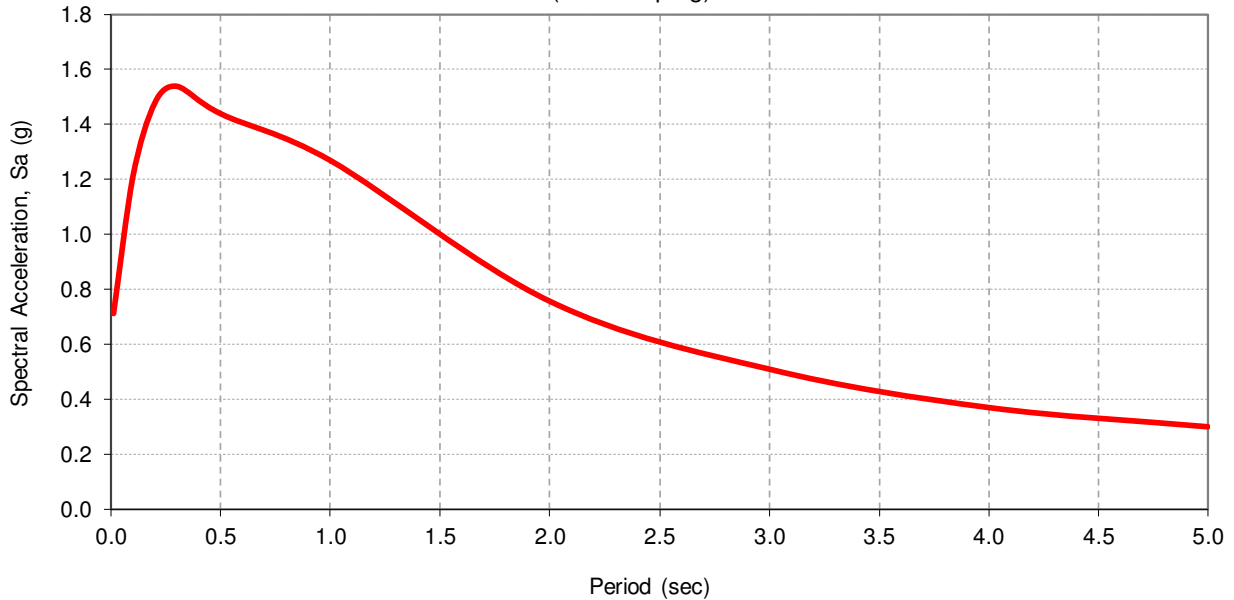


RECOMMENDED ACCELERATION RESPONSE SPECTRUM (5% Damping)



Site Information

Latitude: 37.4934
 Longitude -122.4598
 V_{S30} (m/s) = 290
 $Z_{1.0}$ (m) = N/A
 $Z_{2.5}$ (km) = N/A
 Near Fault Factor, Derived from Caltrans ARS. Dist (km) = 5.65

Governing Curve:

Caltrans Online Probabilistic ARS

Recommended Response Spectrum

Period (sec)	Caltrans Online Probabilistic Spectral Acceleration (g)	Adjusted for Near Fault Effect	Adjusted For Basin Effect	Final Adjusted Spectral Acceleration (g)
0.0	0.712	1	1	0.712
0.1	1.208	1	1	1.208
0.2	1.481	1	1	1.481
0.3	1.538	1	1	1.538
0.5	1.438	1	1	1.438
1.0	1.058	1.2	1	1.270
2.0	0.63	1.2	1	0.756
3.0	0.425	1.2	1	0.510
4.0	0.309	1.2	1	0.371
5.0	0.25	1.2	1	0.300

Source:

1. Caltrans ARS Online tool (V.2.3.09, http://dap3.dot.ca.gov/ARS_Online/)
2. Caltrans Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012



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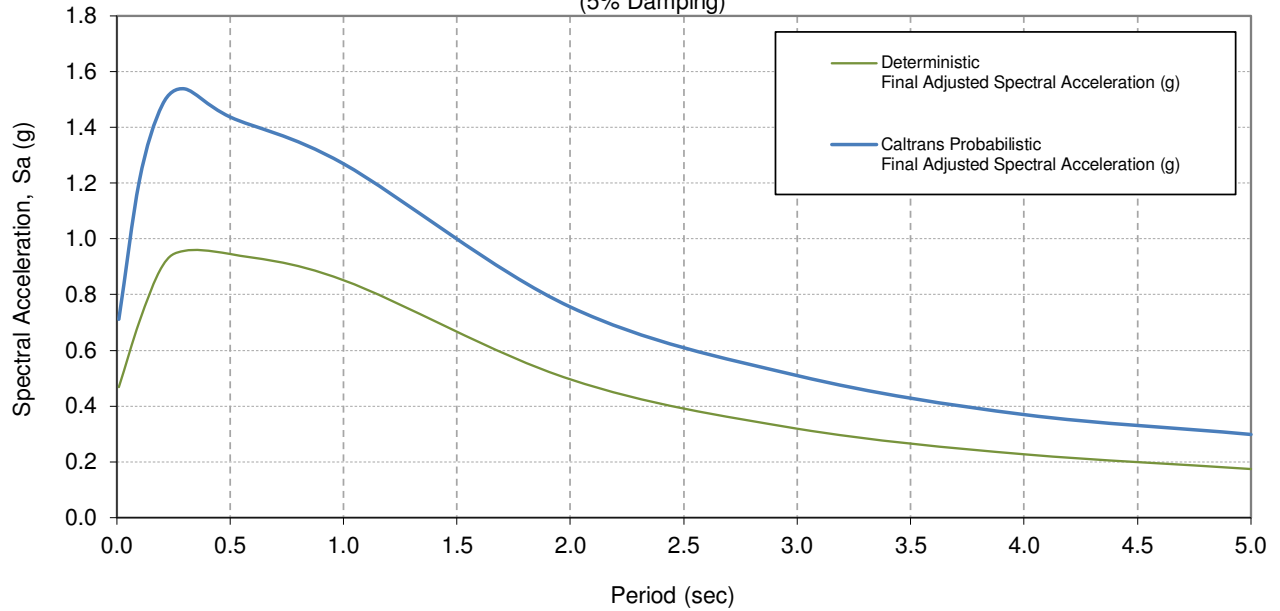
Project No.: 2019-147-GEO

Plate No.: IV-A

ACCELERATION RESPONSE SPECTRUM COMPARISON

(Deterministic & Probabilistic Curves)

(5% Damping)



Site Information

Latitude: 37.4934
 Longitude: -122.4598
 V_{S30} (m/s) = 290
 $Z_{1.0}$ (m) = N/A
 $Z_{2.5}$ (km) = N/A
 Near Fault Factor, Derived from USGS Deagg. Dist (km) = 5.65

Period (sec)	Deterministic Final Adjusted Spectral Acceleration (g)	Caltrans Probabilistic Final Adjusted Spectral Acceleration (g)
0.0	0.470	0.712
0.1	0.703	1.208
0.2	0.902	1.481
0.3	0.958	1.538
0.5	0.946	1.438
1.0	0.853	1.270
2.0	0.496	0.756
3.0	0.320	0.510
4.0	0.228	0.371
5.0	0.176	0.300

Source:

1. Caltrans ARS Online tool (V.2.3.09, http://dap3.dot.ca.gov/ARS_Online/)
2. Caltrans Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012



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Project No.: 2019-147-GEO

Plate No.: IV-B