July 30, 2010
Project No. 401426002

Mr. Jeffrey Kingston
Chabot-Las Positas Community College District
5020 Franklin Drive
Pleasanton, California 94588

Subject: Update to Geotechnical Evaluation Report
Student Services and Administration Building
Las Positas College
Livermore, California

Dear Mr. Kingston:

In accordance with your request, we have reviewed the geotechnical evaluation report we prepared for the subject project dated November 3, 2009 (referenced) with respect to the revised Soils and Foundations (Chapter 18A) guidelines of the recently published 2010 California Building Code (CBC). The purpose of our review is to update our referenced 2009 geotechnical evaluation to be in compliance with the 2010 CBC.

Our review indicates that the referenced geotechnical evaluation report is in substantial compliance with the requirements of 2010 CBC except for the site-specific acceleration response spectra (Figure 7 of the referenced report). The response spectra presented on Figure 7 were based on the guidelines of 2007 CBC and American Society for Civil Engineers (ASCE) Standard 7-05 (2006). The attenuation relations used to develop the deterministic and probabilistic spectra were Abrahamson and Silva (1997), Sadigh et al. (1997) and Campbell (1997). The 2010 CBC, however, requires that the Next Generation Attenuation (NGA) relations be used while evaluating site-specific ground motion. Accordingly, we have revised the site-specific response spectra. The NGA relations we used for developing the deterministic and probabilistic spectra are by Chiou and Youngs (2008), Campbell and Bozorgnia (2008) and Boore and Atkinson (2008). The probabilistic seismic hazard analysis (PSHA) performed using the NGA relations considered the maximum rotated component of the ground motion. The deterministic seismic hazard analysis (DSHA) performed using the NGA relations incorporated the 84th percentile of the maximum rotated component of ground motion. The revised site-

specific acceleration response spectra are attached (Figure 7). These response spectra should supersede the ones presented in our referenced geotechnical evaluation report. As indicated above, the referenced report should be considered in compliance with 2010 CBC upon incorporation of the attached site-specific response spectra.

We appreciate the opportunity to be of continued service on this project.

Respectfully submitted,
NINYO & MOORE

Mun-Ho Lee
Senior Staff Engineer

Soumitra Guha, Ph.D., G.E.
Principal Engineer

MHL/SG/dhi

Attachment: Figure 7: Acceleration Response Spectra

Distribution: (1) Addressee (via-email)
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REFERENCES

Abrahamson, N.A., and Silva, W., 1997, Empirical Response Spectral Attenuation Relations for Shallow Crustal Earthquakes, Seismological Research Letters, Vol. 68, No. 1, dated: January/February.

American Society of Civil Engineers, 2006, Minimum Design Loads for Buildings and Other Structures, ASCE Standard 7-05, dated January 1.

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California Building Standards Commission, 2010, California Building Code (CBC): California Code of Regulations, Title 24, Part 2, Volumes 1 and 2.

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Campbell, K.W., and Bozorgnia, Y., 2008, NGA Ground Motion Model for the Geometric Mean Horizontal Component of PGA, PGV, PGD and 5% Damped Linear Elastic Response Spectra for Periods Ranging from 0.01 to 10 s, Earthquake Spectra Volume 24, Issue 1, pp. 139-172, dated February.

Chiou, B. S.-J., and Youngs, R.R., 2008, An NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra, Earthquake Spectra Volume 24, Issue 1, pp. 173-216, dated February.

Ninyo & Moore, 2009, Geotechnical Evaluation, Student Services and Administration Building, Livermore, California, Project No. 401426002, dated November 3.

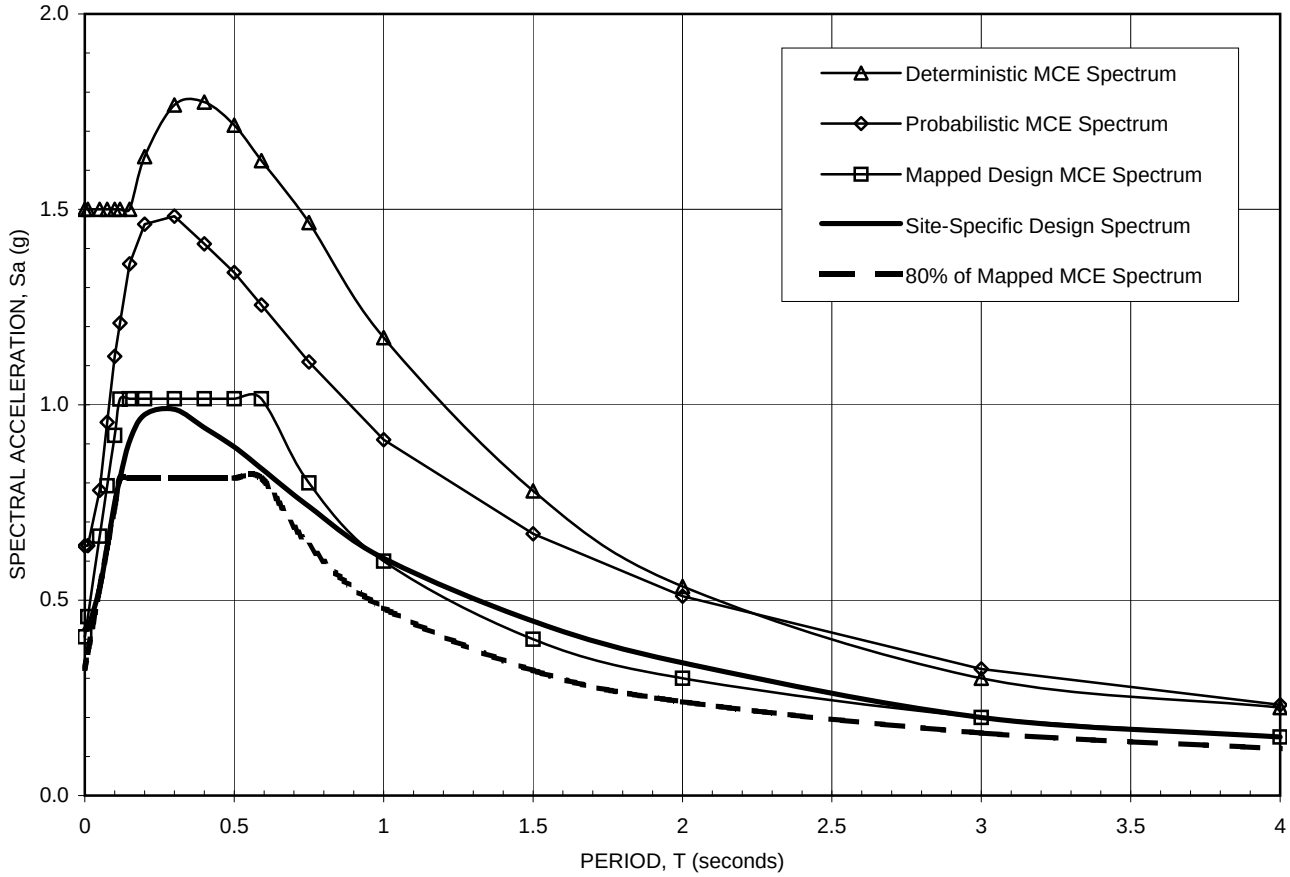
Sadigh, K., Chang, C.Y., Egan, J.A., Makdisi, F., and Youngs, R.R., 1997, Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data, Seismological Research Letters, Volume 68, Number 1, January/February.

United States Geological Survey and Southern California Earthquake Center, 2010, Open Seismic Hazard Analysis, http://www.opensha.org/.

United States Geological Survey, 2009, Java Ground Motion Parameter Calculator, Version 5.0.9a Website Seismic Design Values for Buildings, http://earthquake.usgs.gov/research/hazmaps/design/, dated October 21.

PERIOD (seconds)	SITE-SPECIFIC DESIGN RESPONSE SPECTRUM Sa, (g)
0.000	0.426
0.010	0.426
0.050	0.531
0.075	0.637
0.100	0.749
0.118	0.811
0.150	0.907
0.200	0.975
0.300	0.988

PERIOD (seconds)	SITE-SPECIFIC DESIGN RESPONSE SPECTRUM Sa, (g)
0.400	0.941
0.500	0.892
0.591	0.837
0.750	0.740
1.000	0.607
1.500	0.446
2.000	0.340
3.000	0.200
4.000	0.150



NOTES:

1 Probabilistic Acceleration Response Spectrum (ARS) is for Maximum Considered Earthquake (MCE) with ground motion having 2% probability of exceedance In 50 years using Chiou & Youngs (2008), Campbell & Bozorgnia (2008), and Boore & Atkinson (2008) attenuation relationships.

2 Deterministic ARS is 84th percentile of the median values from attenuation relationships by Chiou & Youngs (2008), Campbell & Bozorgnia (2008), and Boore & Atkinson (2008) for deep soils considering a Mw 6.6 event on Mount Diablo Thrust fault located approximately 1.8 miles from the site. Deterministic ARS conforms with the lower bound limit per ASCE 7-05 Section 21.2.2.

3 Site-Specific Design ARS is the lesser of spectral ordinates of deterministic and probabilistic ARS at each period per ASCE 7-05 Section 21.2.3. Site-Specific Design ARS conforms with lower bound limit per ASCE 7-05 Section 21.3.

4 Mapped Design ARS is computed from mapped spectral ordinates modified for Site Class D (stiff soil profile) per ASCE 7-05 Section 11.4. It is presented for comparison.

5 ARS curves for horizontal ground motion assume 5% damping and do not include response modification factor or importance factor.

Ninyo & Moore	ACCELERATION RESPONSE SPECTRA	FIGURE
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