

APR1400

Feedback on Advanced Response to RAI 255-8285, Question 03.08.05-16, Part c.3

Prepared July 25, 2016

The staff requests that the items identified below be clarified regarding Part c.3 of this RAI question. For the remaining parts of this RAI, feedback was already provided by the NRC during the audit conducted the week of June 20, 2016.

(1) The figure provided presents the horizontal displacement as a function of depth due to a horizontal unit pressure load applied at the surface. Explain why the lateral displacement between a height of 15 and 30 (the units for height are not shown) is constant rather than varying as a function of depth. Also identify the units of displacement and the units of the height shown in the figure.

KHNP INPUT

The foundation media model used for horizontal displacement was consisted of 3 solid FE elements above 45ft elevation (bottom of NI common basemat) as shown in Figure 1. The graph in RAI 255-8285 Question 03.08.05-16 is made by displacement at each node and simplified. Also, as shown Figure 1 and Table 2-3 from technical report, APR1400-E-S-NR-14006-P, Rev1, the site properties at El. 75ft is changed to second layer properties. Due to above-explanation, the height of 15 and 30 seems to be constant.

In the graph, the units of displacement and height are feet.

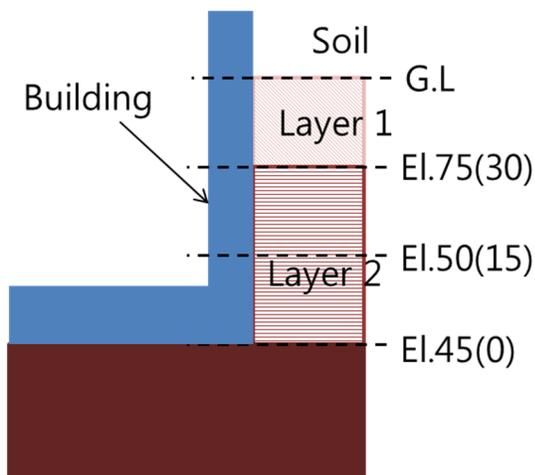


Figure 1 The schematic figure related with horizontal displacement

(2) Another figure was shown during the audit that identifies the location of the horizontal springs used in the NI common basemat model. This figure only shows horizontal springs along the vertical edge of the basemat (not embedded walls). This figure should be included in the RAI response. Explain whether horizontal springs were also located beneath the basemat, which is not shown in the figure, and if not, why. Lastly, explain the effect of including horizontal springs along the vertical edge of the basemat and not including springs along the embedded walls below grade.

KHNP INPUT

Another figure was shown during audit will be included in the revised RAI response. The horizontal springs are not located beneath the basemat. These are only located along the vertical side surface of the basemat as shown another figure since these are enough to sustain the horizontal forces. The soil spring was only used for static loading case (load combinations except seismic load).

In the static load analysis, the horizontal springs along the embedded walls are not considered due to the uncertainty of passive soil pressure and the horizontal forces are not dominant for analysis. Also, the location of input loads for NI common basemat analysis is the top of basematt (El. 55ft for AB, EL.78ft for RCB) and superstructure is to consider the effect of the stiffness of superstructure.