on the web site <https://peer.berkeley.edu/news-and-events/blind-prediction-contest-2018> under the *Notification* tab and will be updated twice per week.
14. Teams from the UNR and UCSD experimental research teams are not allowed to participate.