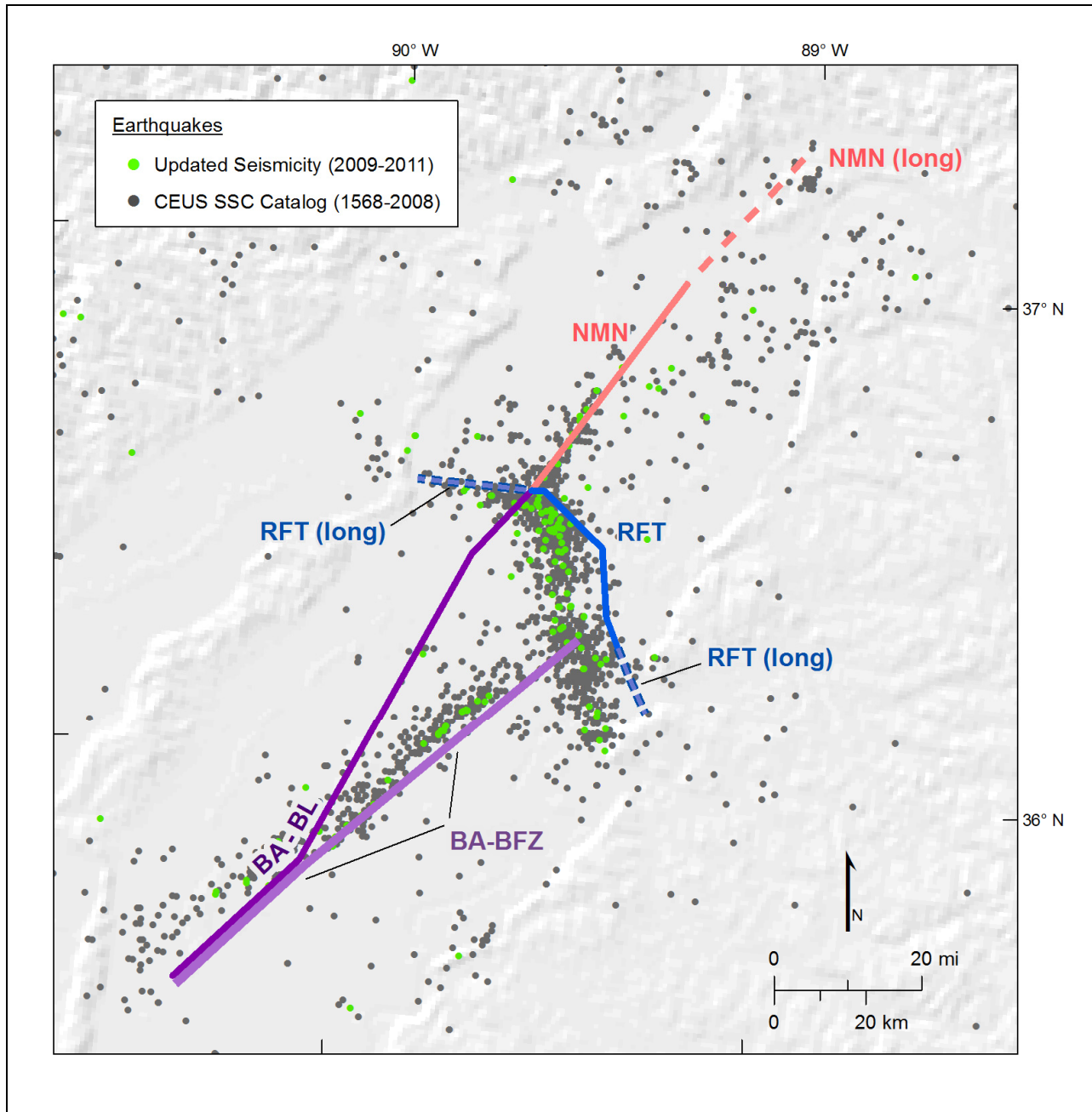


NAPS COL 2.0-27-A    Figure 2.5.2-226    Elements of the New Madrid Fault System (NMFS)  
NAPS ESP VAR 2.0-4    RLME (Modified After Figure 6.1.5-4 of CEUS SSC  
Report)



NOTE: Individual fault segments are the New Madrid North fault (NMN), the Reelfoot thrust (RFT), the Blytheville arch (BA), the Bootheel Lineament (BL), and the Blytheville fault zone (BFZ). Seismicity includes mainshocks and dependent events of  $E[M] \geq 2.2$ . Fault geometries modified after [Reference 2.5-223](#).





Figure 2.5.2-229 Distribution of Seismicity from the Updated CEUS SSC Report Earthquake Catalog Illustrating Areas of Elevated Seismicity Described in the Text, Along with CEUS SSC Report Seismotectonic Source Zones (Modified from Figure 7.1-1 of Reference 2.5-223)

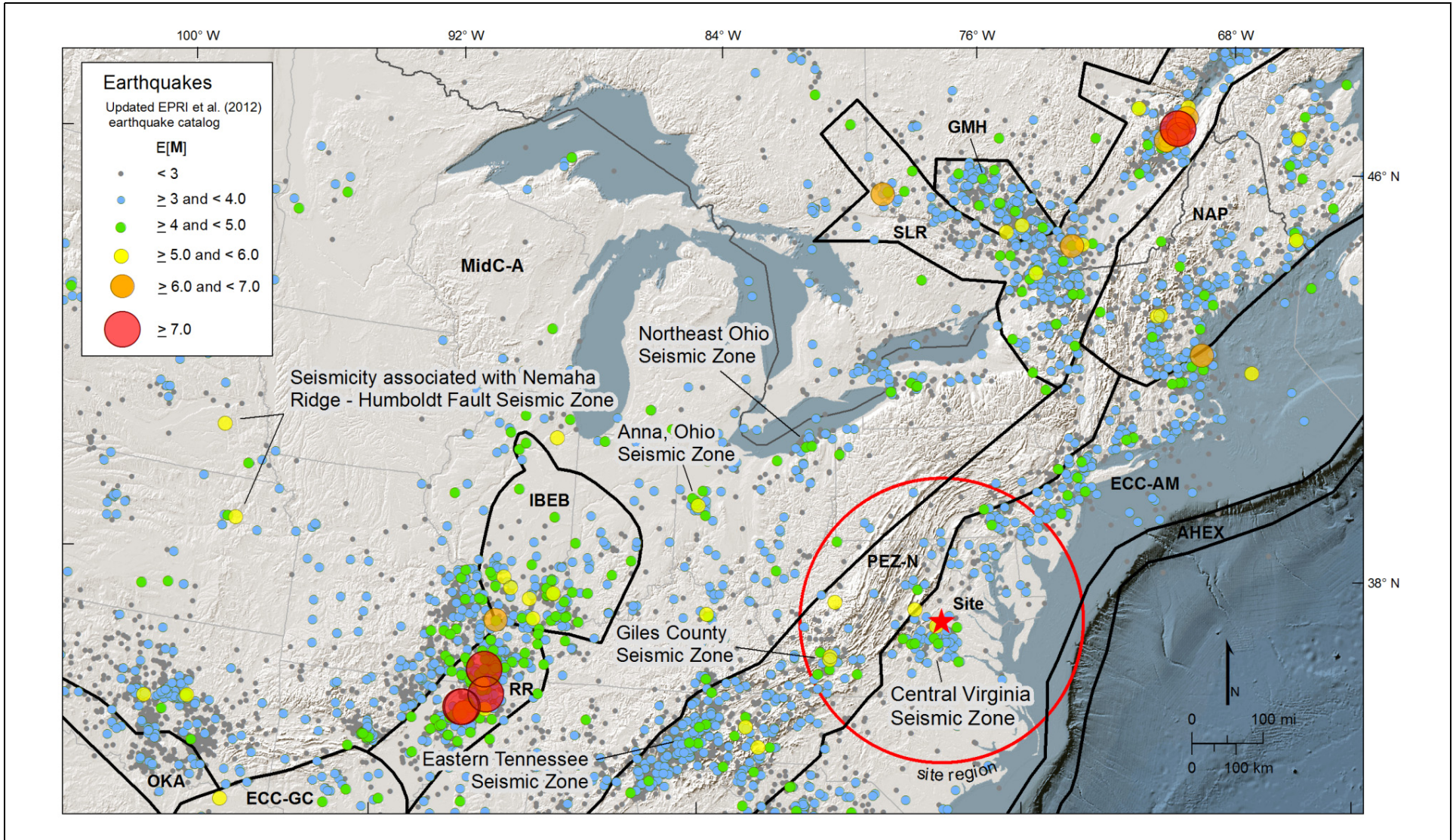


Figure 2.5.2-230 Mean and Fractile Rock Hazard Curves for 0.5 Hz

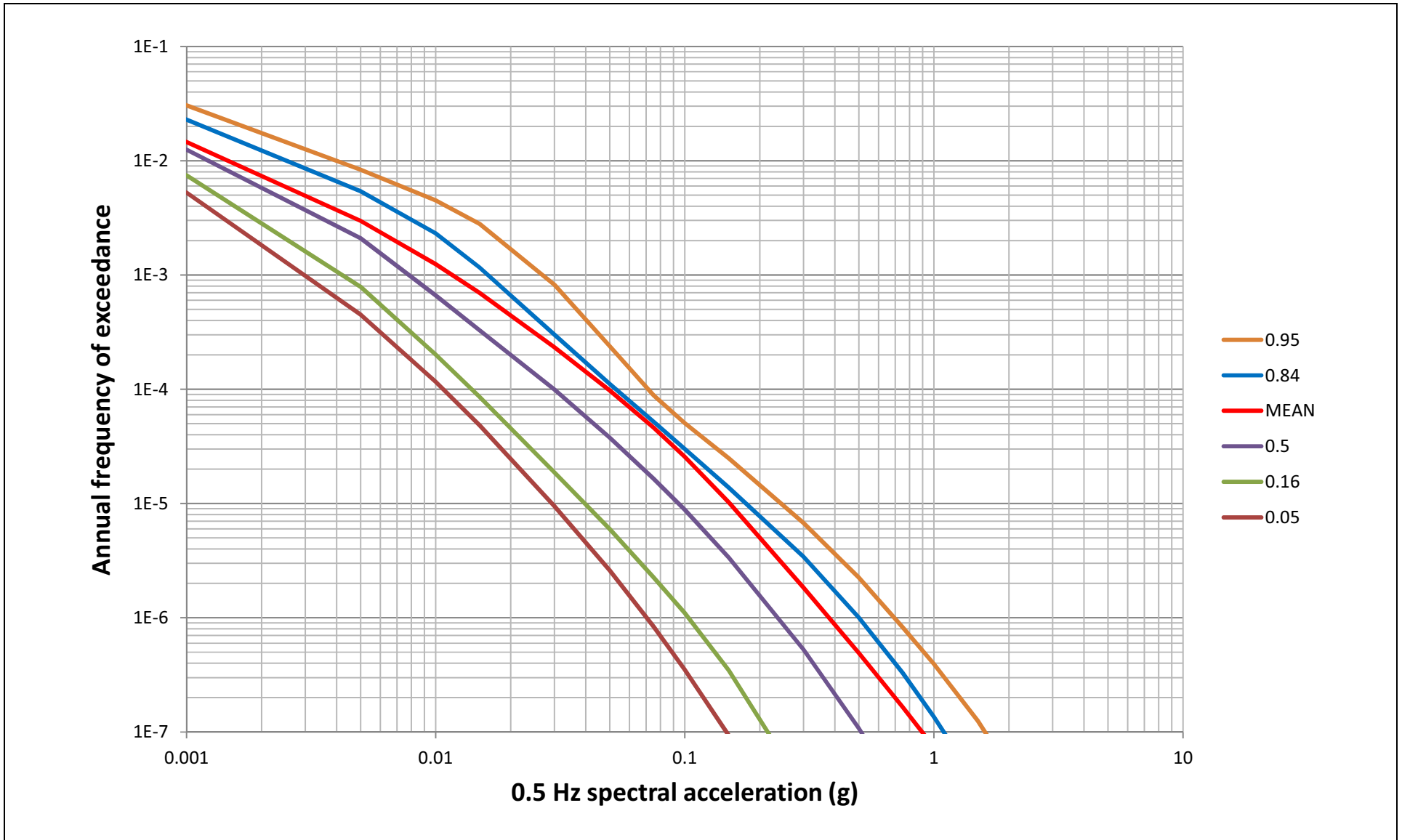


Figure 2.5.2-231 Mean and Fractile Rock Hazard Curves for 1 Hz

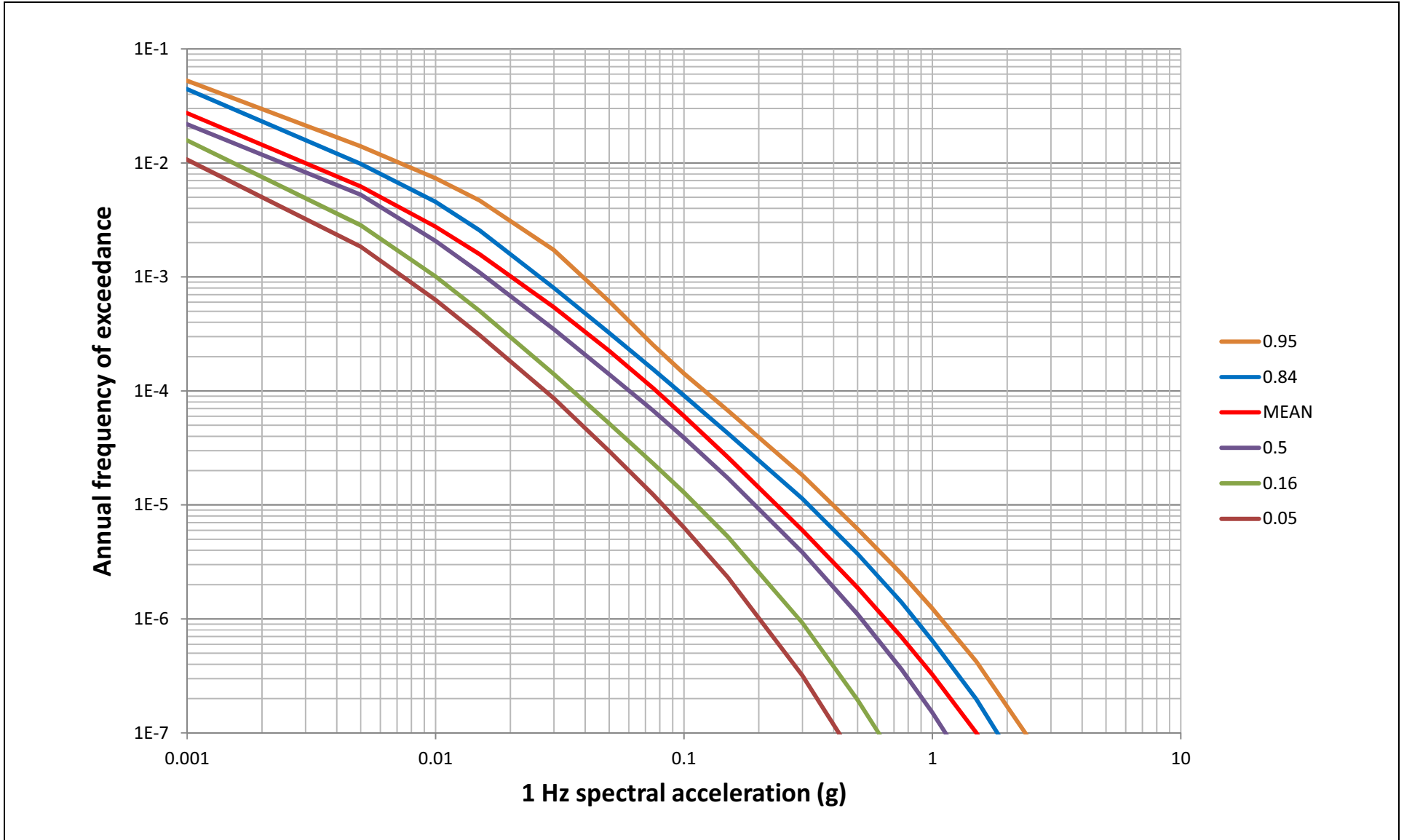


Figure 2.5.2-232 Mean and Fractile Rock Hazard Curves for 2.5 Hz

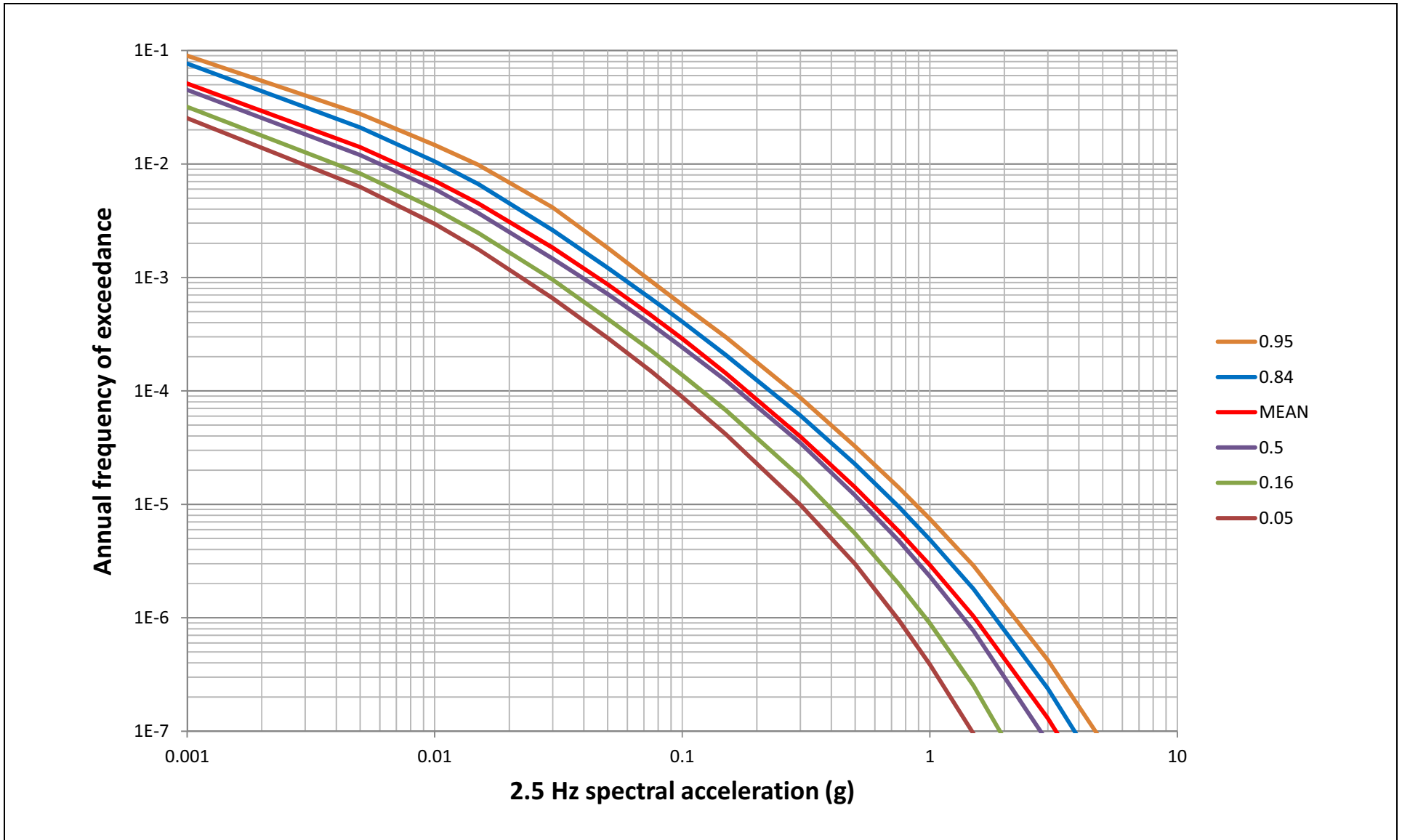


Figure 2.5.2-233 Mean and Fractile Rock Hazard Curves for 5 Hz

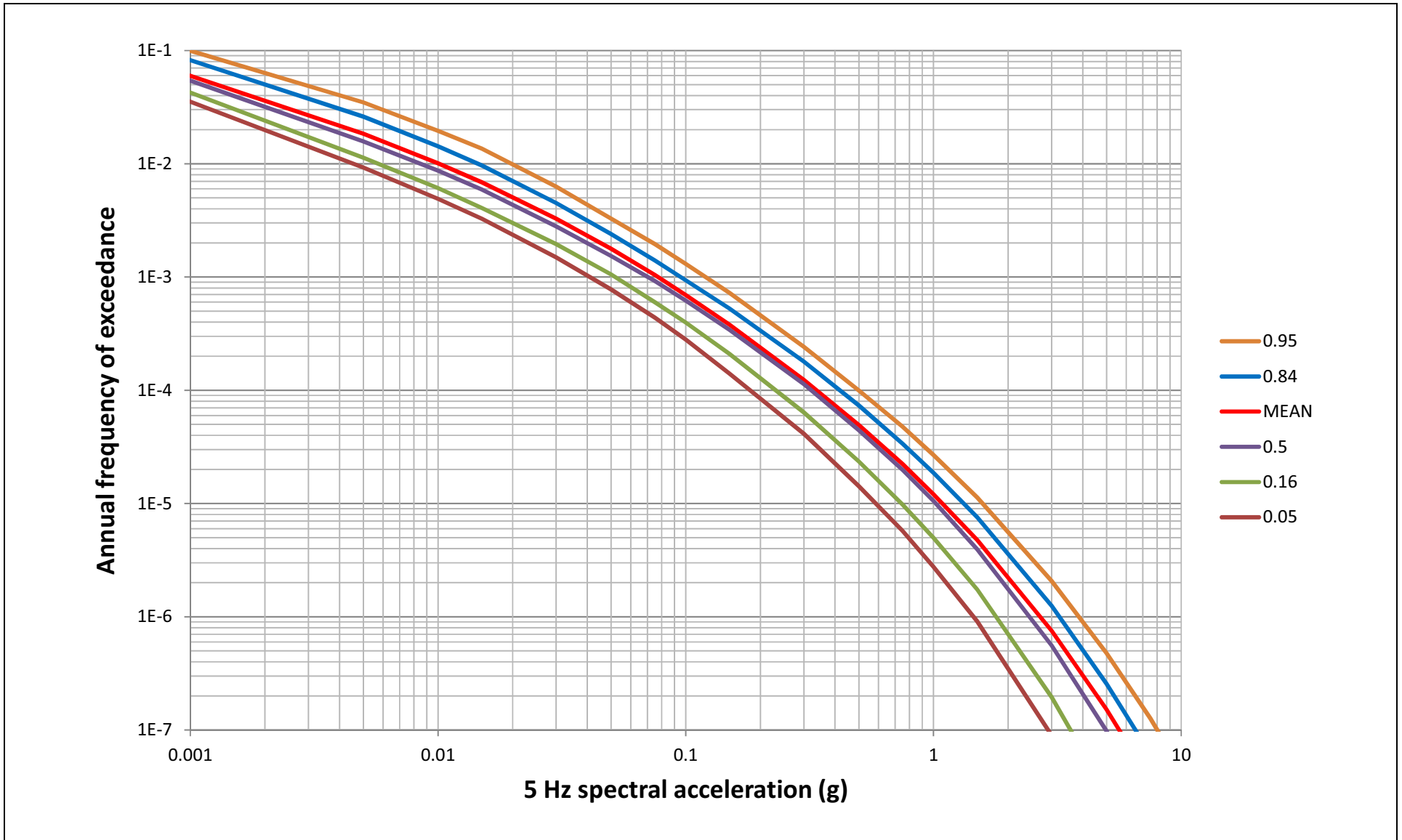




Figure 2.5.2-234 Mean and Fractile Rock Hazard Curves for 10 Hz

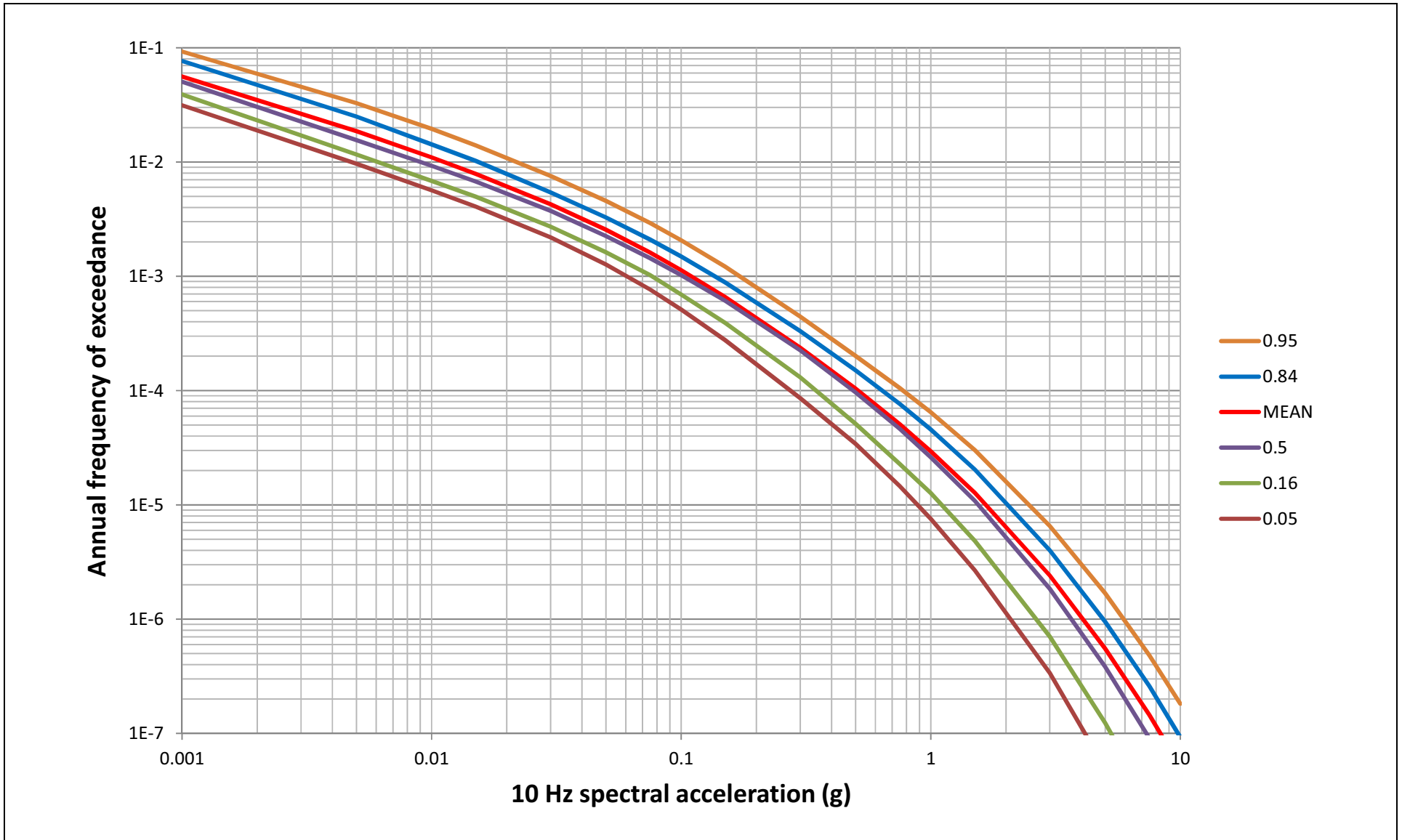


Figure 2.5.2-235 Mean and Fractile Rock Hazard Curves for 25 Hz

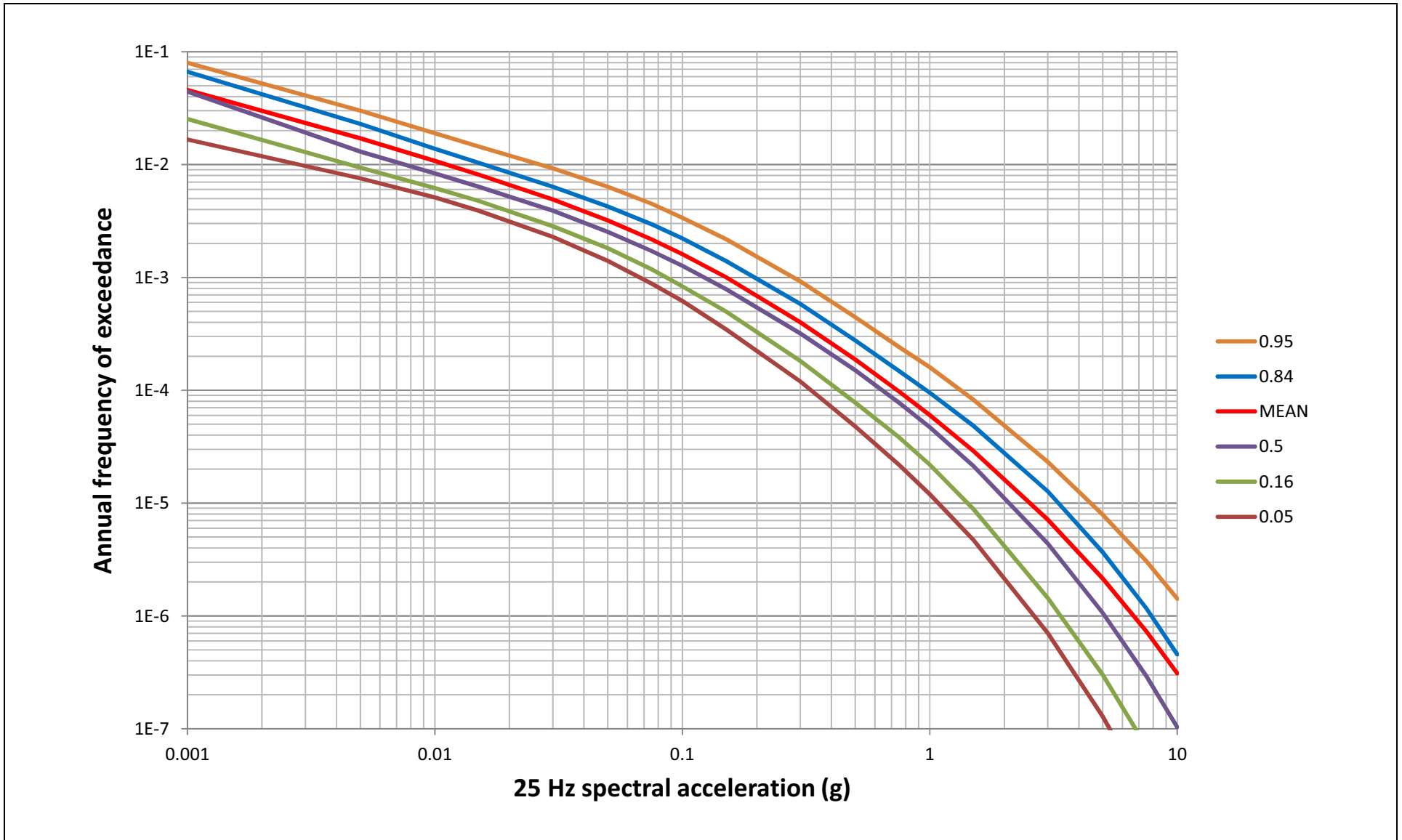


Figure 2.5.2-236 Mean and Fractile Rock Hazard Curves for PGA

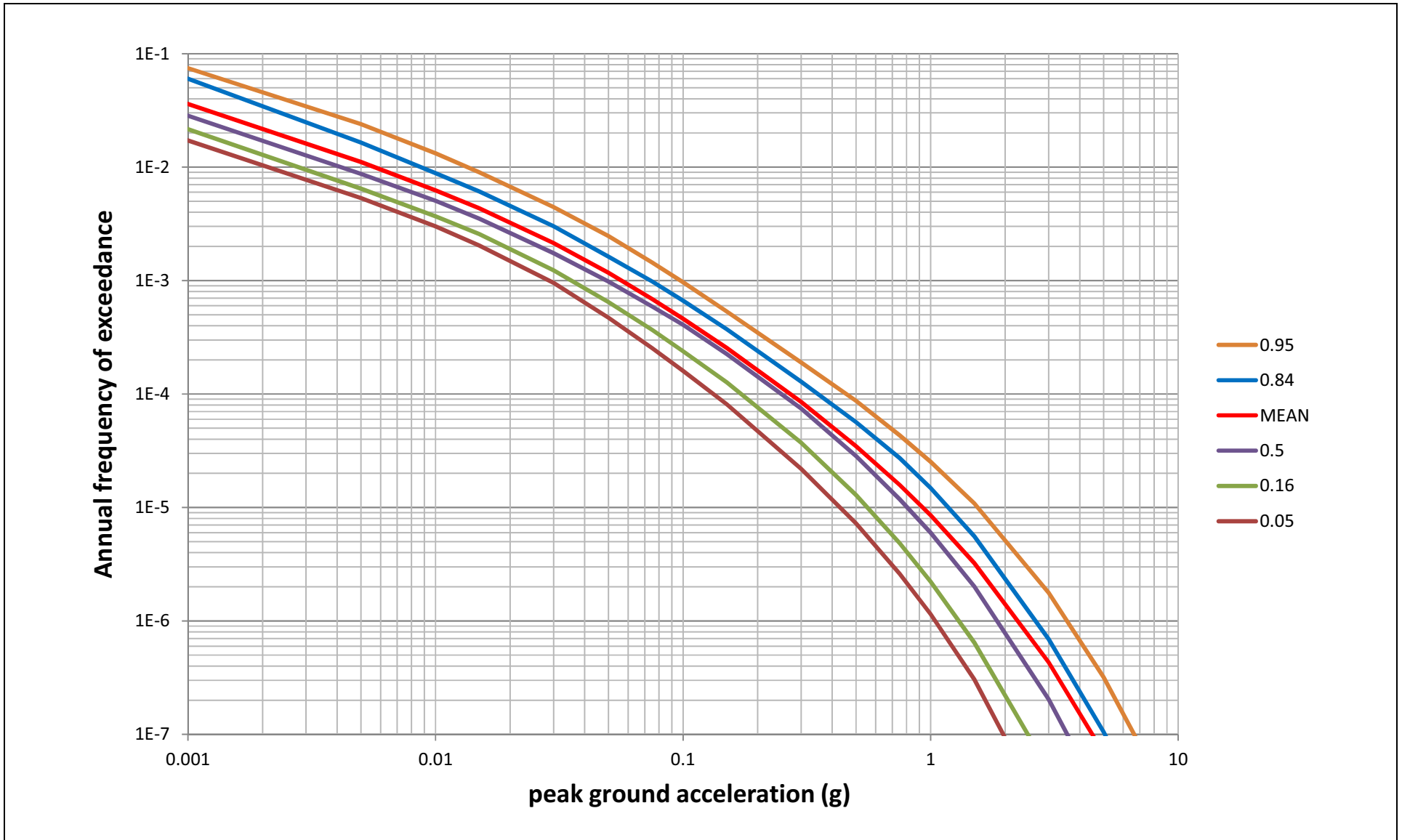


Figure 2.5.2-237 1 Hz Mean Rock Hazard from Background, Charleston, New Madrid and Wabash Valley

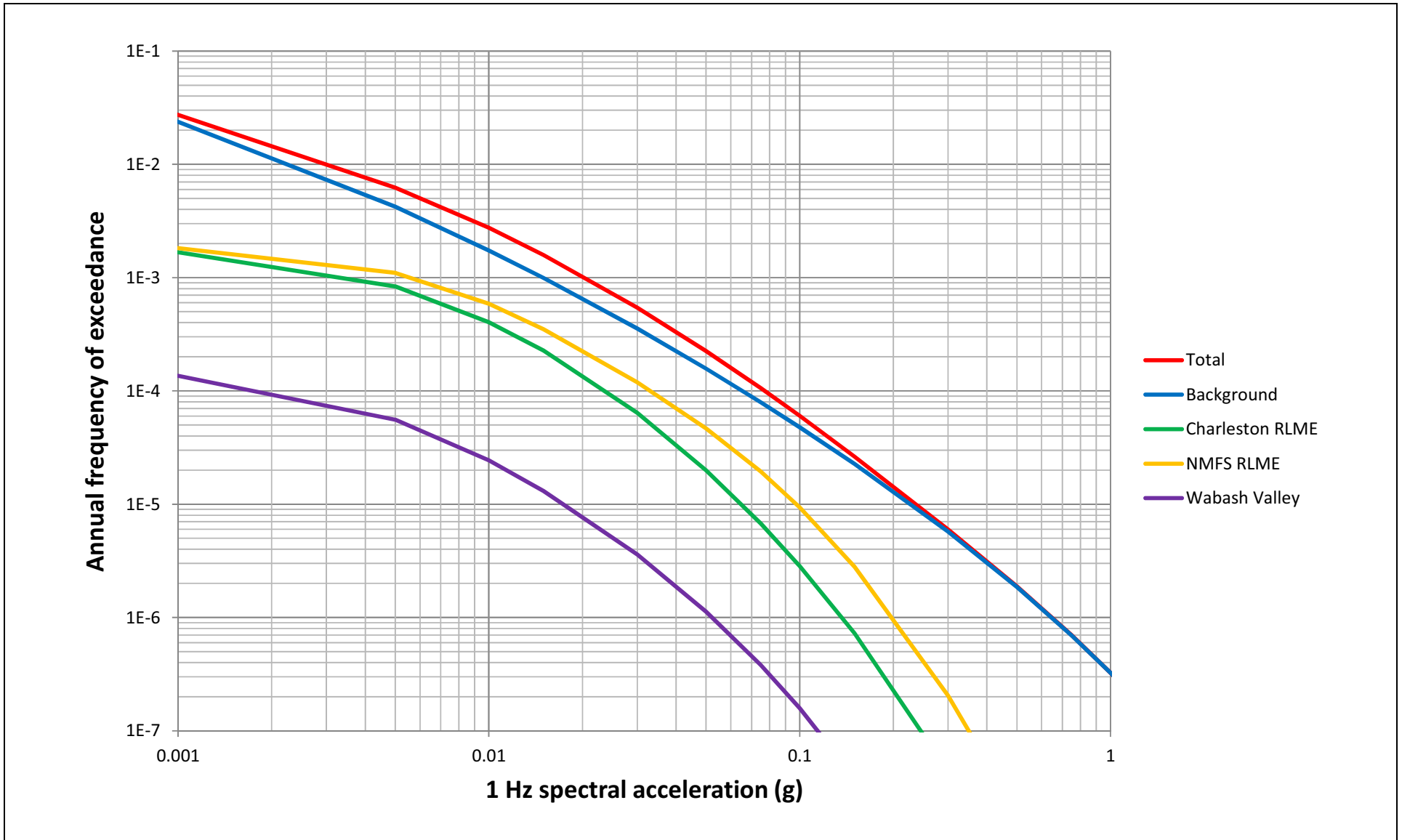


Figure 2.5.2-238 10 Hz Mean Rock Hazard from Background, Charleston, New Madrid and Wabash Valley

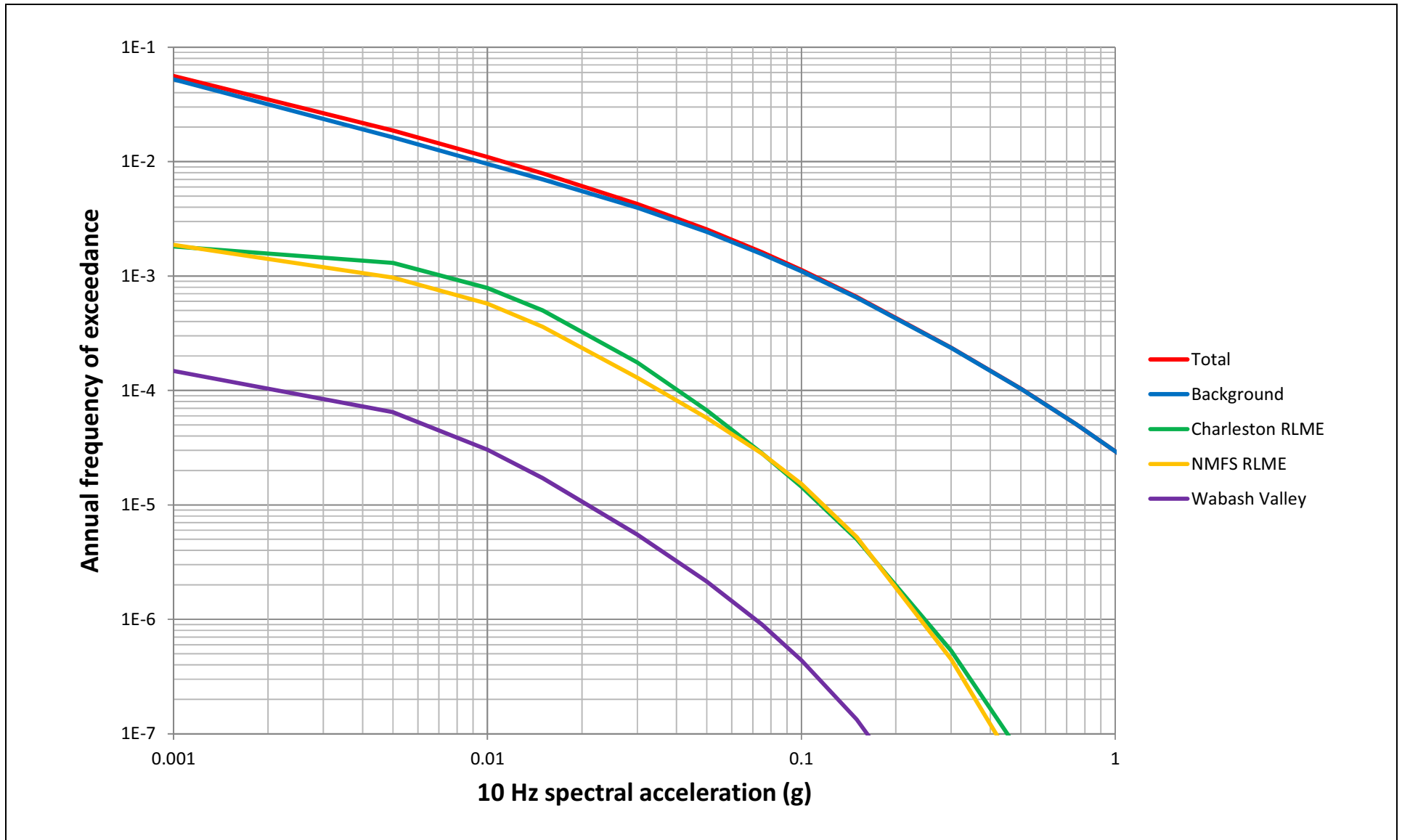


Figure 2.5.2-239 1 Hz Mean Rock Hazard from Individual Weighted Background Sources

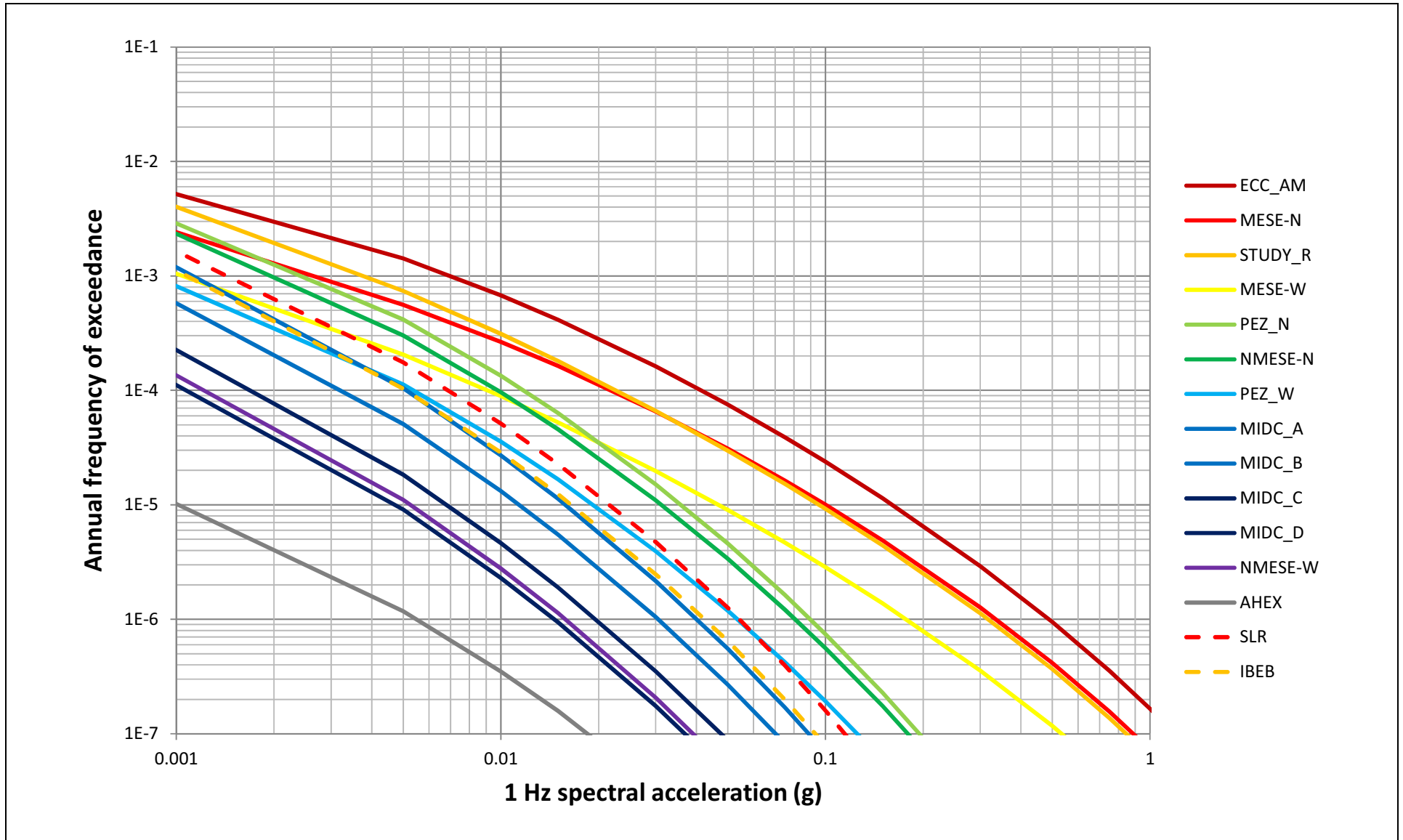


Figure 2.5.2-240 10 Hz Mean Rock Hazard from Individual Weighted Background Sources

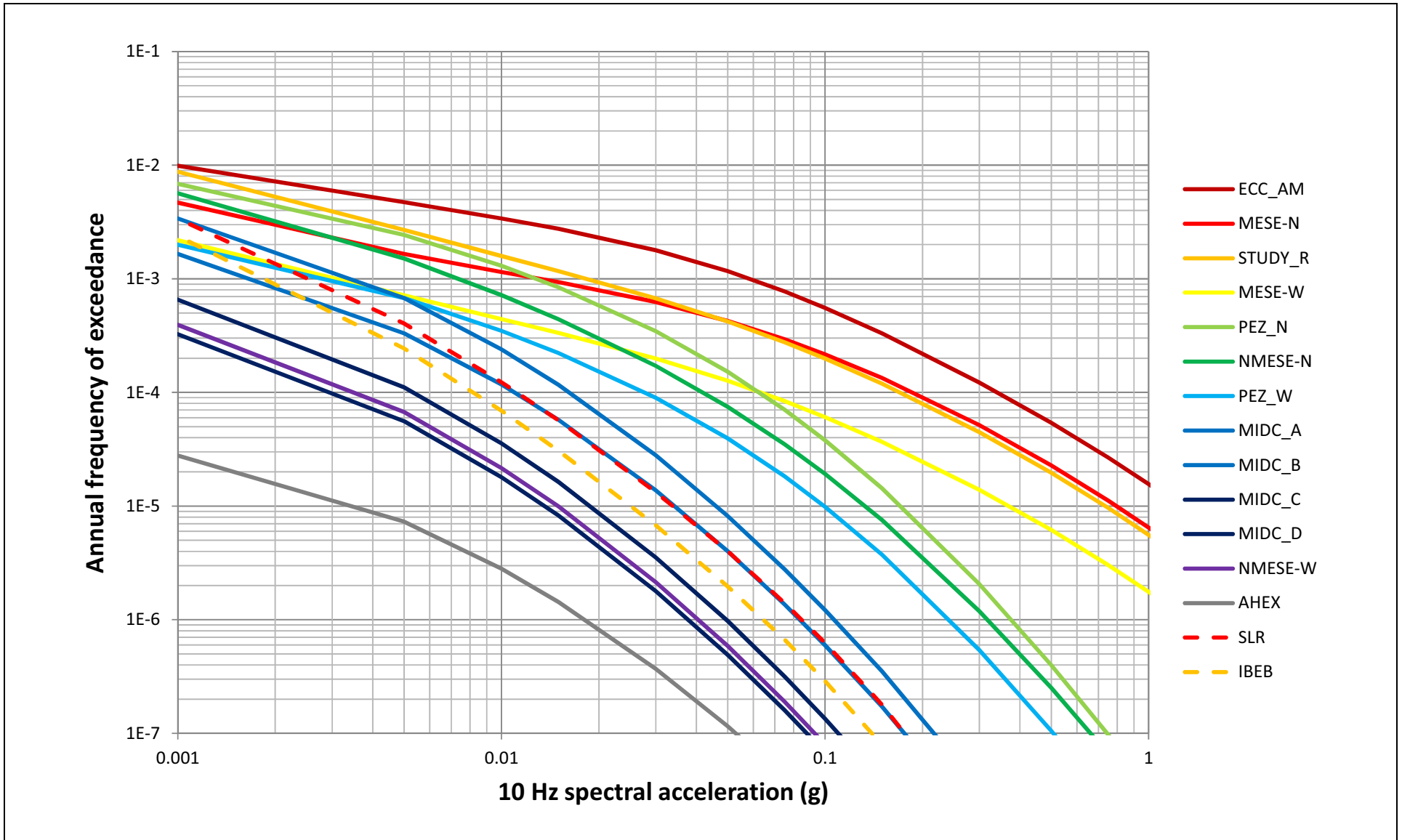


Figure 2.5.2-241 1 Hz Mean Rock Hazard from Individual Weighted Charleston Sources

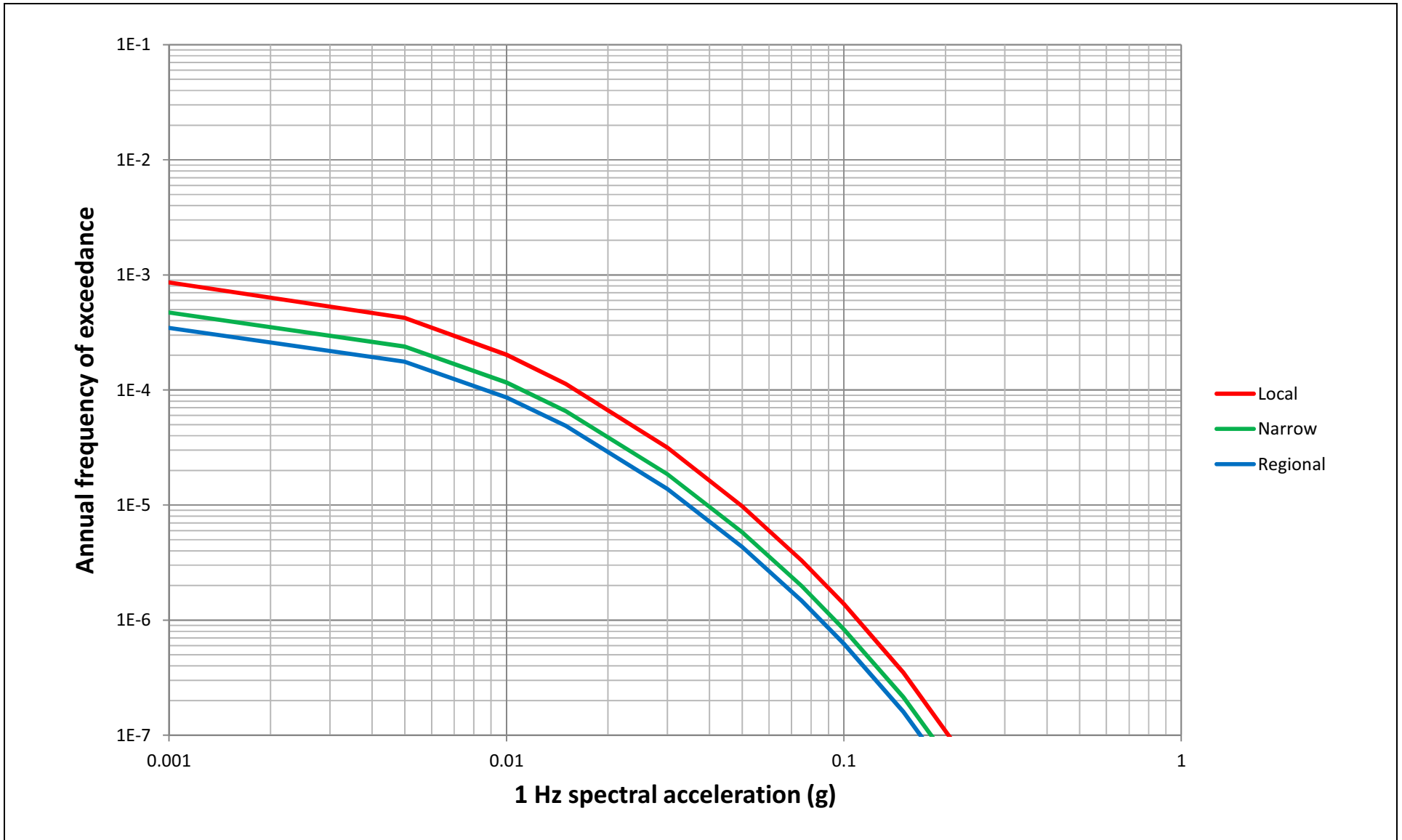




Figure 2.5.2-242 10 Hz Mean Rock Hazard from Individual Weighted Charleston Sources

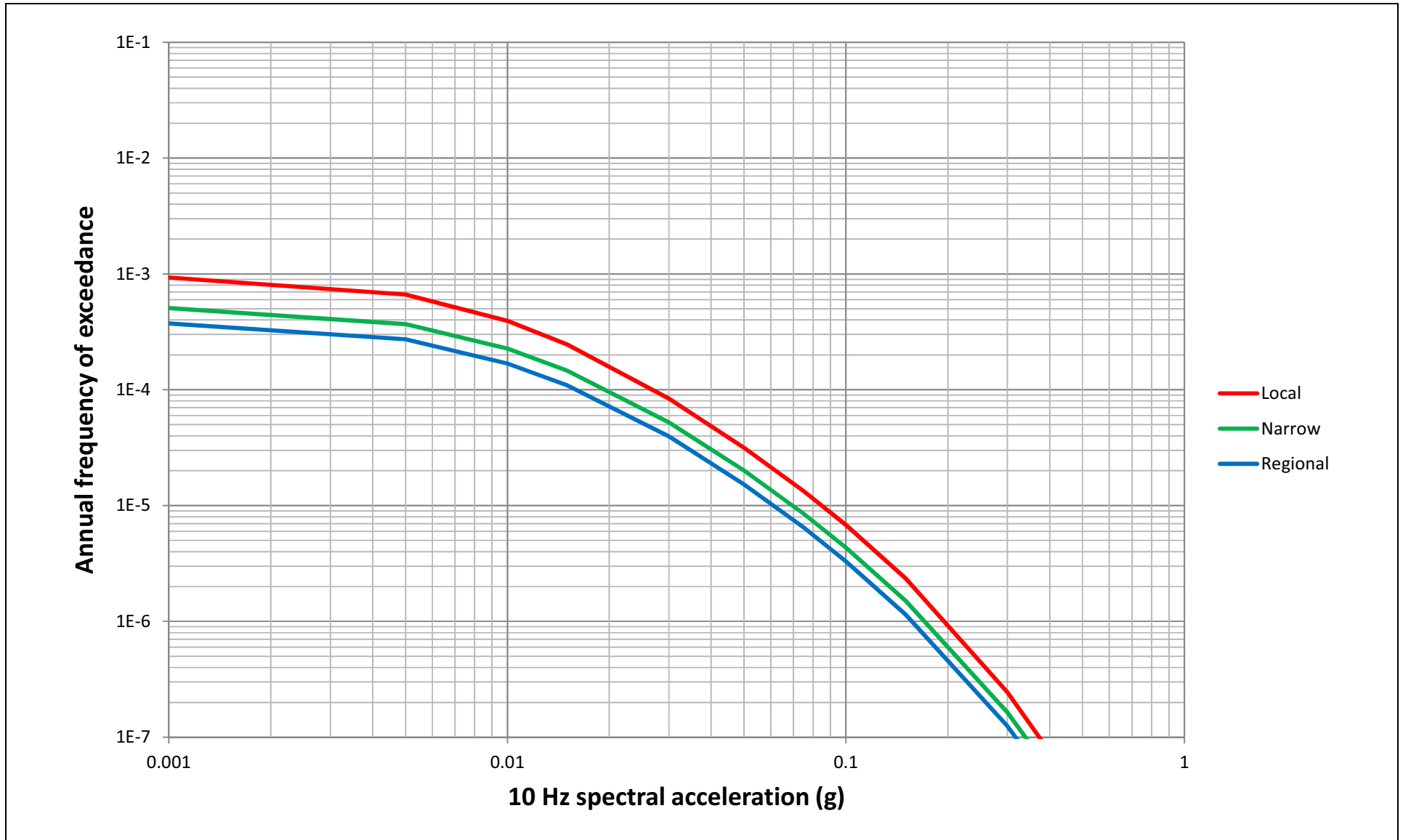


Figure 2.5.2-243 Unweighted Sensitivity to the 9 EPRI (Background) Ground Motion Prediction Equations, 1 Hz

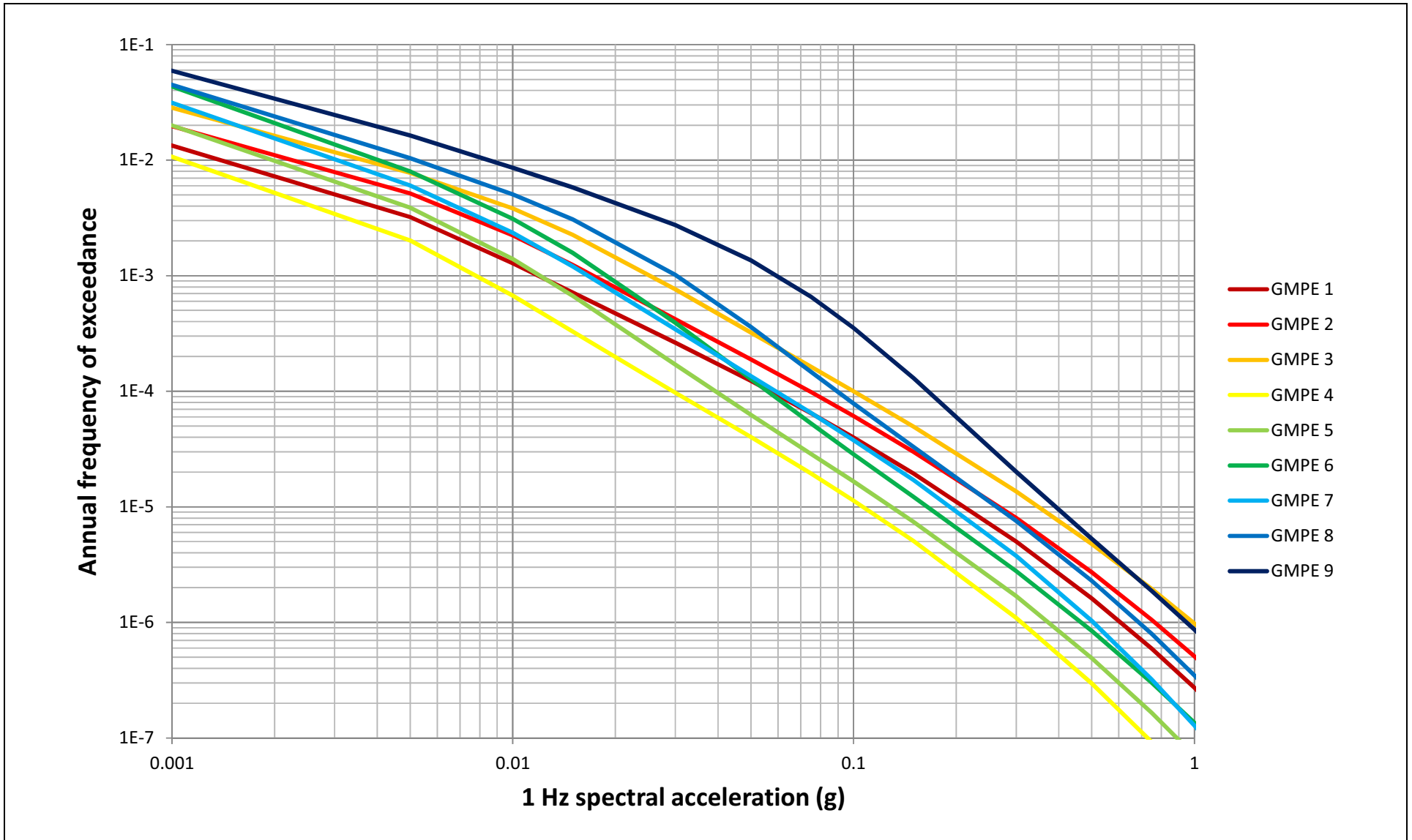


Figure 2.5.2-244 Unweighted Sensitivity to the 9 EPRI (Background) Ground Motion Prediction Equations, 10 Hz

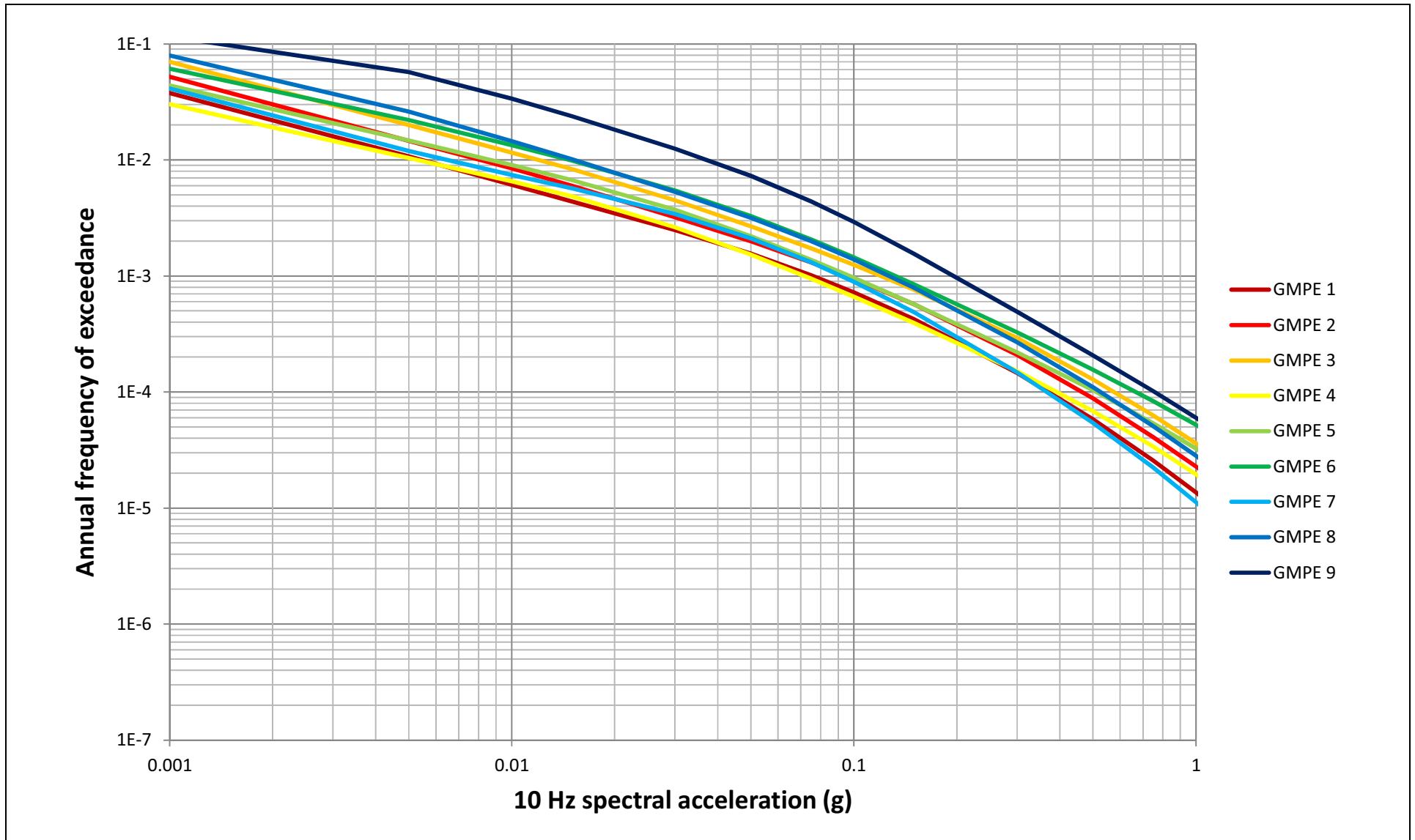


Figure 2.5.2-245 Unweighted Sensitivity to the 12 EPRI (RLME) Ground Motion Prediction Equations, 1 Hz

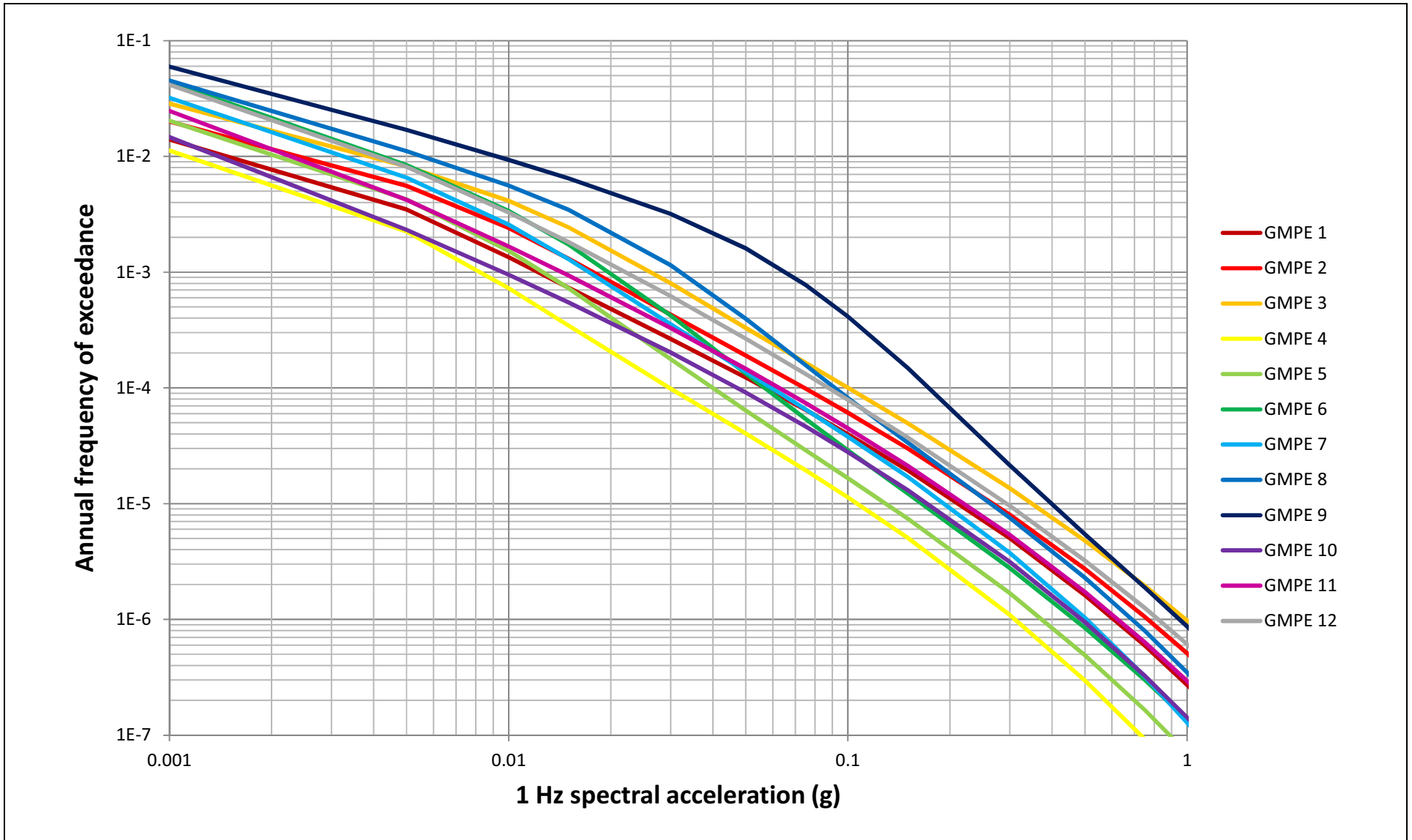


Figure 2.5.2-246 Unweighted Sensitivity to the 12 EPRI (RLME) Ground Motion Prediction Equations, 10 Hz

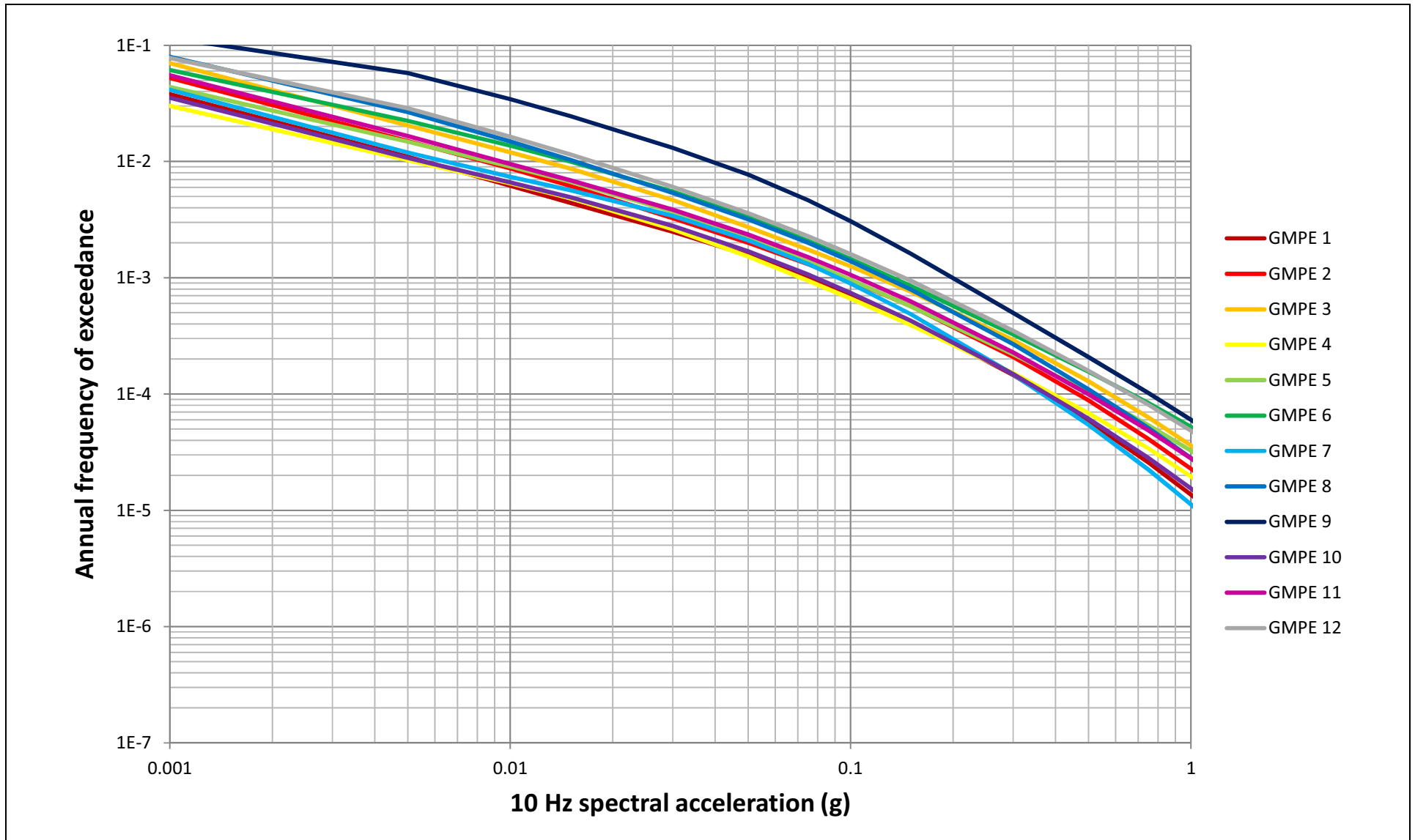


Figure 2.5.2-247 1 Hz Median Rock Hazard from Background, Charleston, New Madrid and Wabash Valley

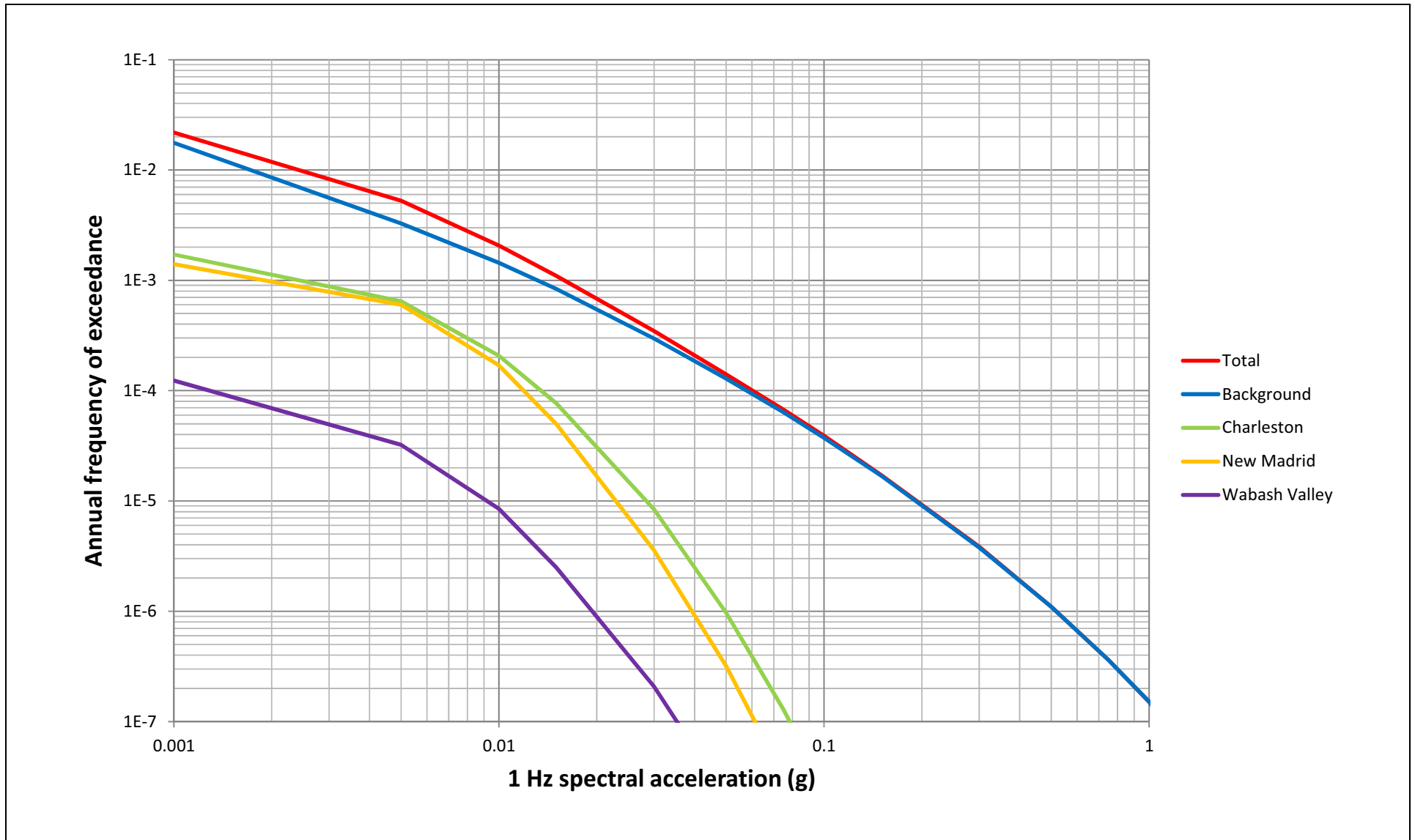


Figure 2.5.2-248 10 Hz Median Rock Hazard from Background, Charleston, New Madrid and Wabash Valley

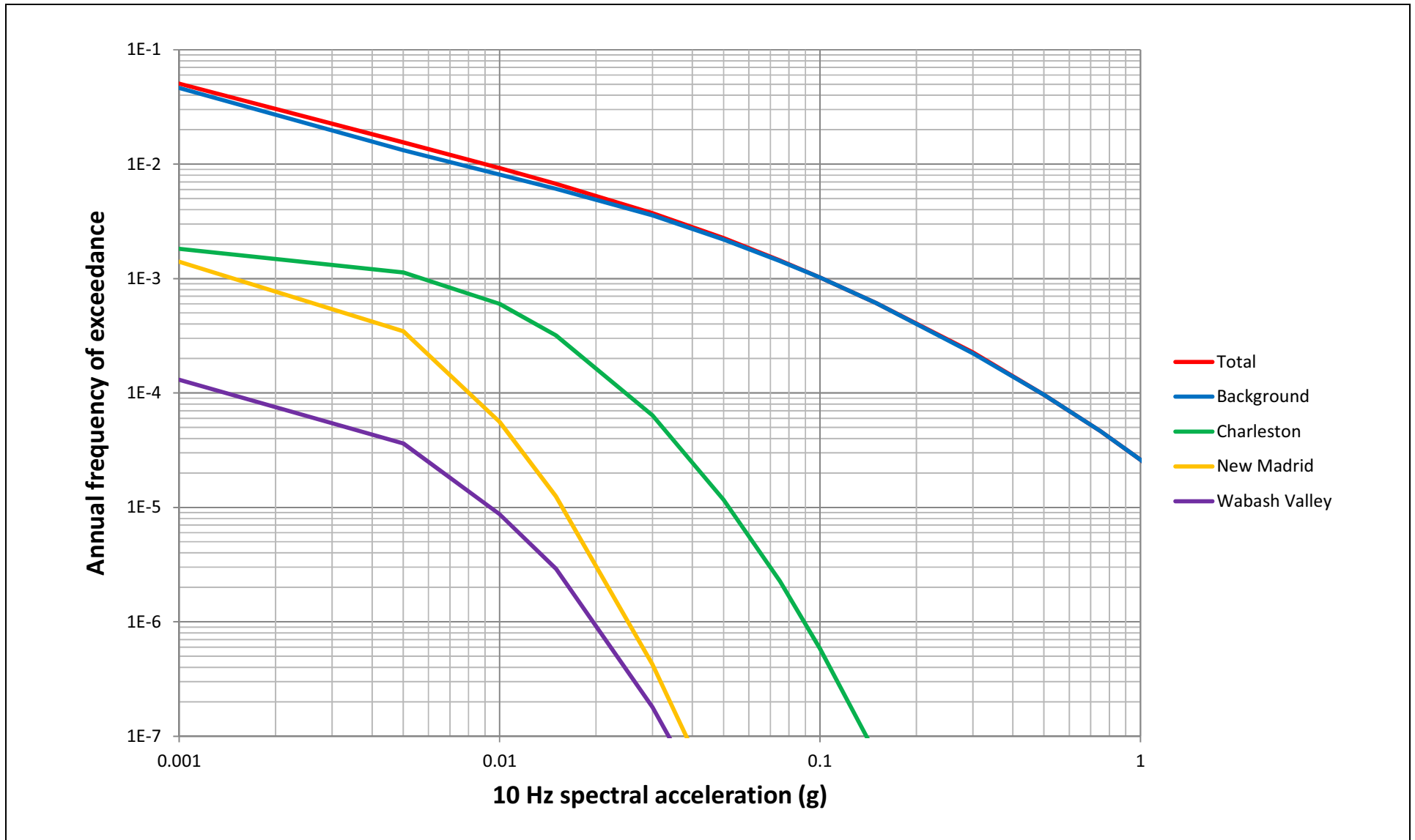
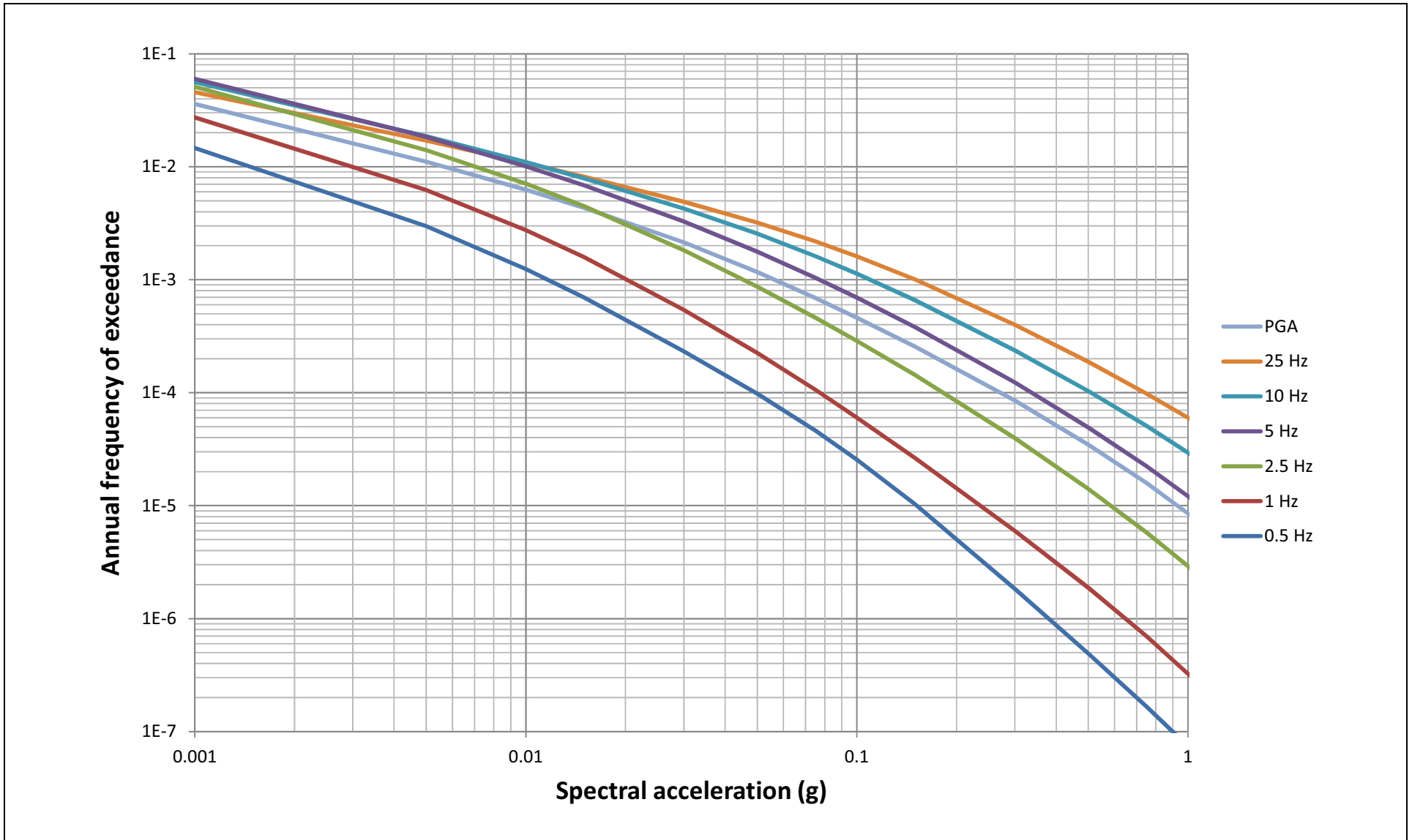


Figure 2.5.2-249 Mean Total Rock Hazard Curves for 7 Spectral Frequencies





NAPS COL 2.0-27-A Figure 2.5.2-250 Mean  $10^{-4}$  Deaggregation Plot for 1 and 2.5 Hz (LF)  
 NAPS ESP VAR 2.0-4

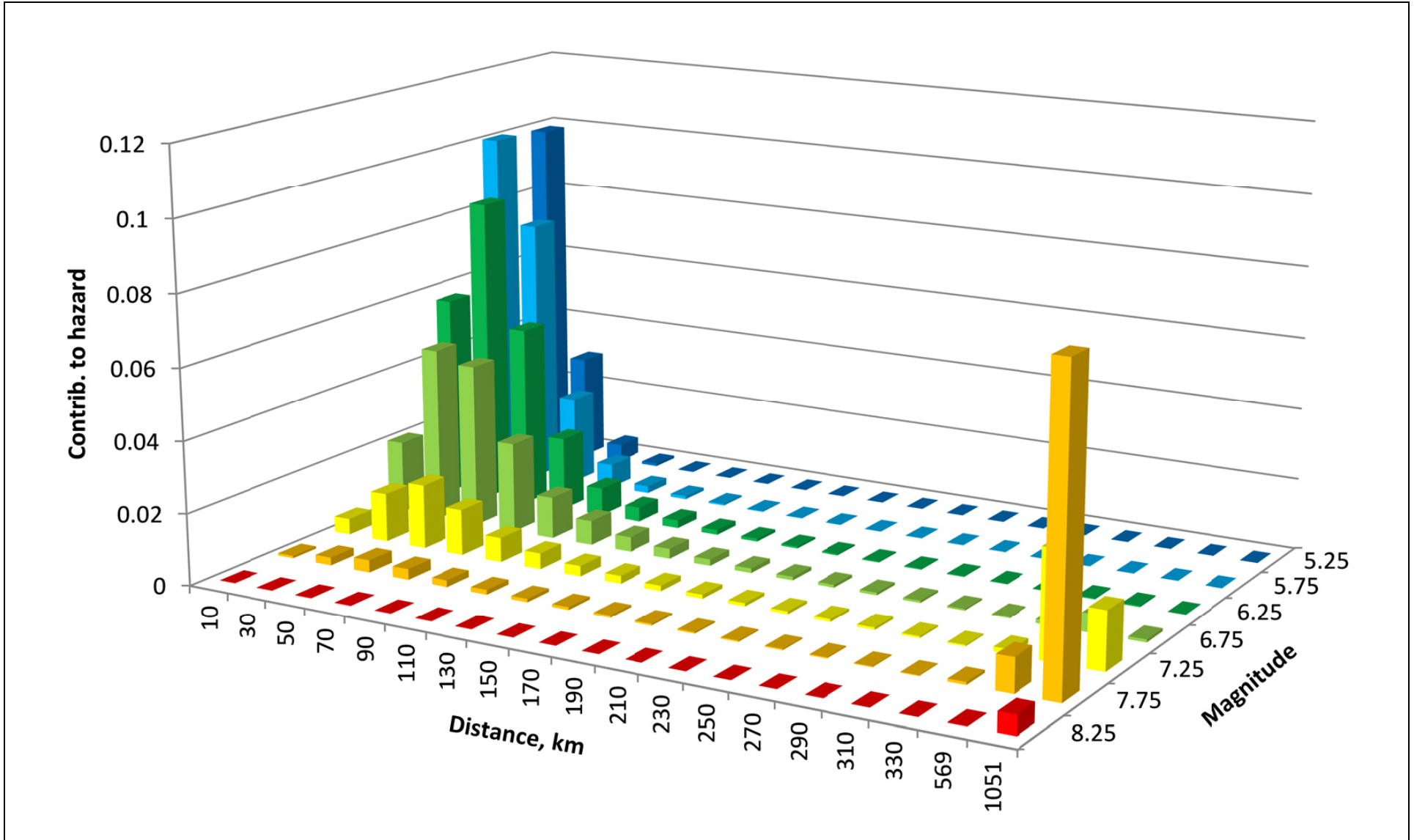


Figure 2.5.2-251 Mean  $10^{-4}$  Deaggregation Plot for 5 and 10 Hz (HF)

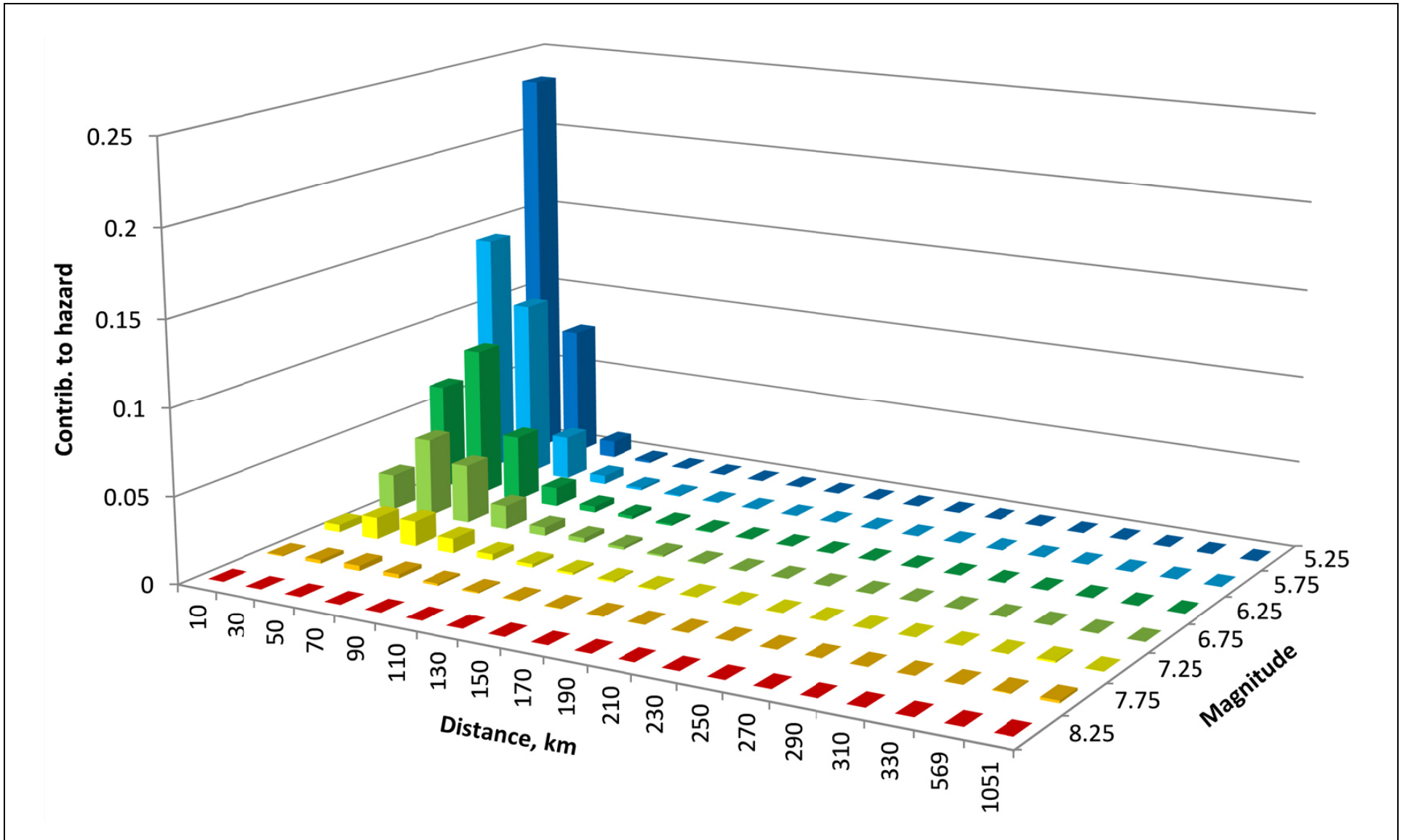


Figure 2.5.2-252 Mean  $10^{-5}$  Deaggregation Plot for 1 and 2.5 Hz (LF)

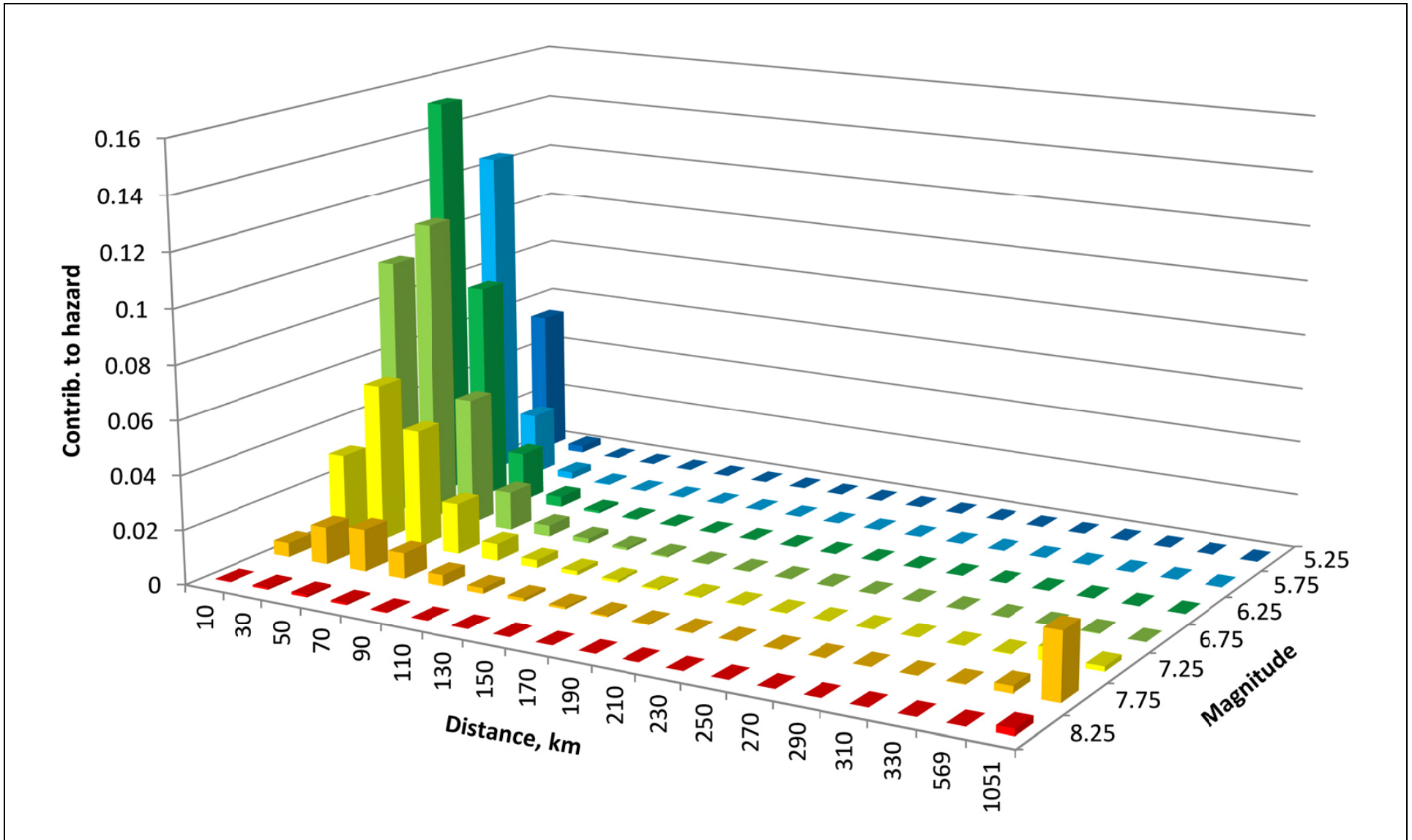


Figure 2.5.2-253 Mean  $10^{-5}$  Deaggregation Plot for 5 and 10 Hz (HF)

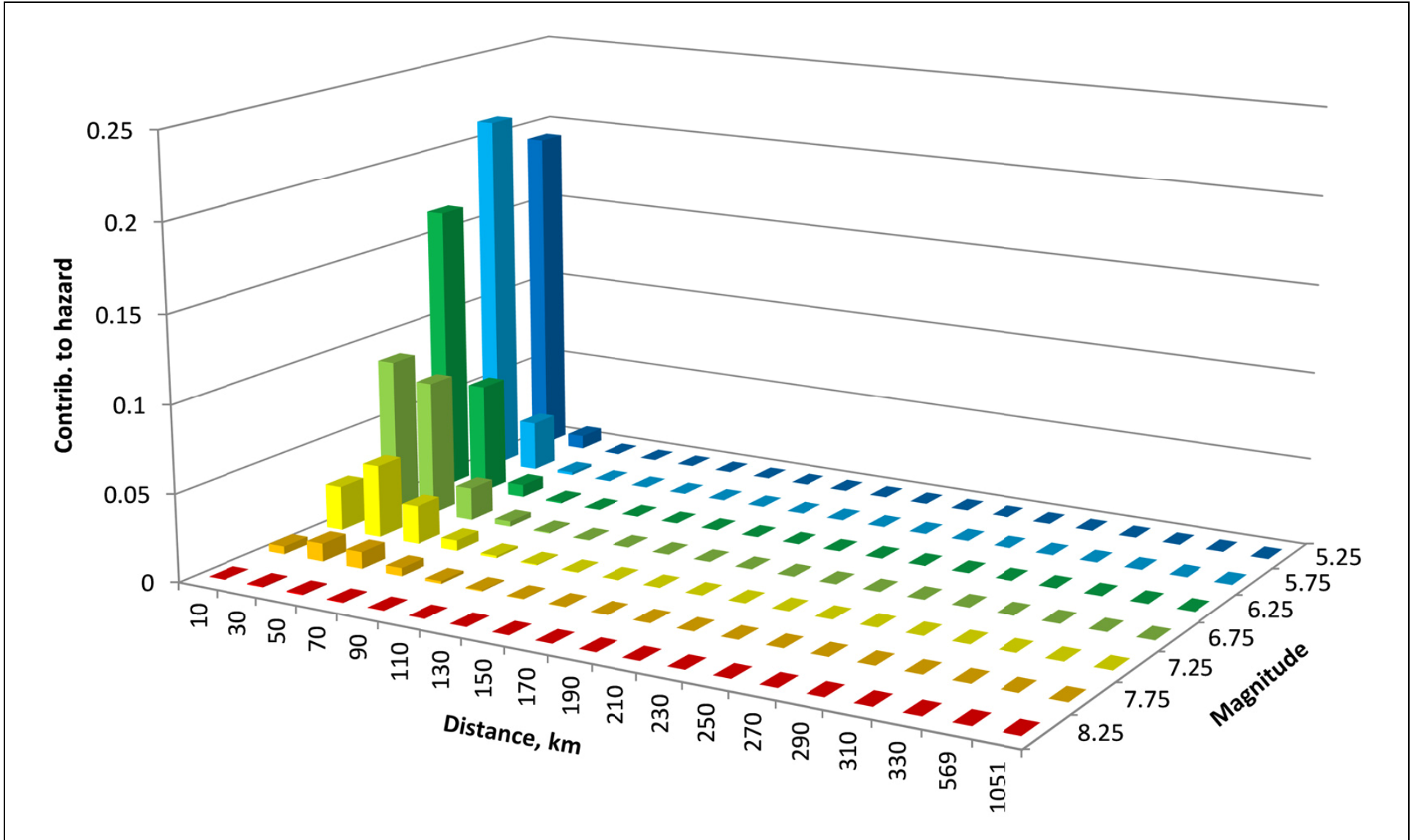


Figure 2.5.2-254 Mean  $10^{-6}$  Deaggregation Plot for 1 and 2.5 Hz (LF)

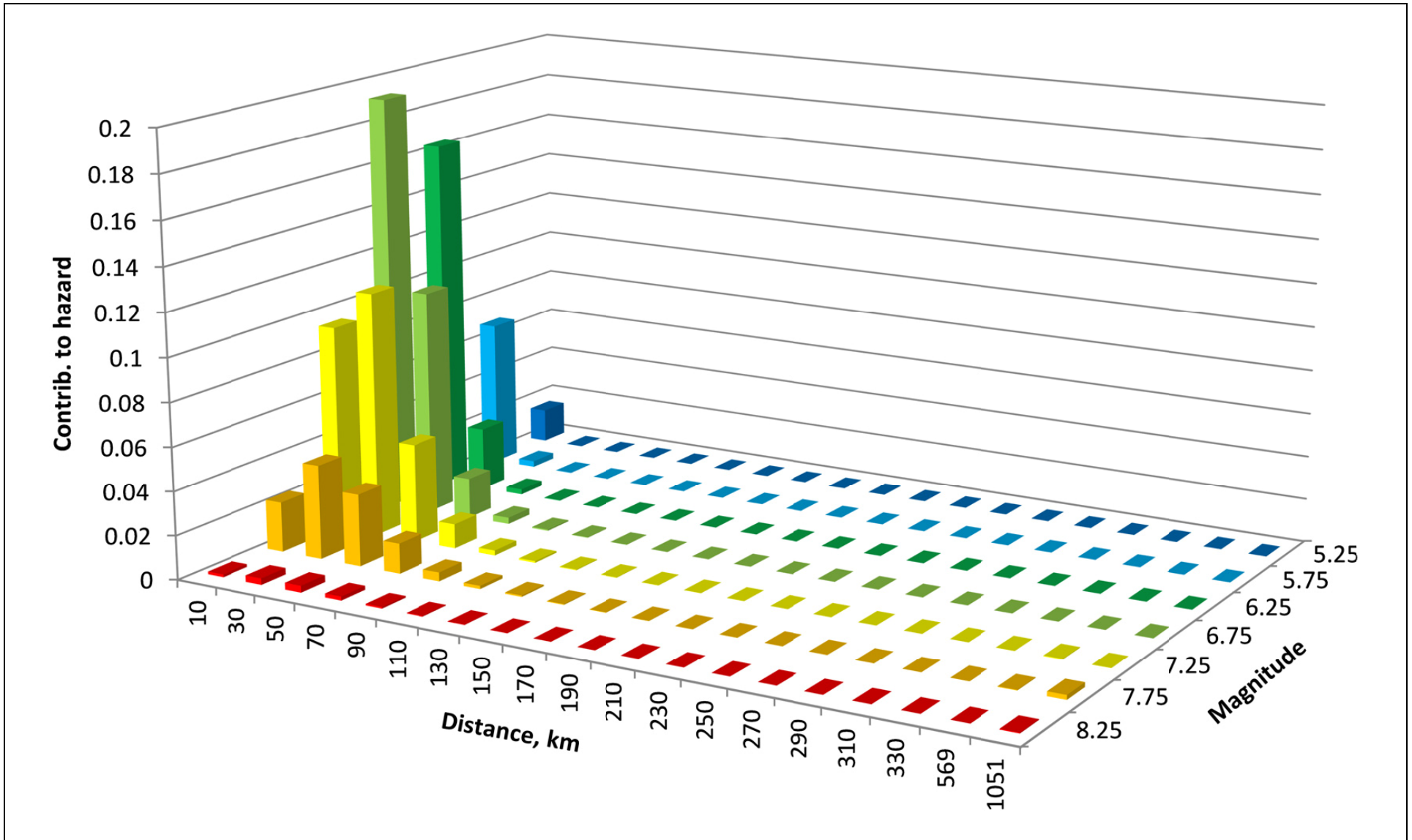


Figure 2.5.2-255 Mean  $10^{-6}$  Deaggregation Plot for 5 and 10 Hz (HF)

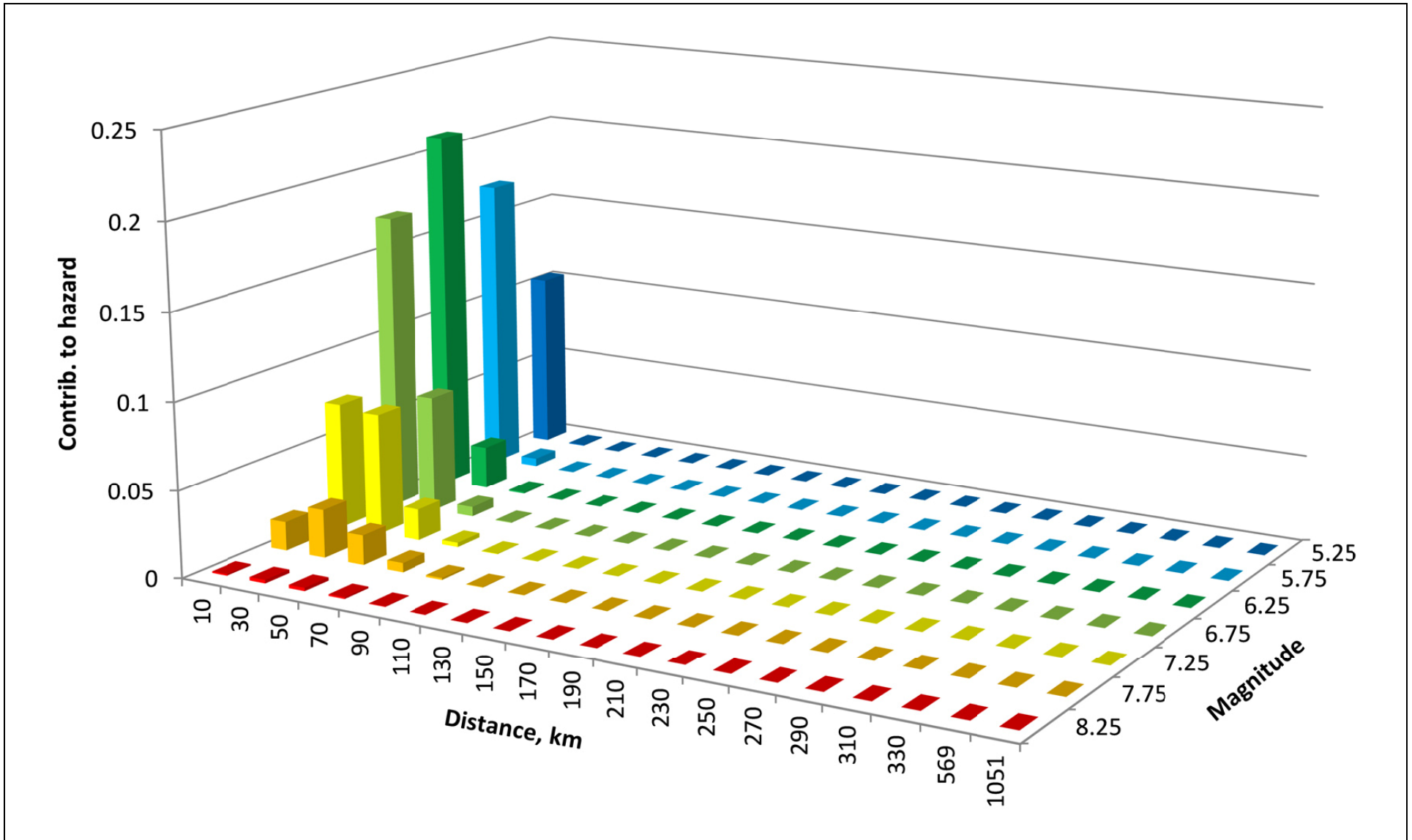


Figure 2.5.2-256 High and Low Frequency Mean UHRS for MAFEs of  $10^{-4}$ ,  $10^{-5}$  and  $10^{-6}$

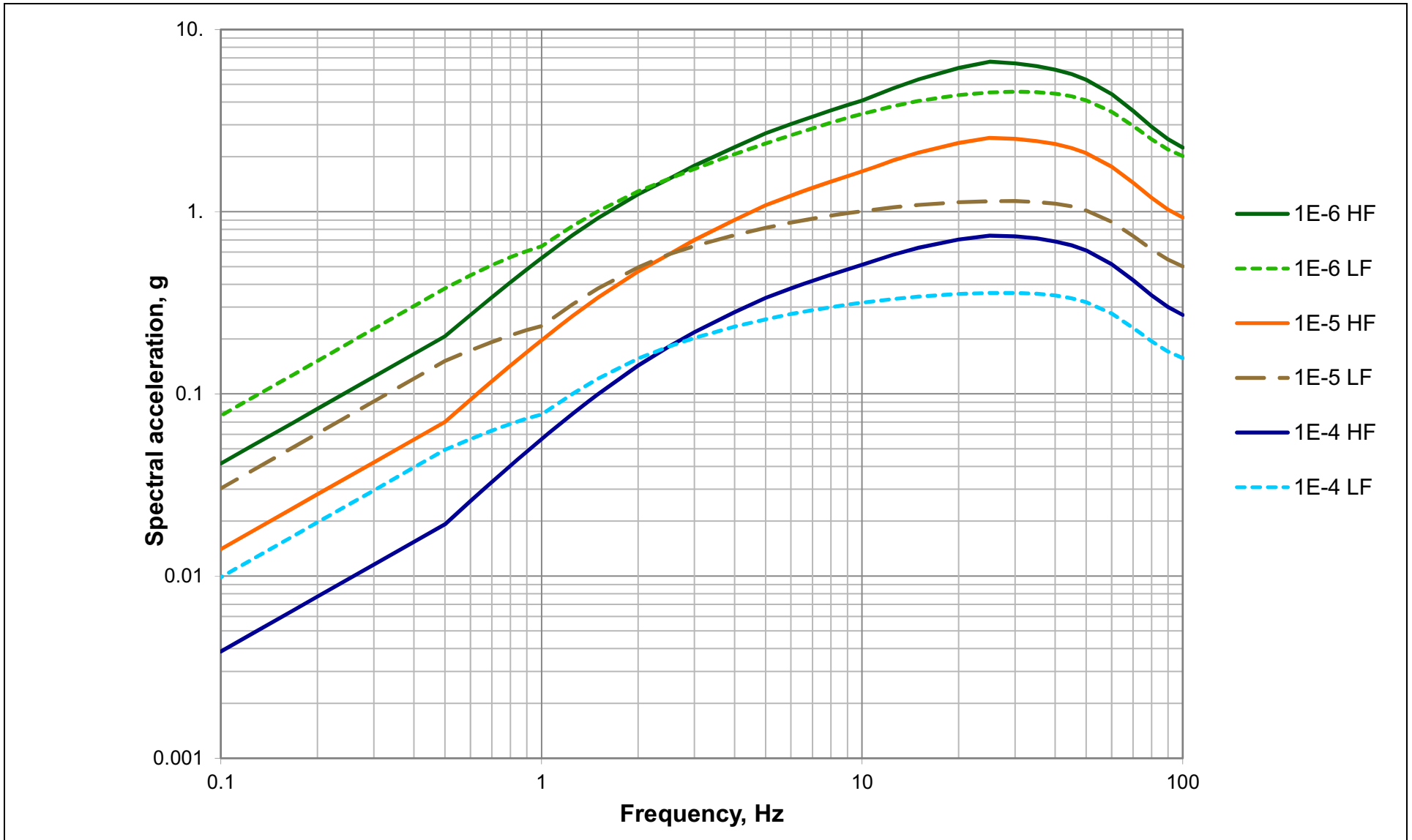


Figure 2.5.2-257 Mean Rock UHRs for MAFEs of  $10^{-4}$ ,  $10^{-5}$  and  $10^{-6}$

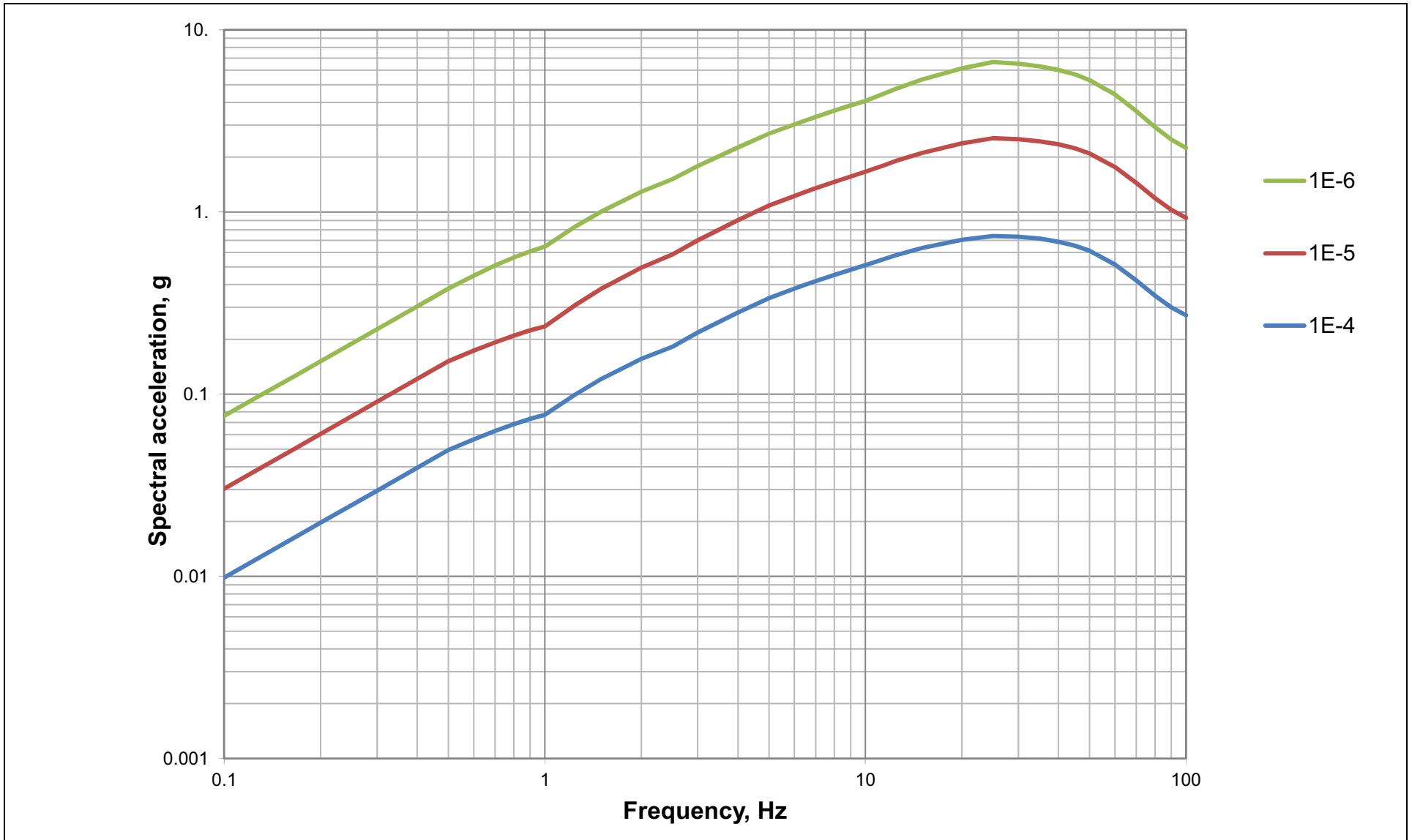
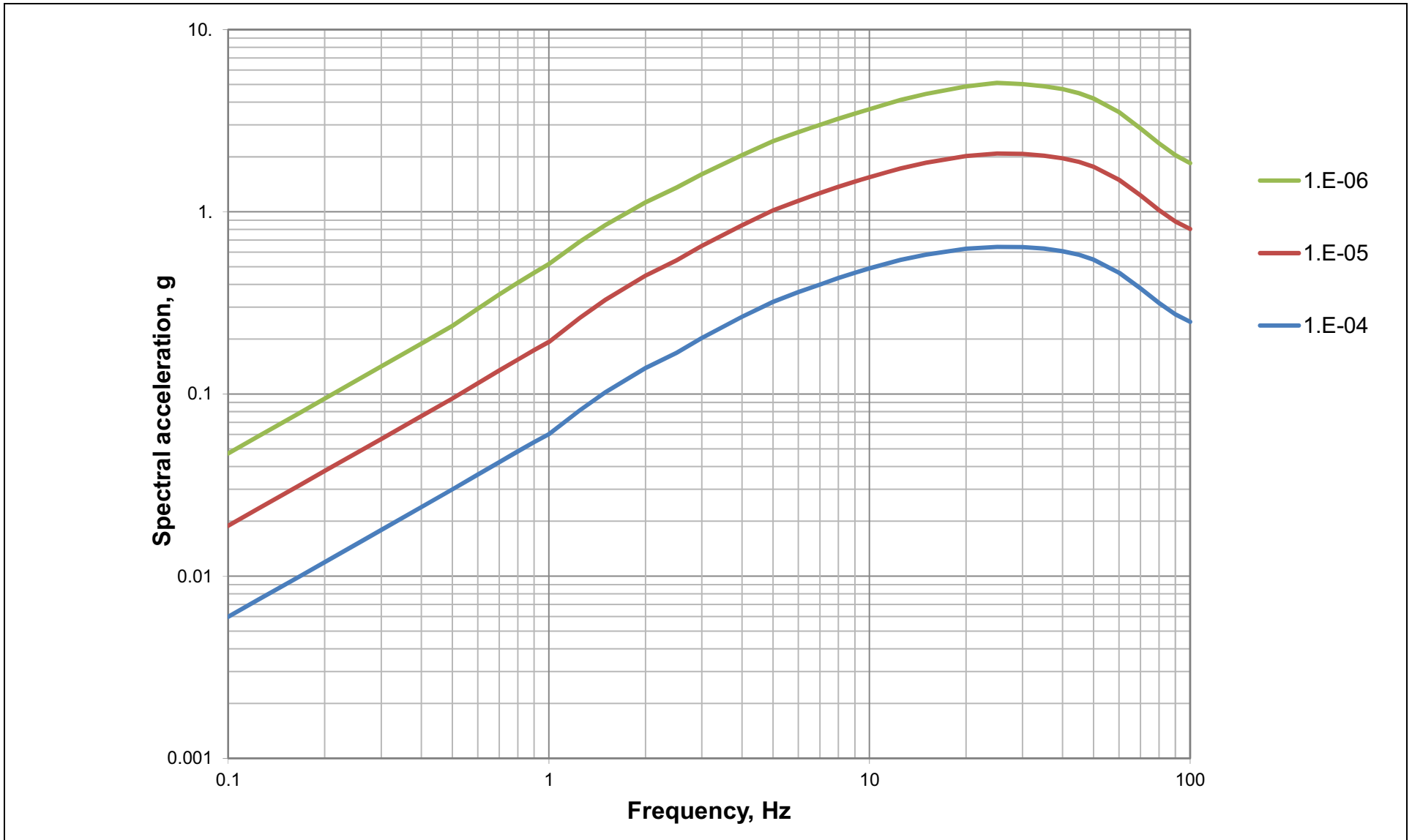
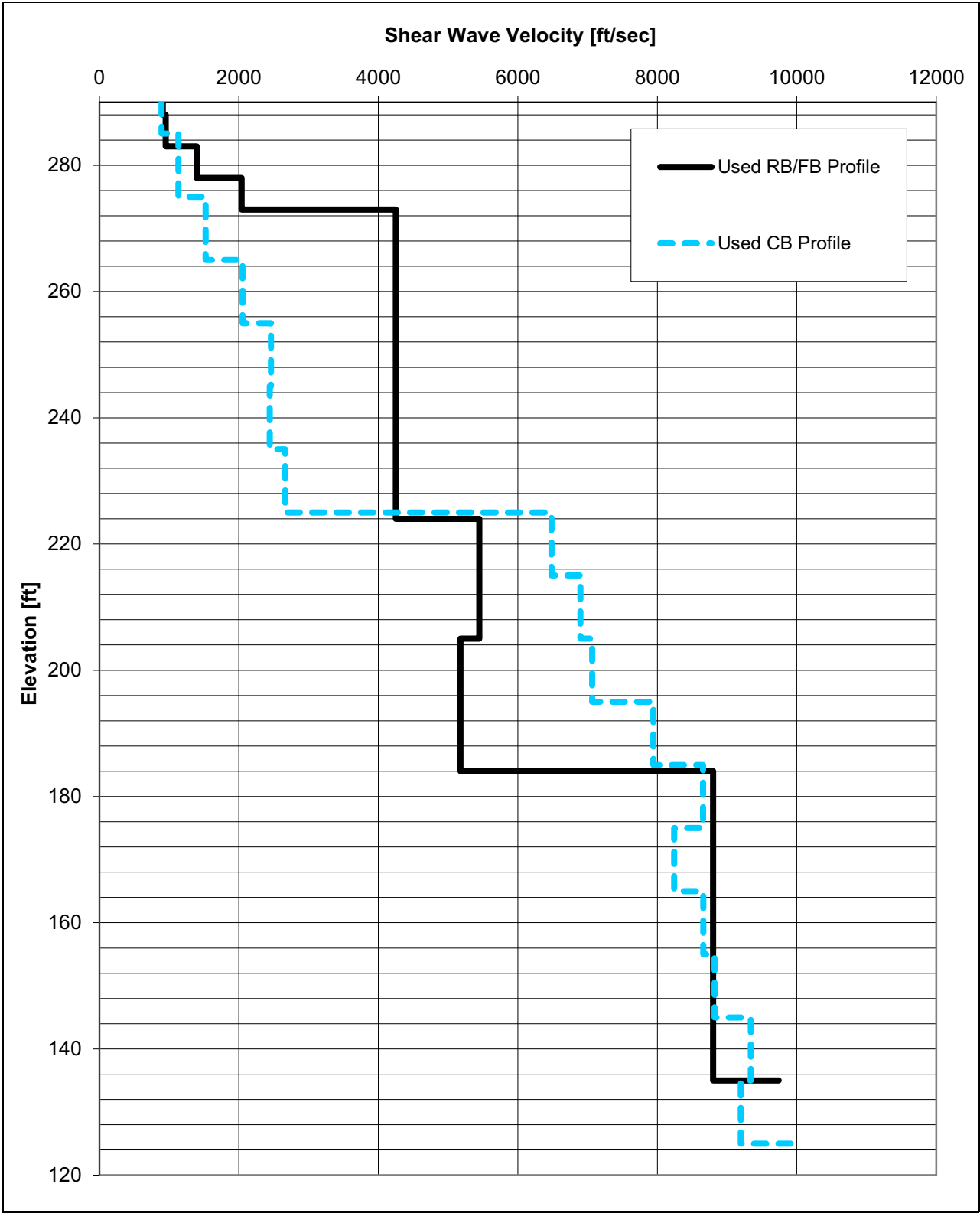




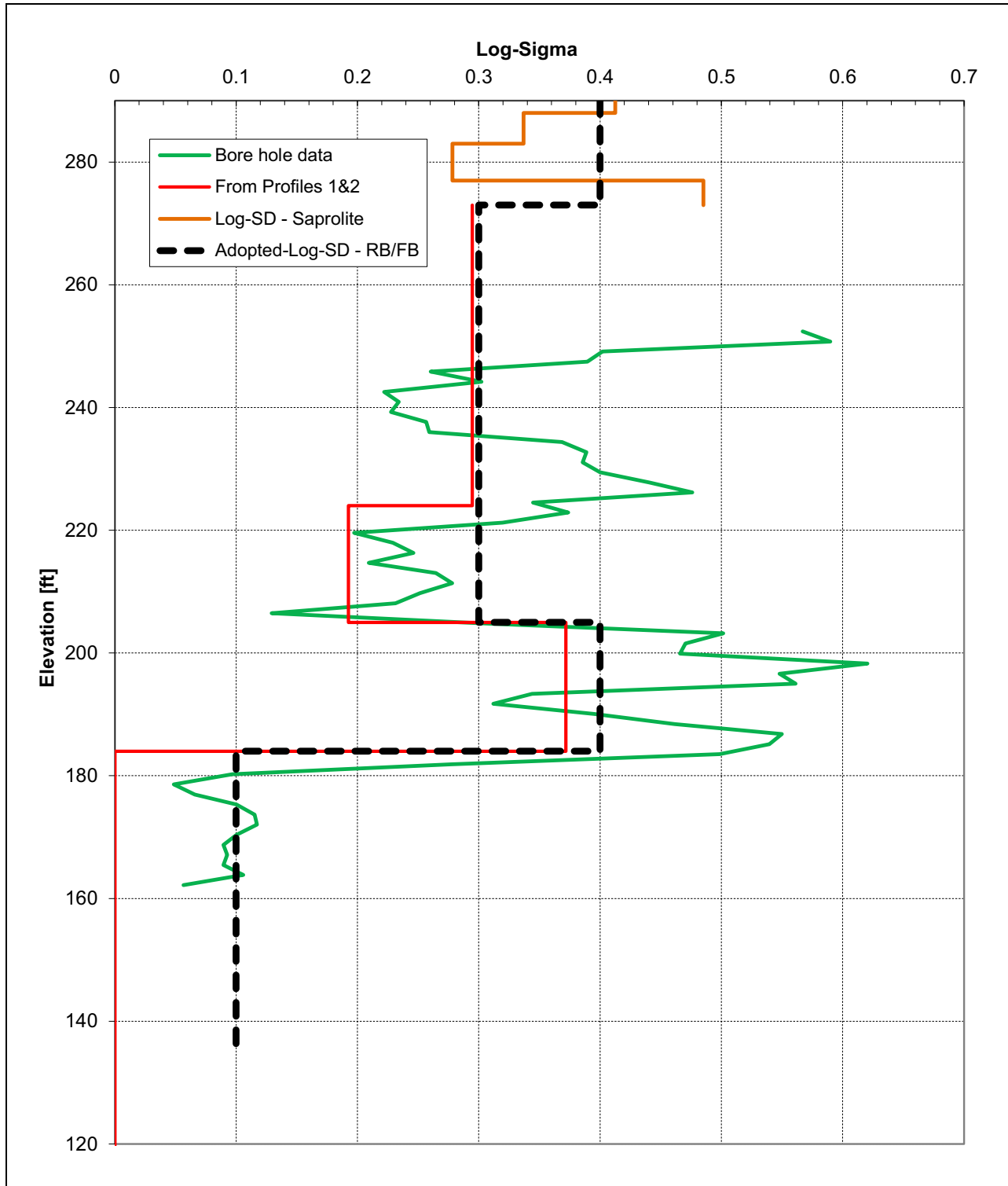
Figure 2.5.2-258 Median Rock UHRS for MAFEs of  $10^{-4}$ ,  $10^{-5}$  and  $10^{-6}$



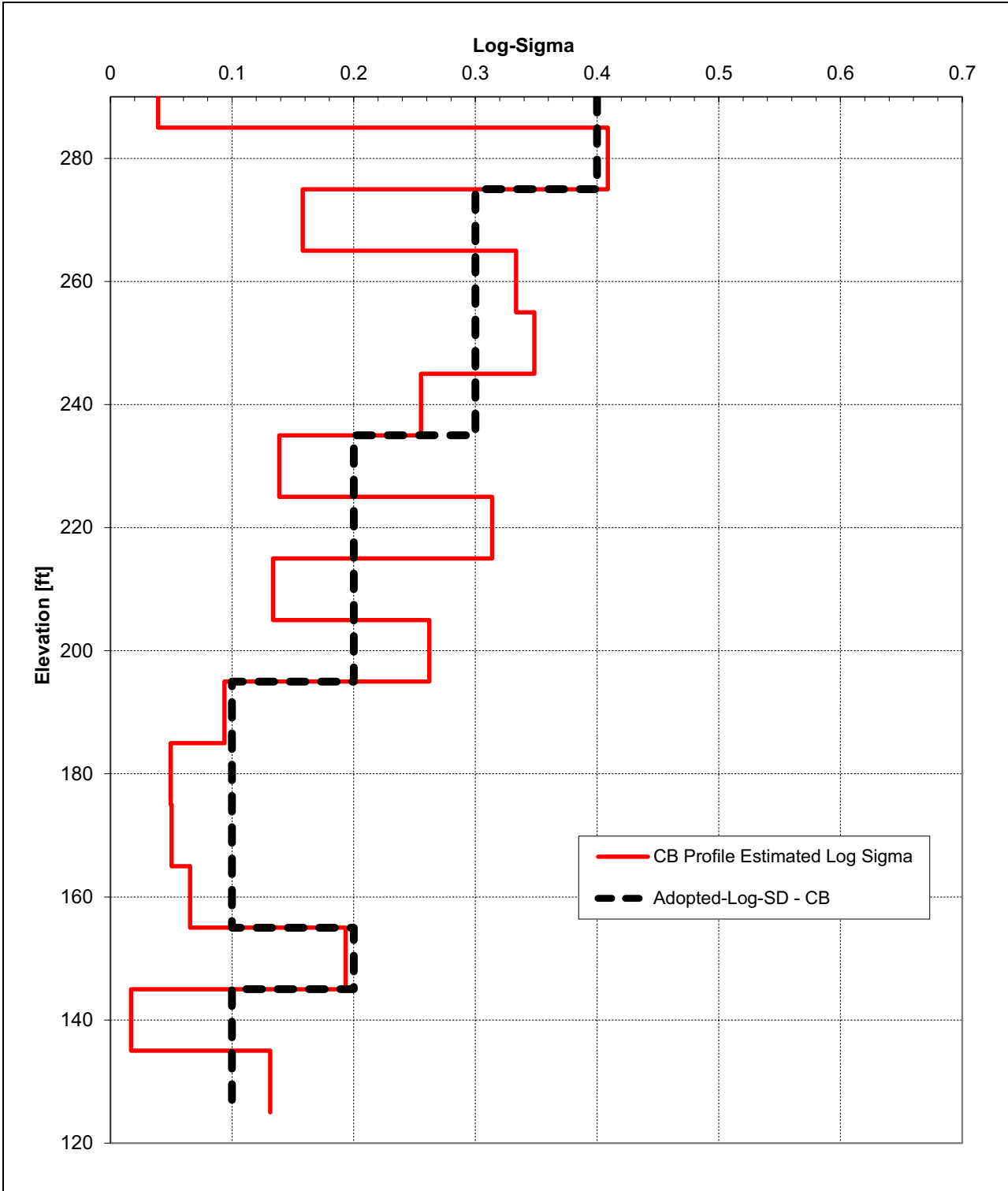
NAPS COL 2.0-27-A Figure 2.5.2-259 Best Estimate Shear-Wave Velocity Profile for RB/FB and CB Soil Columns



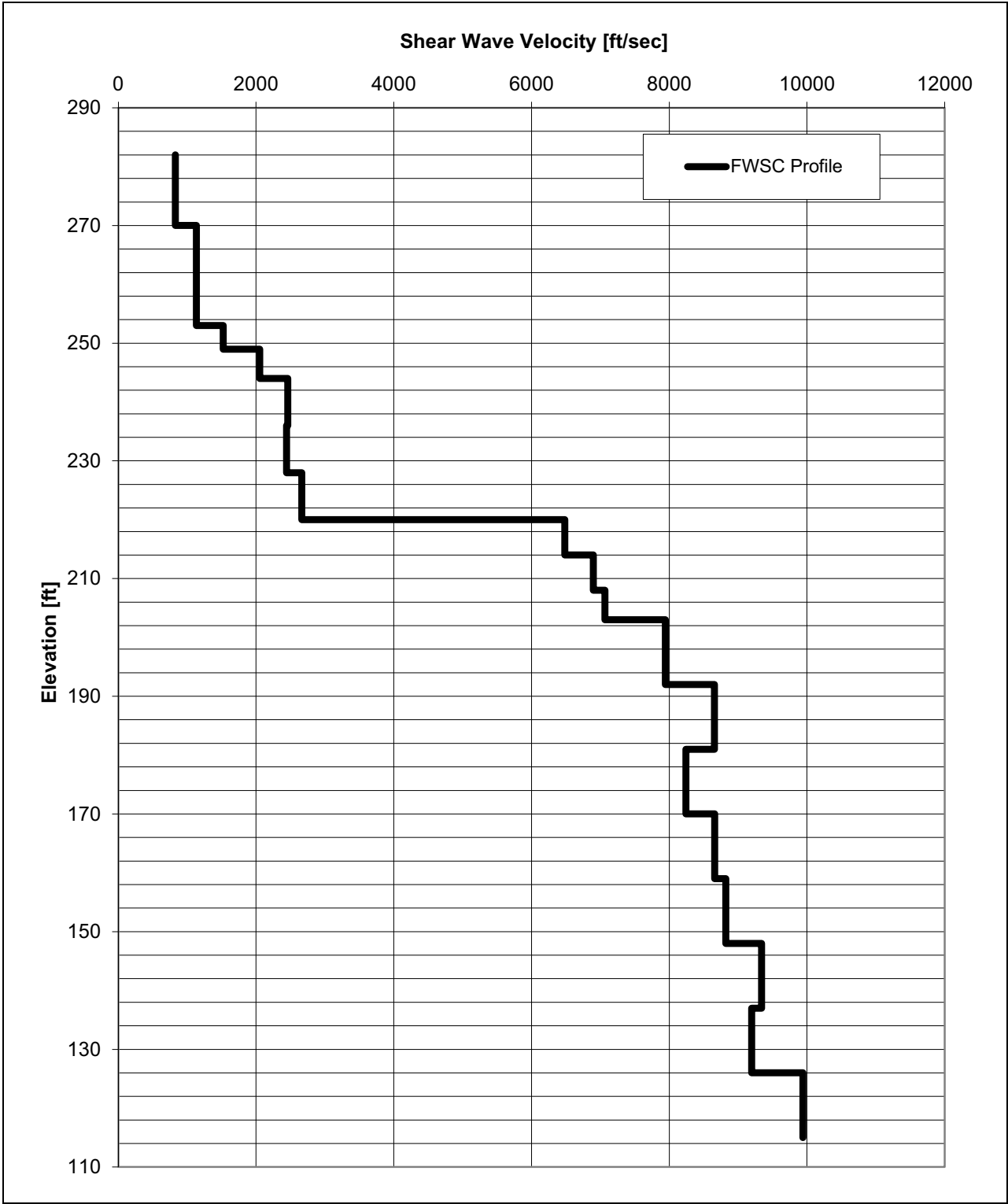
NAPS COL 2.0-27-A Figure 2.5.2-260 Logarithmic Standard Deviation for the RB/FB Shear-Wave Velocity Profile



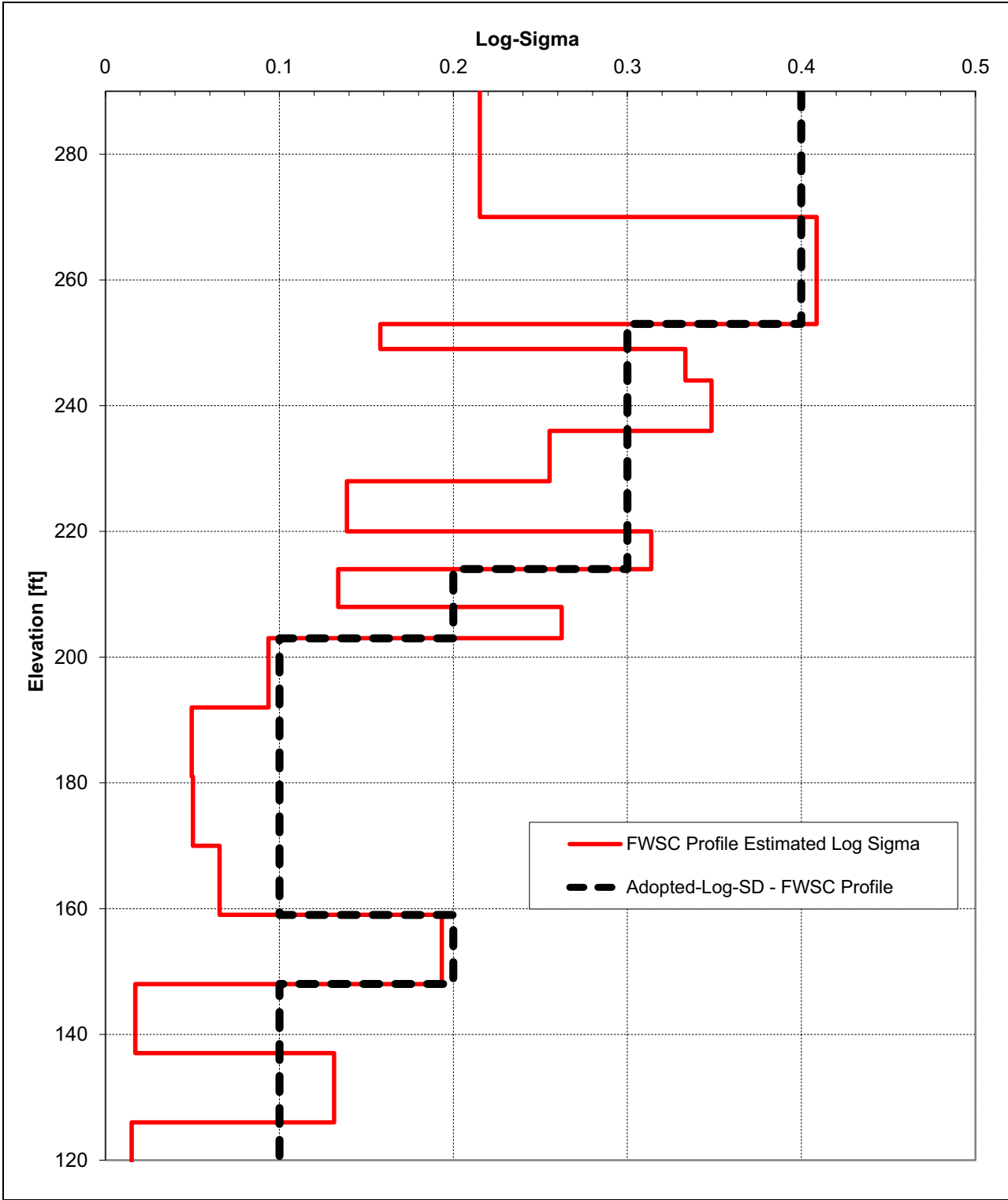
NAPS COL 2.0-27-A Figure 2.5.2-261 Logarithmic Standard Deviation for the CB Shear-Wave Velocity Profile



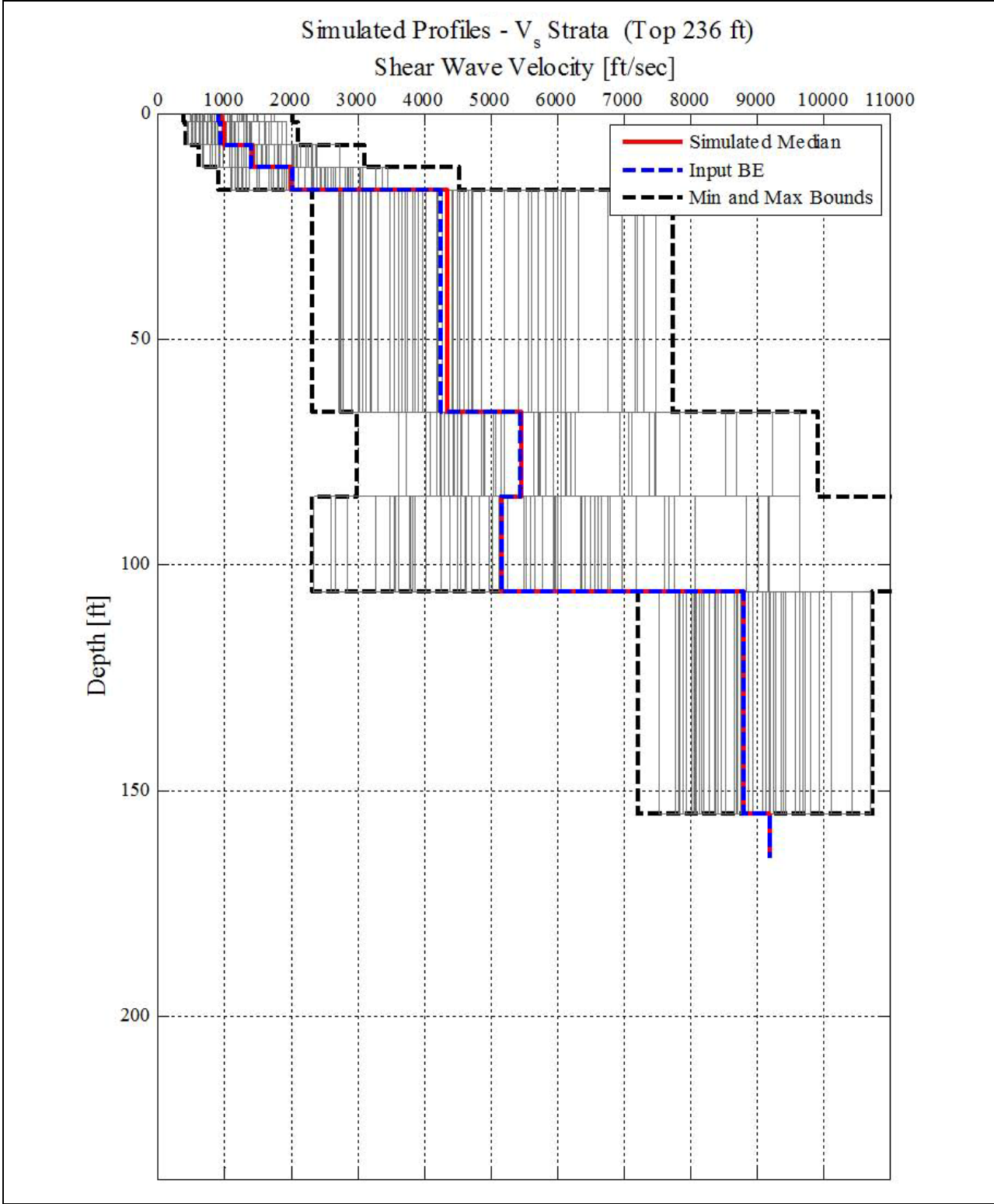
NAPS COL 2.0-27-A Figure 2.5.2-262 Best Estimate Shear-Wave Velocity Profile for FWSC Soil Column



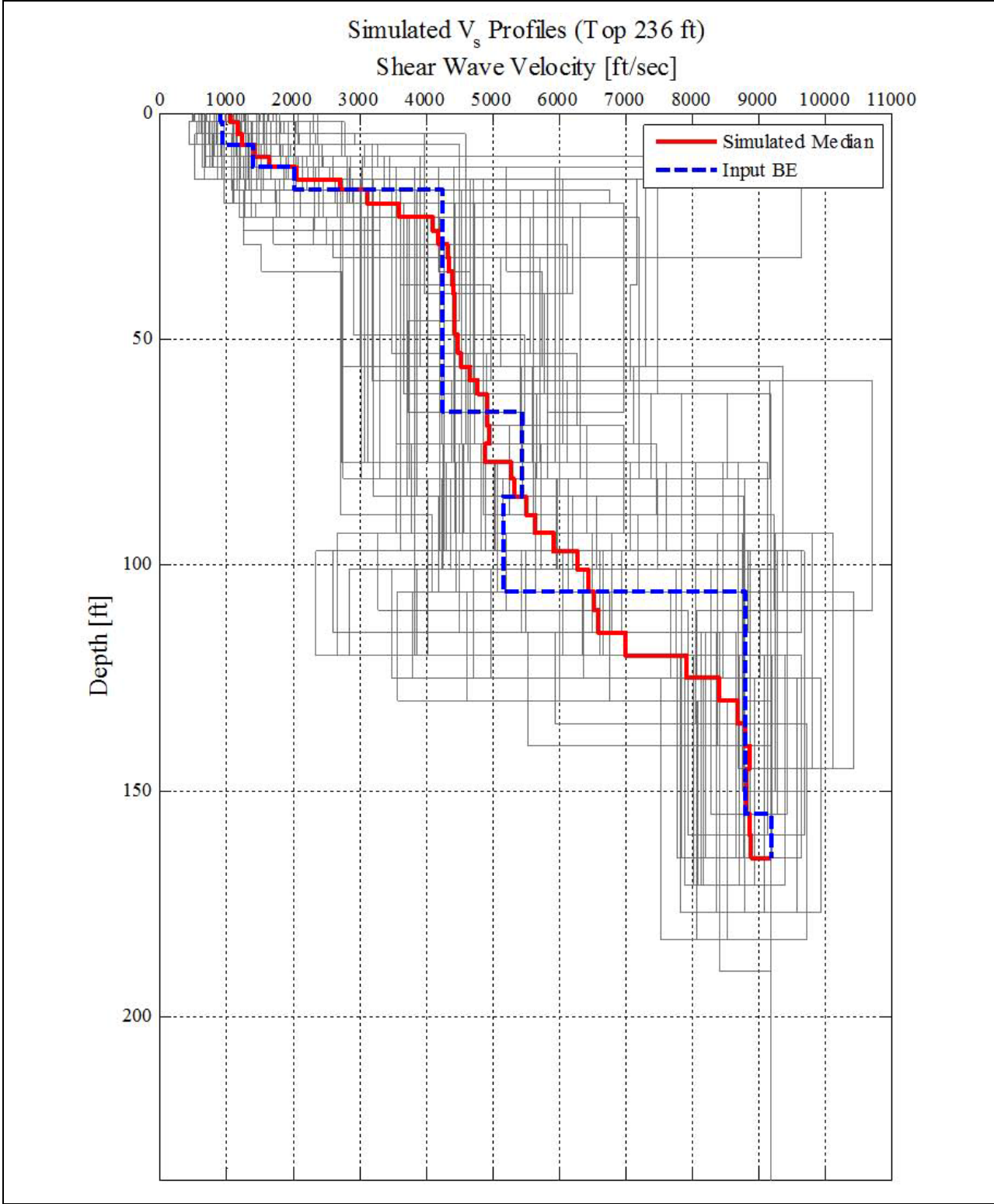
NAPS COL 2.0-27-A Figure 2.5.2-263 Logarithmic Standard Deviation for the FWSC Shear-Wave Velocity Profile



NAPS COL 2.0-27-A Figure 2.5.2-264 Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for RB/FB Soil Column Not Including Thickness Variation (Half-Space at  $V_s = 9,200$  ft/s)

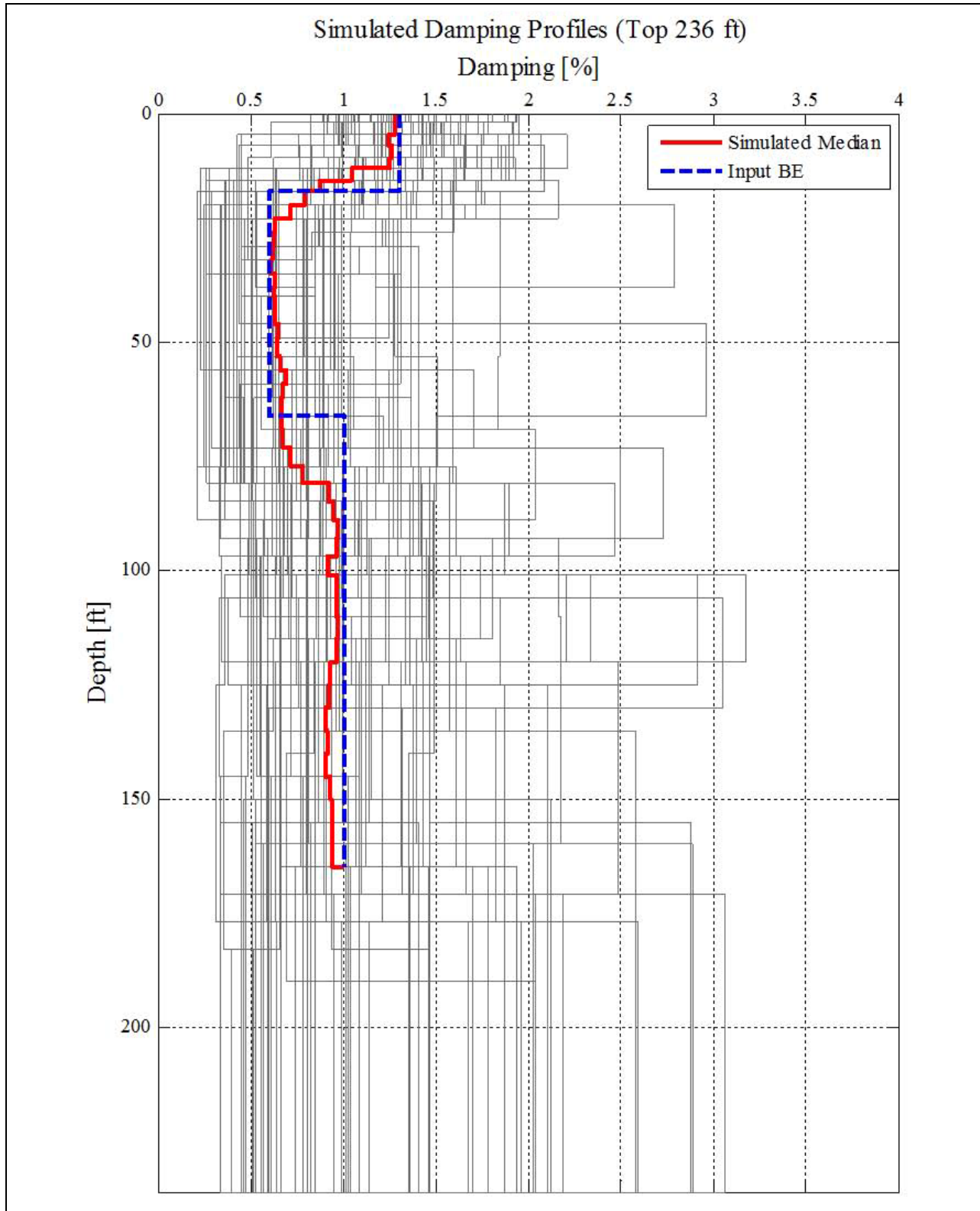


NAPS COL 2.0-27-A Figure 2.5.2-265 Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for RB/FB Soil Column Including Thickness Variation (Half-Space at  $V_S = 9,200$  ft/s)

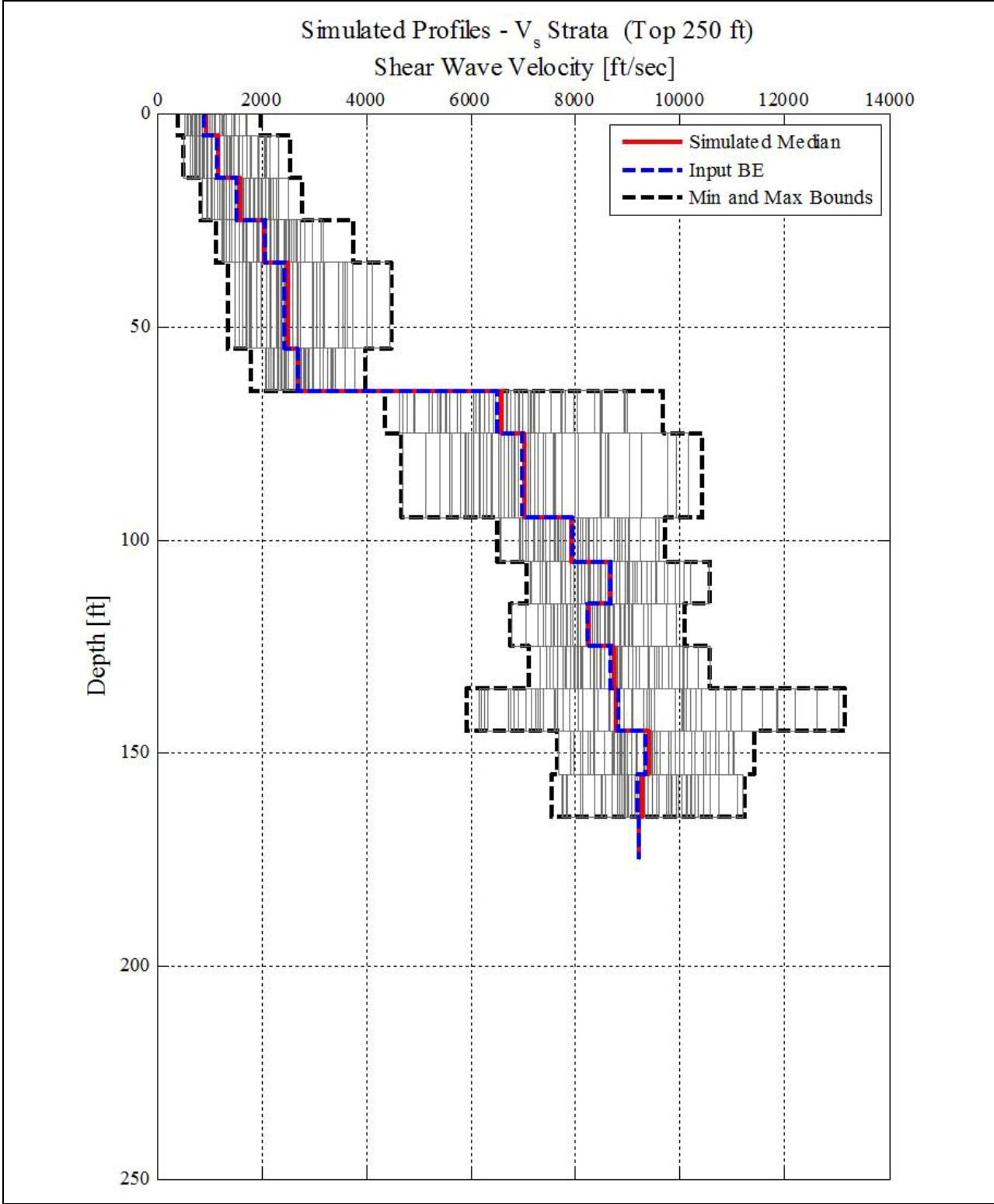




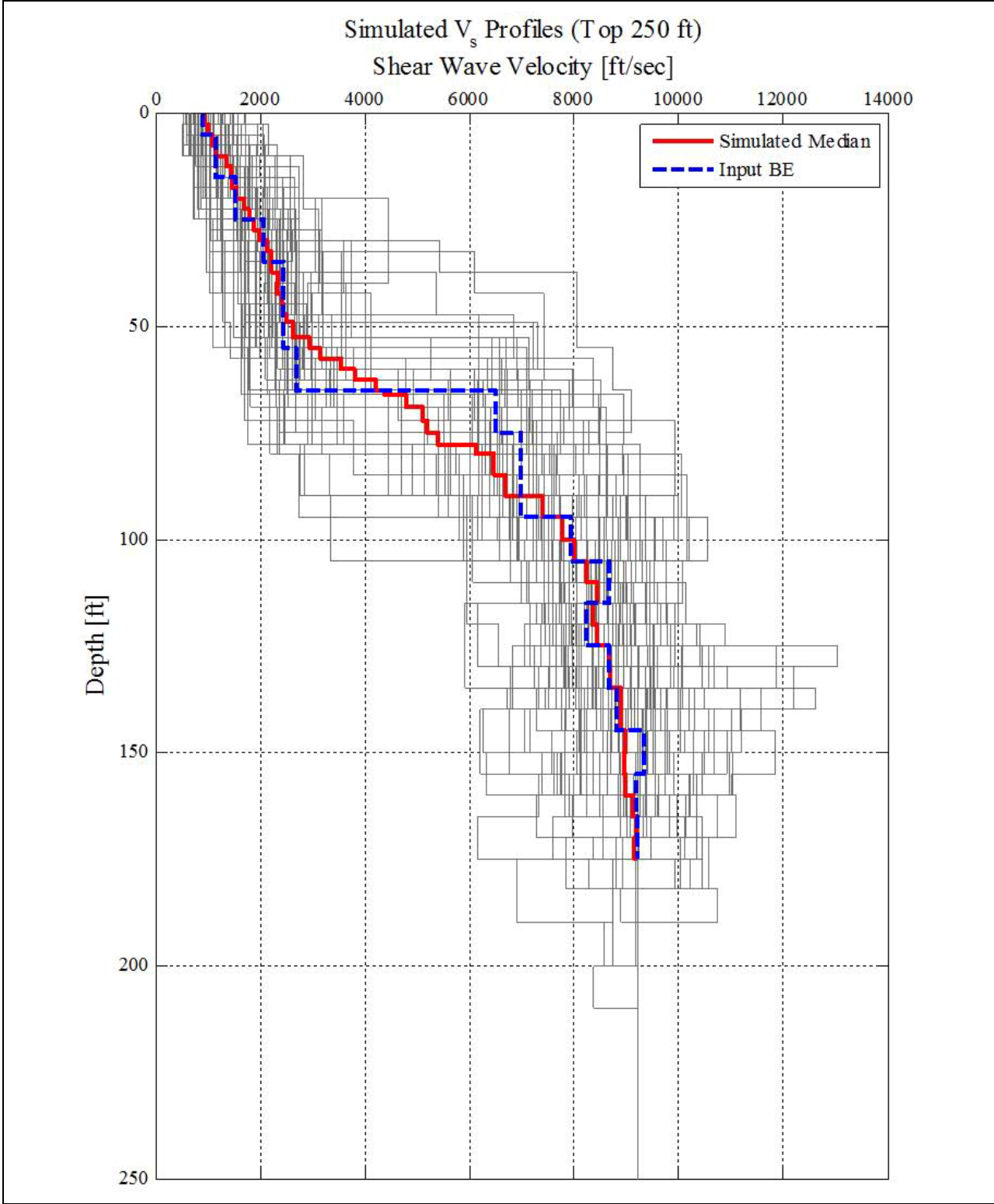
NAPS COL 2.0-27-A Figure 2.5.2-266 Low-Strain Damping Ratio for 60 Simulated Profiles for RB/FB Soil Column



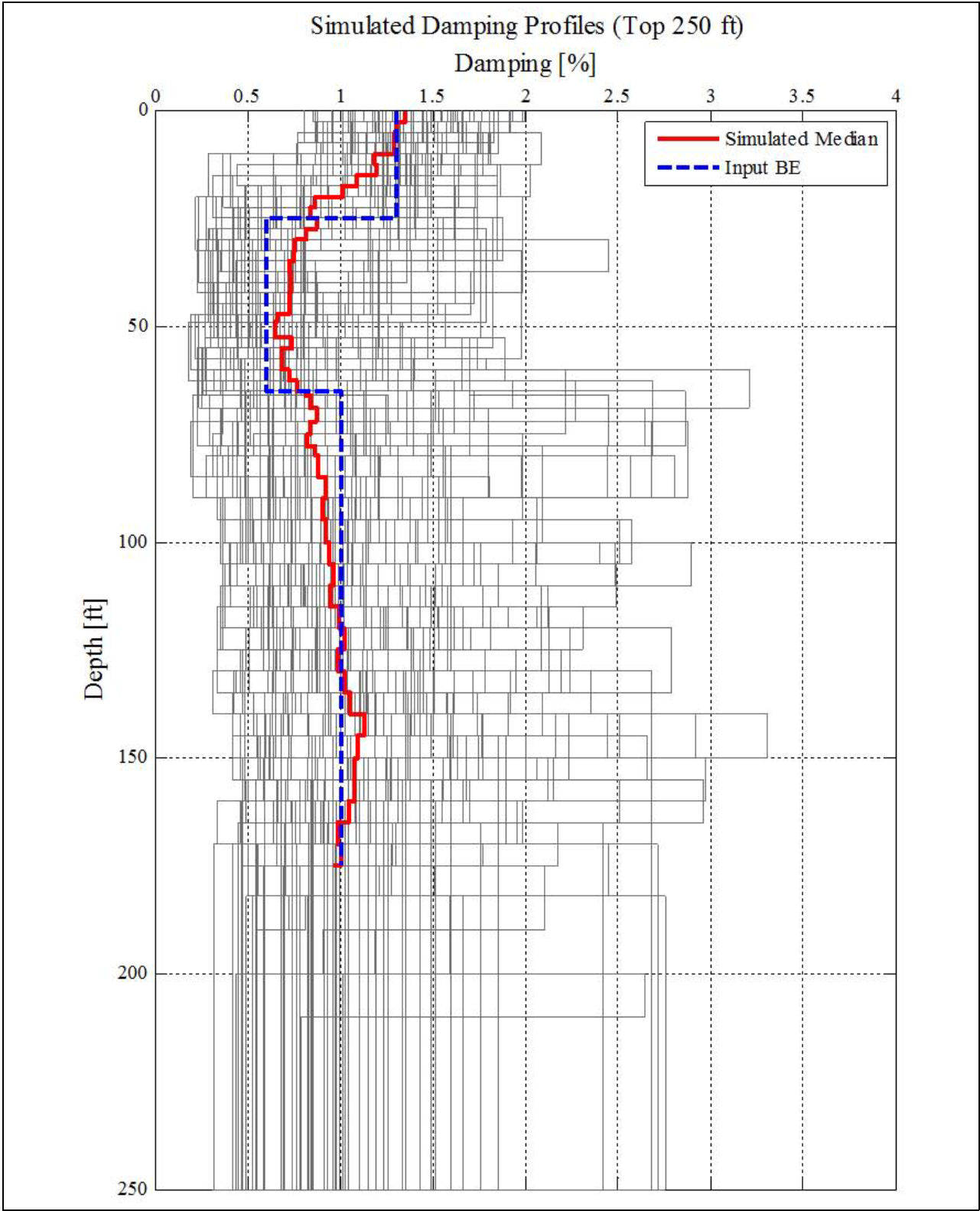
NAPS COL 2.0-27-A Figure 2.5.2-267 Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for CB Soil Column Not Including Thickness Variation (Half-Space at  $V_S = 9,200$  ft/s)



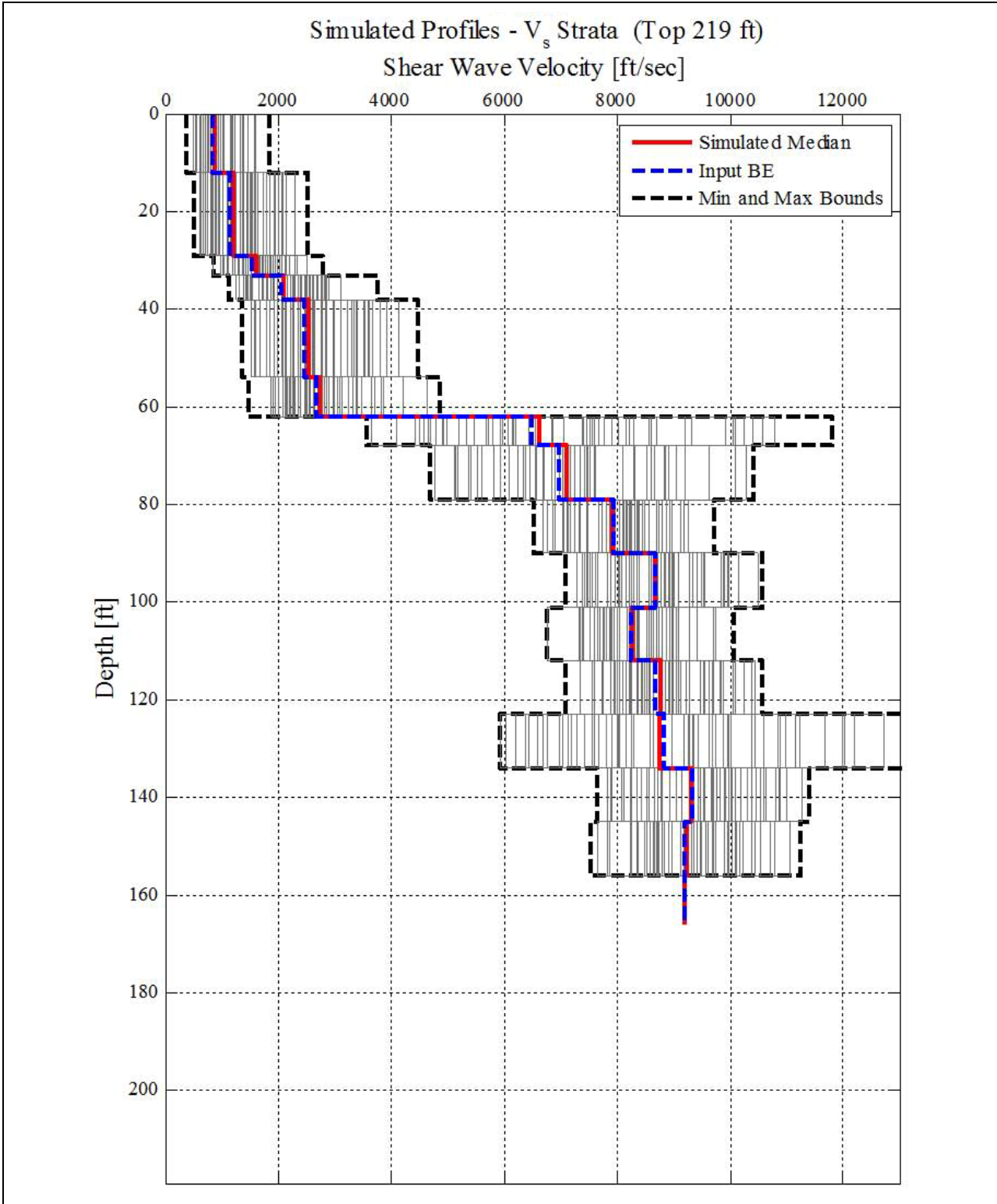
NAPS COL 2.0-27-A    **Figure 2.5.2-268**    **Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for CB Soil Column Including Thickness Variation (Half-Space at  $V_S = 9,200$  ft/s)**



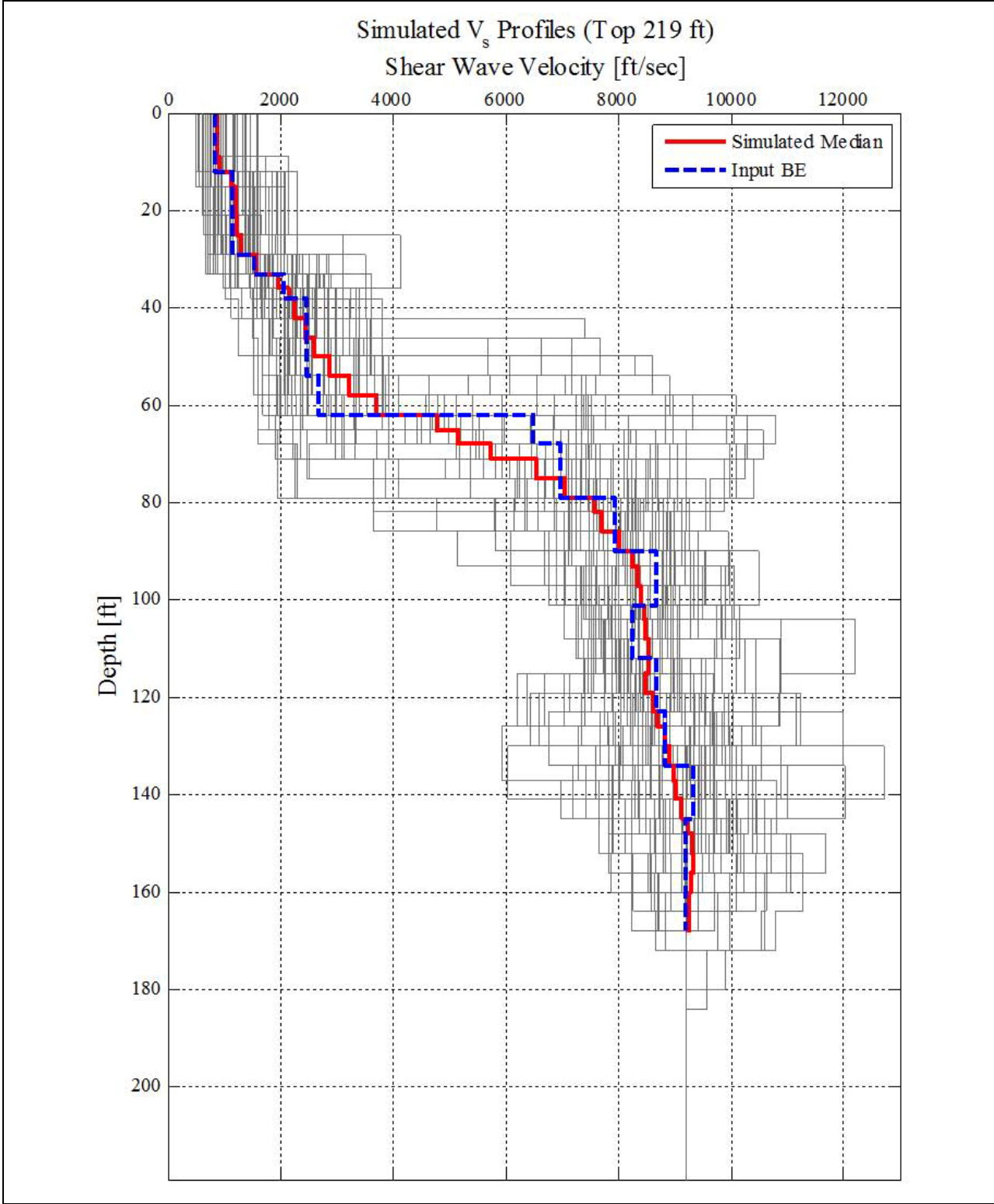
NAPS COL 2.0-27-A Figure 2.5.2-269 Low-Strain Damping Ratio for 60 Simulated Profiles for CB Soil Column



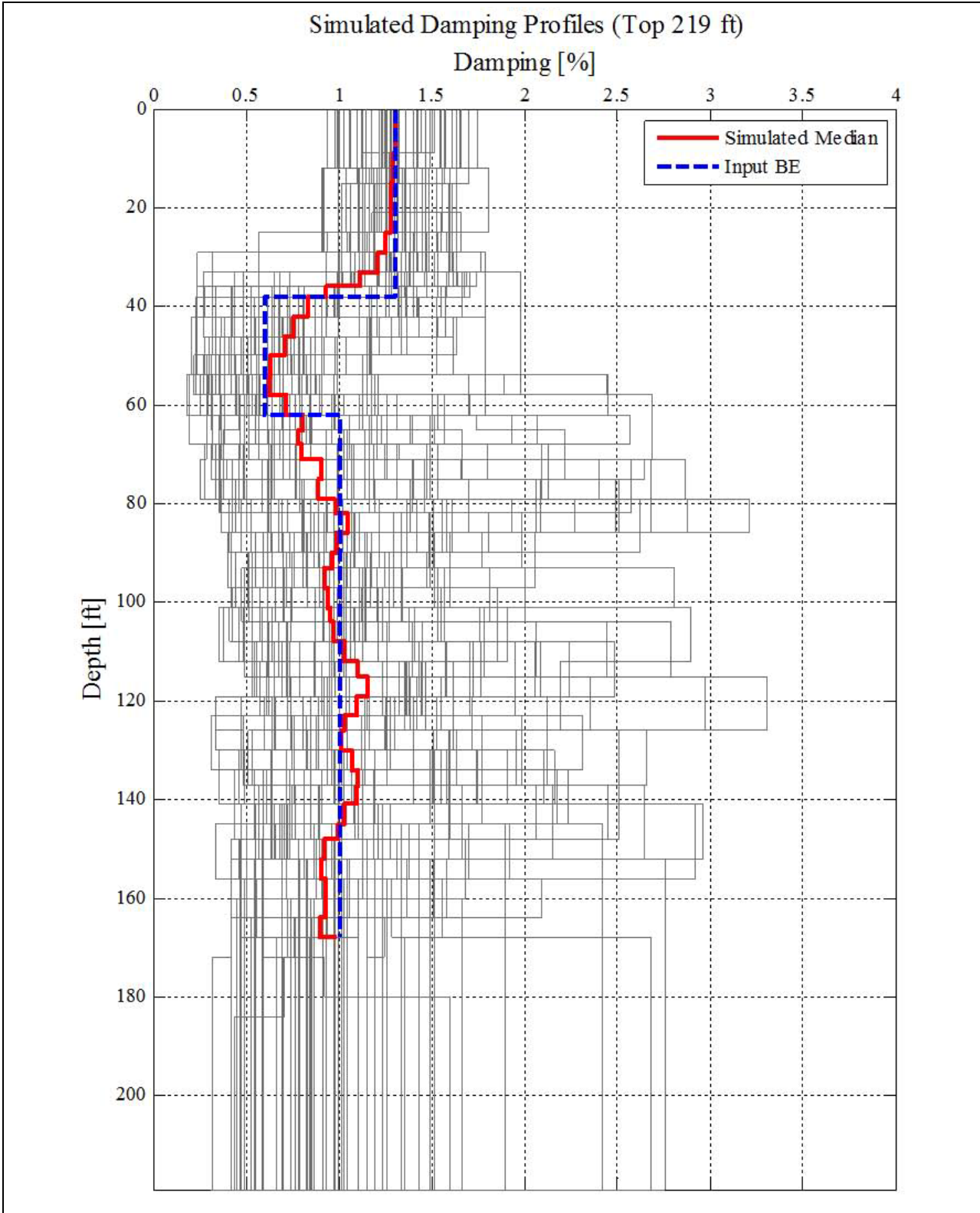
NAPS COL 2.0-27-A Figure 2.5.2-270 Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for FWSC Soil Column Not Including Thickness Variation (Half-Space at  $V_s = 9,200$  ft/s)



NAPS COL 2.0-27-A Figure 2.5.2-271 Low-Strain Shear-Wave Velocity for 60 Simulated Profiles for FWSC Soil Column Including Thickness Variation (Half-Space at  $V_s = 9,200$  ft/s)



NAPS COL 2.0-27-A Figure 2.5.2-272 Low-Strain Damping Ratio for 60 Simulated Profiles for FWSC Soil Column



NAPS COL 2.0-27-A Figure 2.5.2-273 Strain-Dependent Property Curves for 60 Simulated Profiles for Saprolite1 Stratum of RB/FB Soil Column

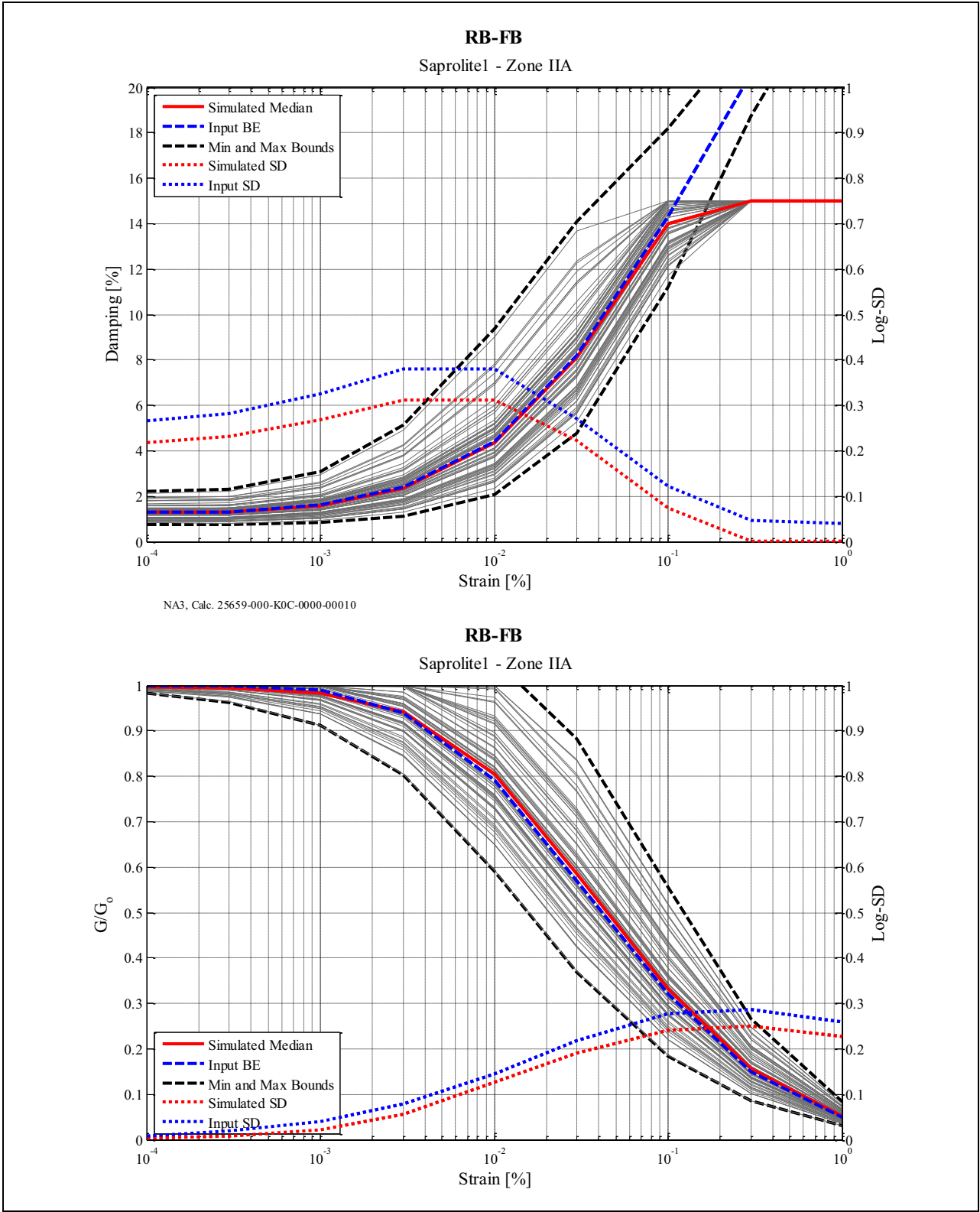
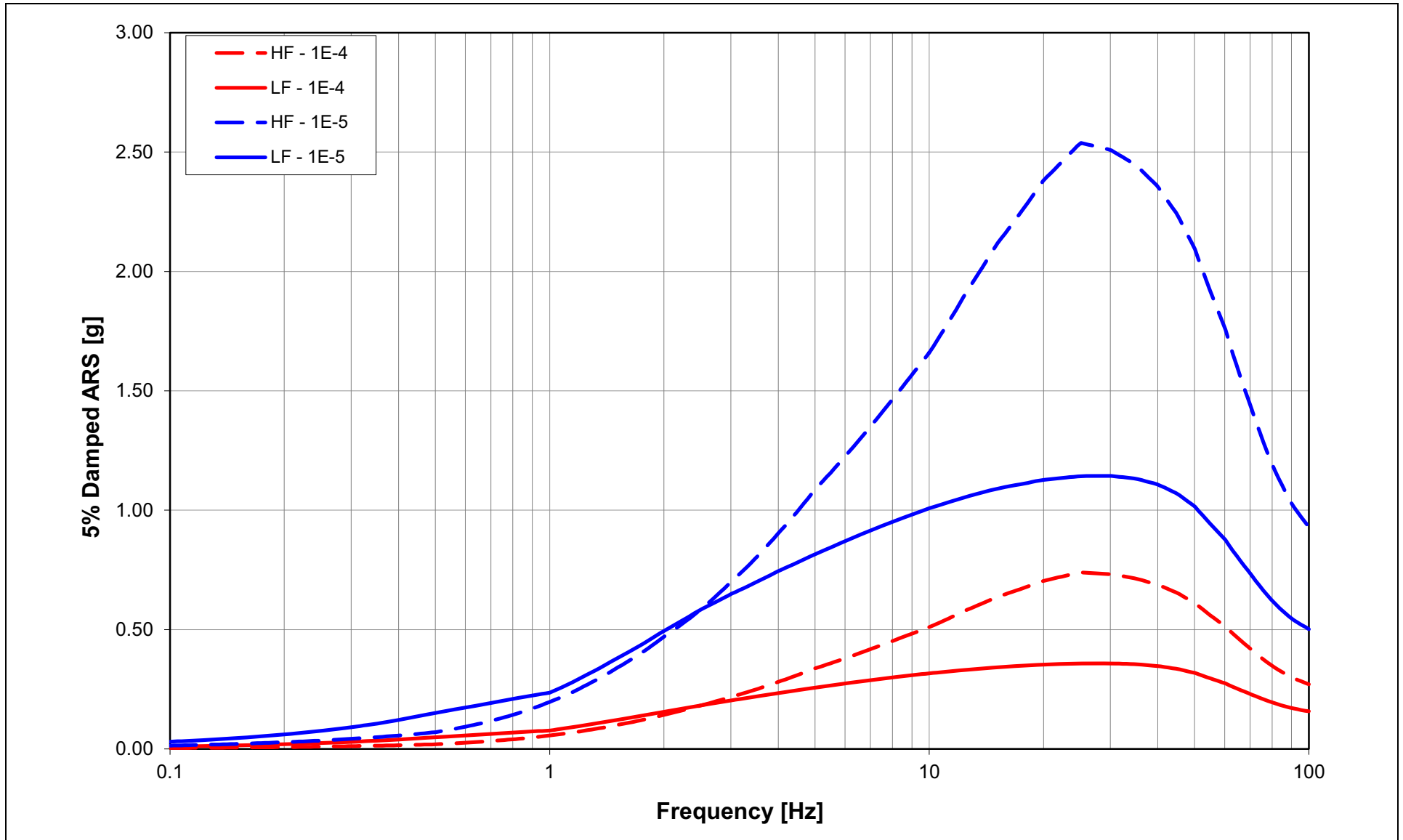
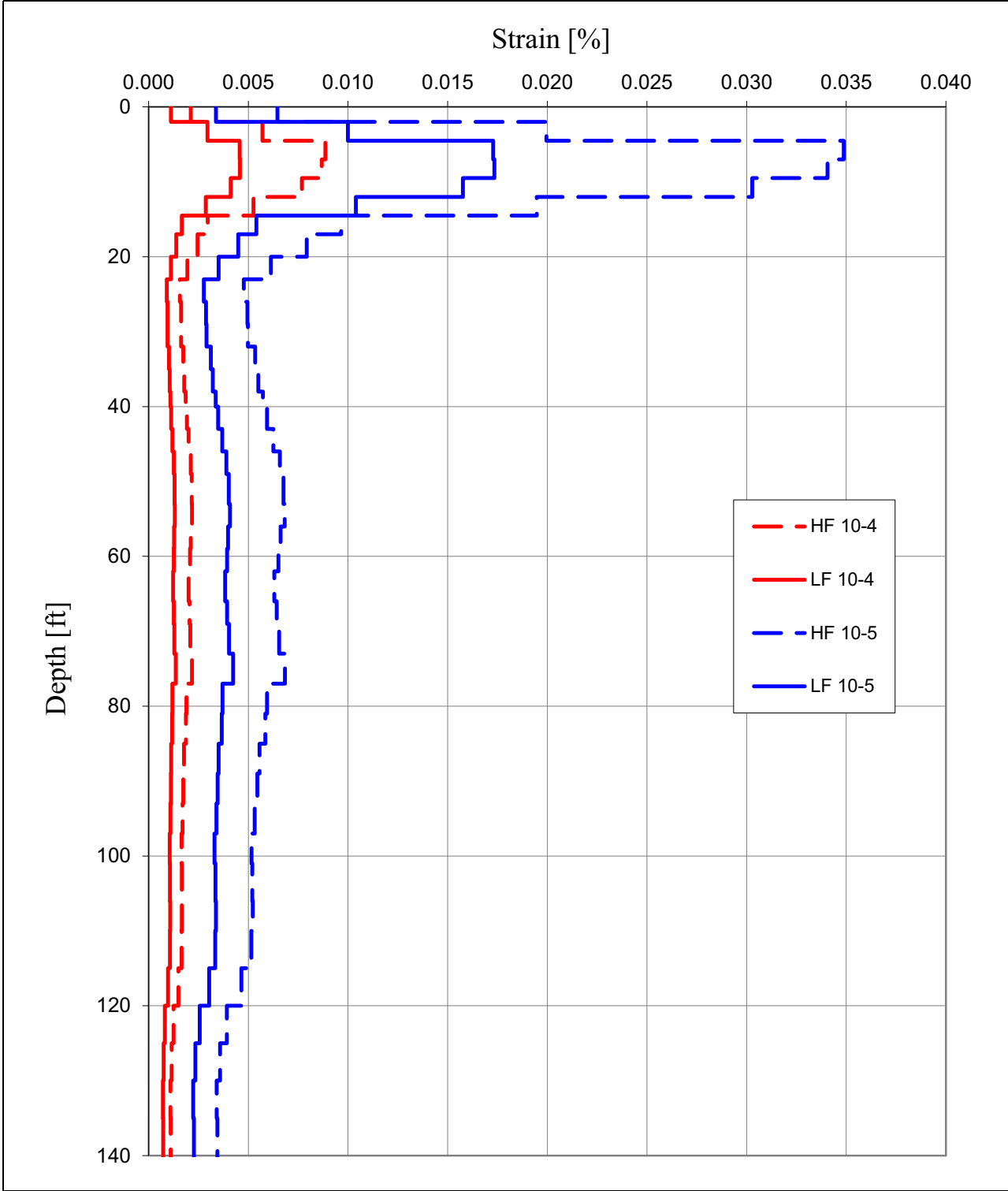




Figure 2.5.2-274 High Frequency (HF) and Low Frequency (LF) Hard Rock Input Ground Motion Spectra

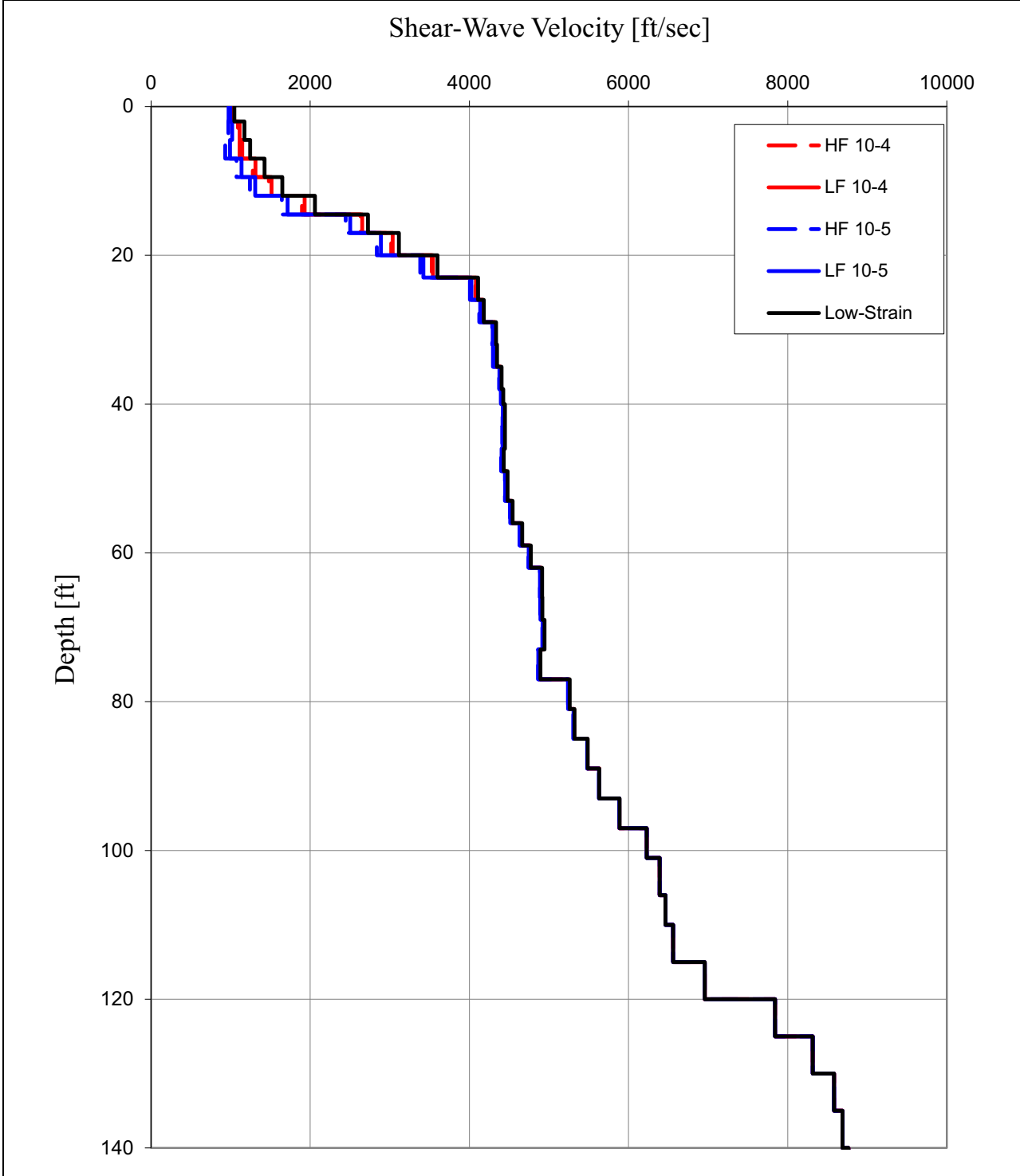


NAPS COL 2.0-27-A Figure 2.5.2-275 Log-Mean Strain Profiles in RB/FB Soil Column Subject to  $10^{-4}$  and  $10^{-5}$  HF and LF Input Hard Rock Ground Motions



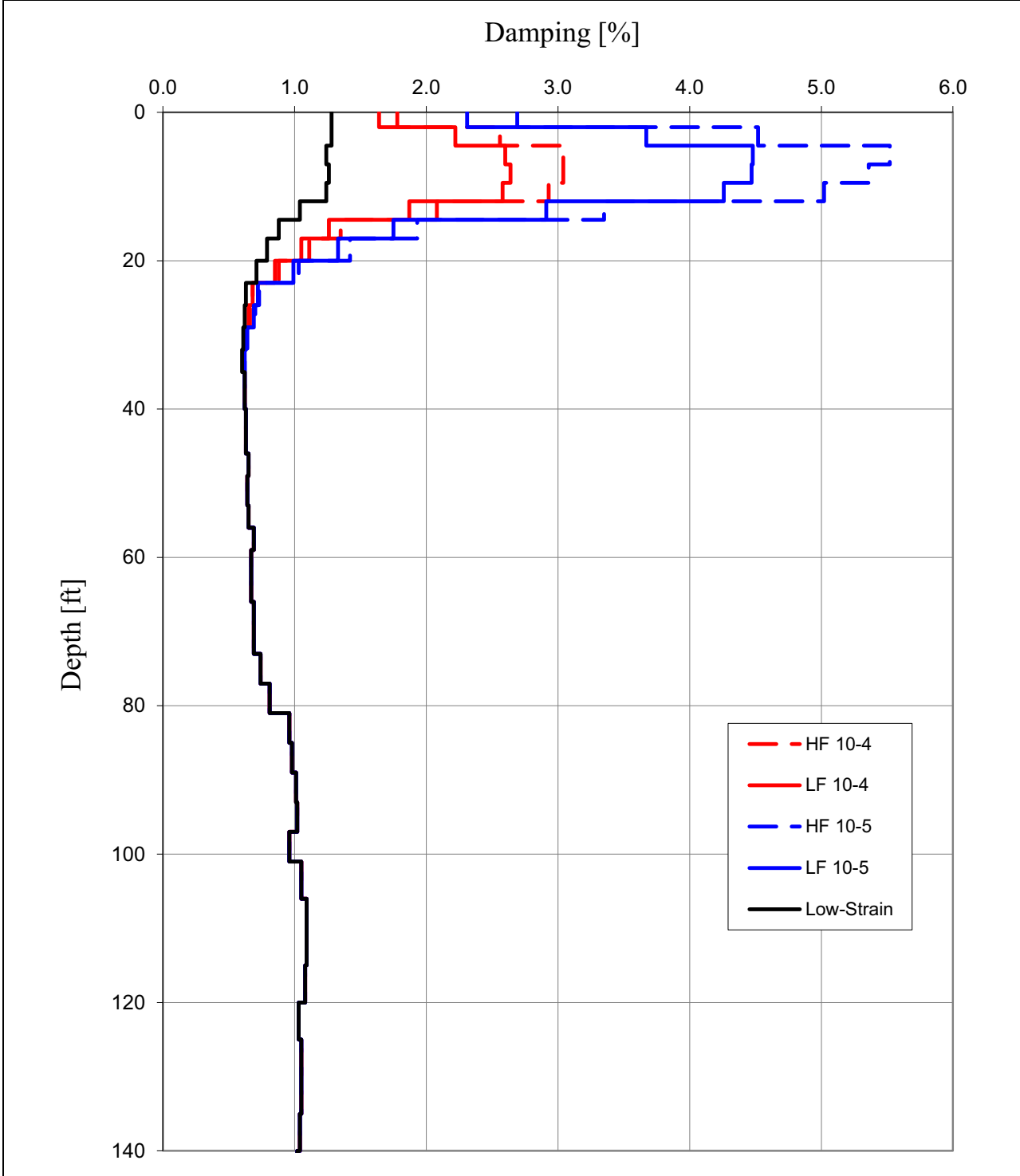
NOTE: Depth of zero corresponds to the finished grade at Elevation 290 ft.

NAPS COL 2.0-27-A    **Figure 2.5.2-276 Log-Mean Low Strain and Strain-Compatible Shear Wave Velocity Profiles for RB/FB Soil Column Subject to  $10^{-4}$  and  $10^{-5}$  HF and LF Input Hard Rock Ground Motions**



NOTE: Depth of zero corresponds to the finished grade at Elevation 290 ft.

NAPS COL 2.0-27-A Figure 2.5.2-277 Log-Mean Low Strain and Strain-Compatible Damping Profiles for RB/FB Soil Column Subject to  $10^{-4}$  and  $10^{-5}$  HF and LF Input Hard Rock Ground Motions



NOTE: Depth of zero corresponds to the finished grade at Elevation 290 ft.

**Figure 2.5.2-278 Mean Full Column Outcrop ARS Amplification Factors for RB/FB Soil Column at 10<sup>-4</sup> Hazard Level Input Ground Motion**

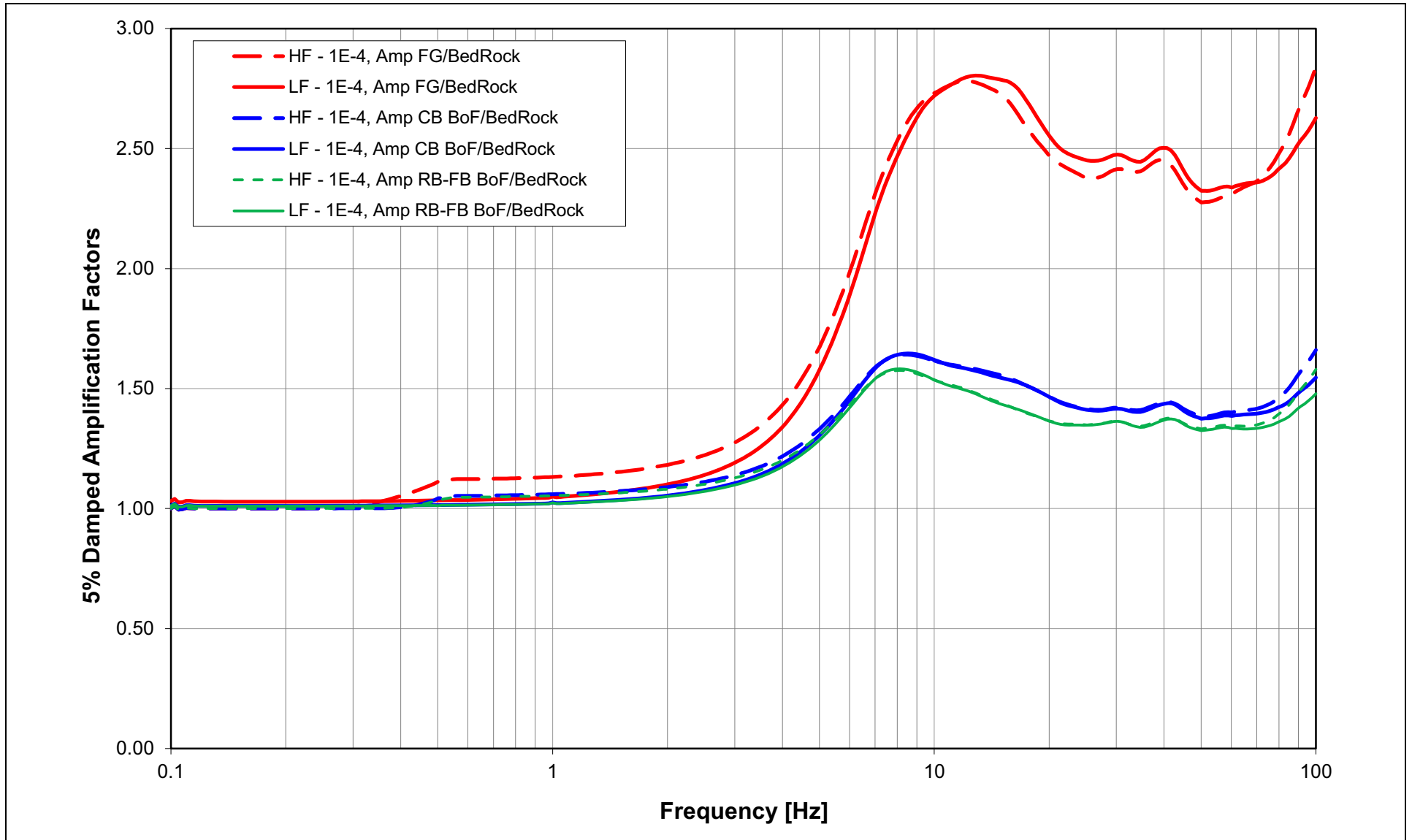
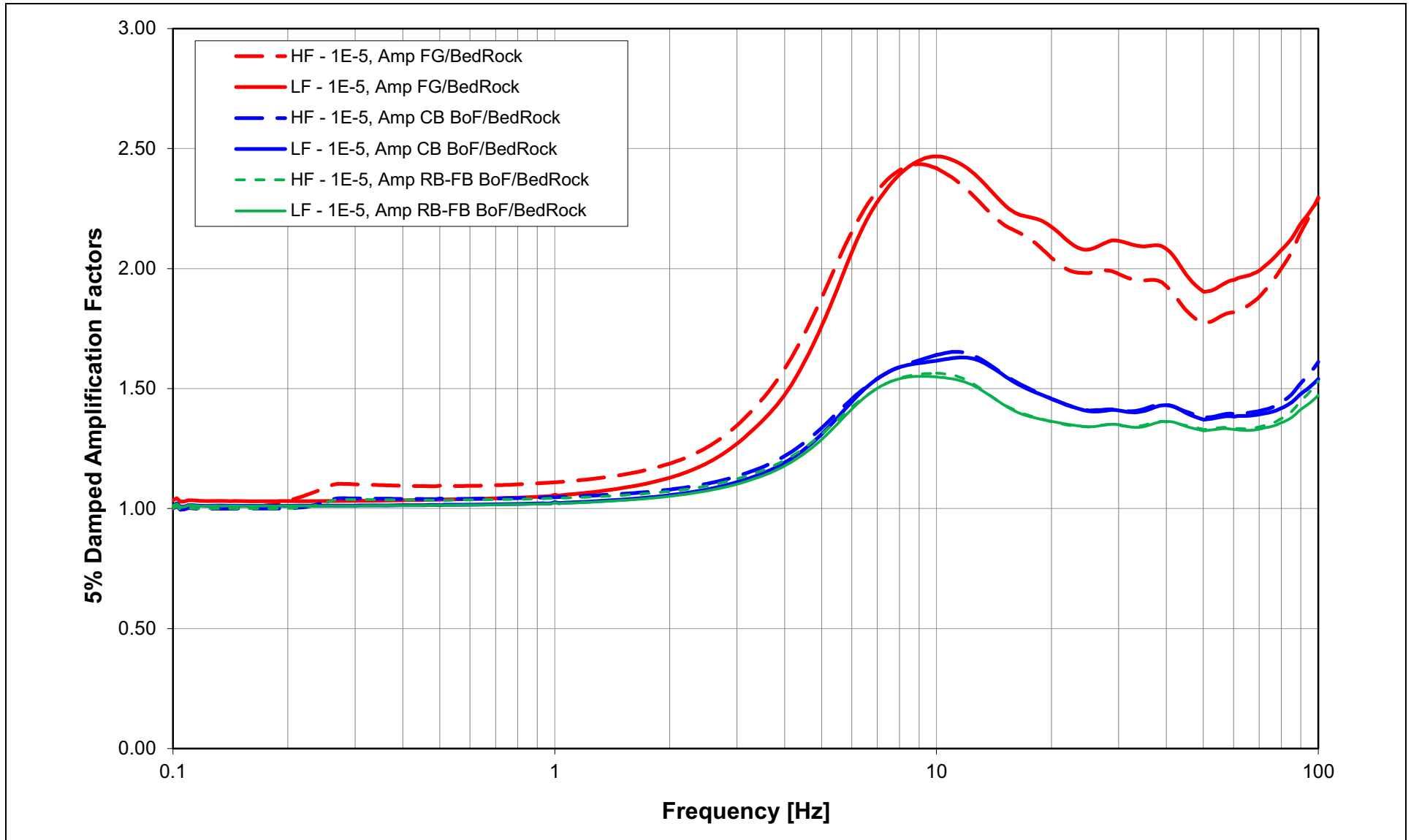


Figure 2.5.2-279 Mean Full Column Outcrop ARS Amplification Factors for RB/FB Soil Column at  $10^{-5}$  Hazard Level Input Ground Motion



NAPS COL 2.0-27-A Figure 2.5.2-280 Mean Full Column Outcrop ARS for RB/FB Soil Column at  $10^{-4}$  Hazard Level Input Ground Motion

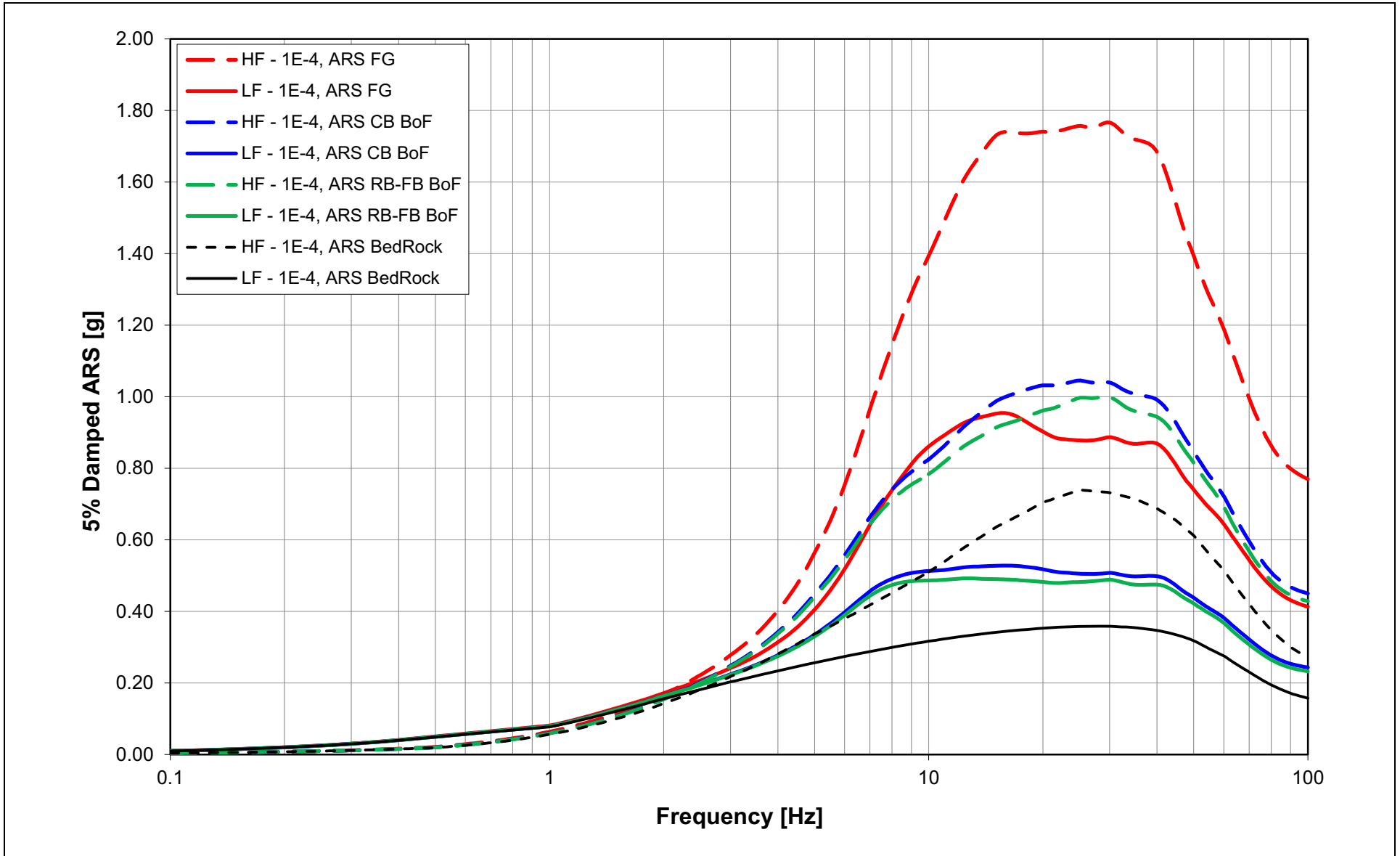
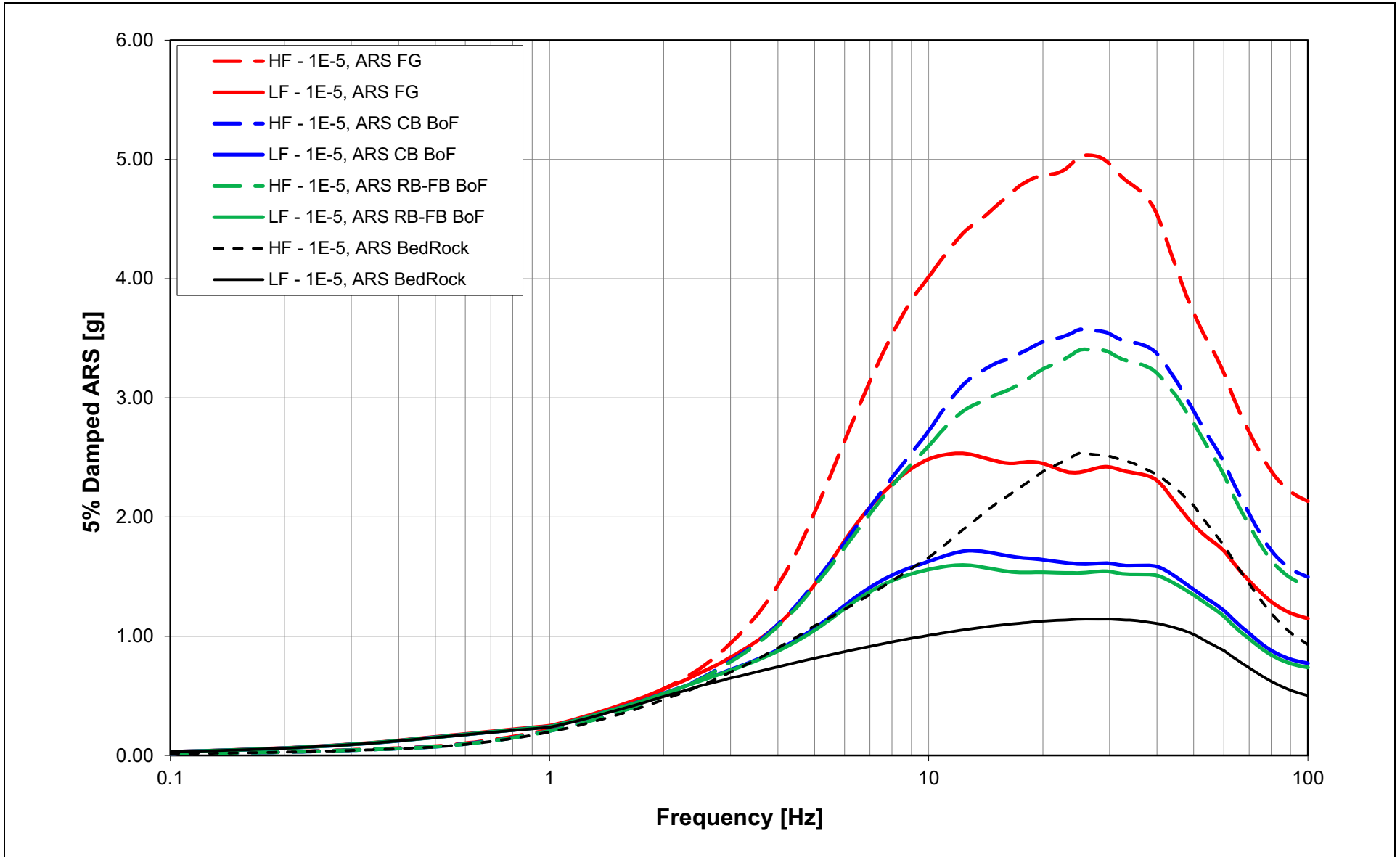
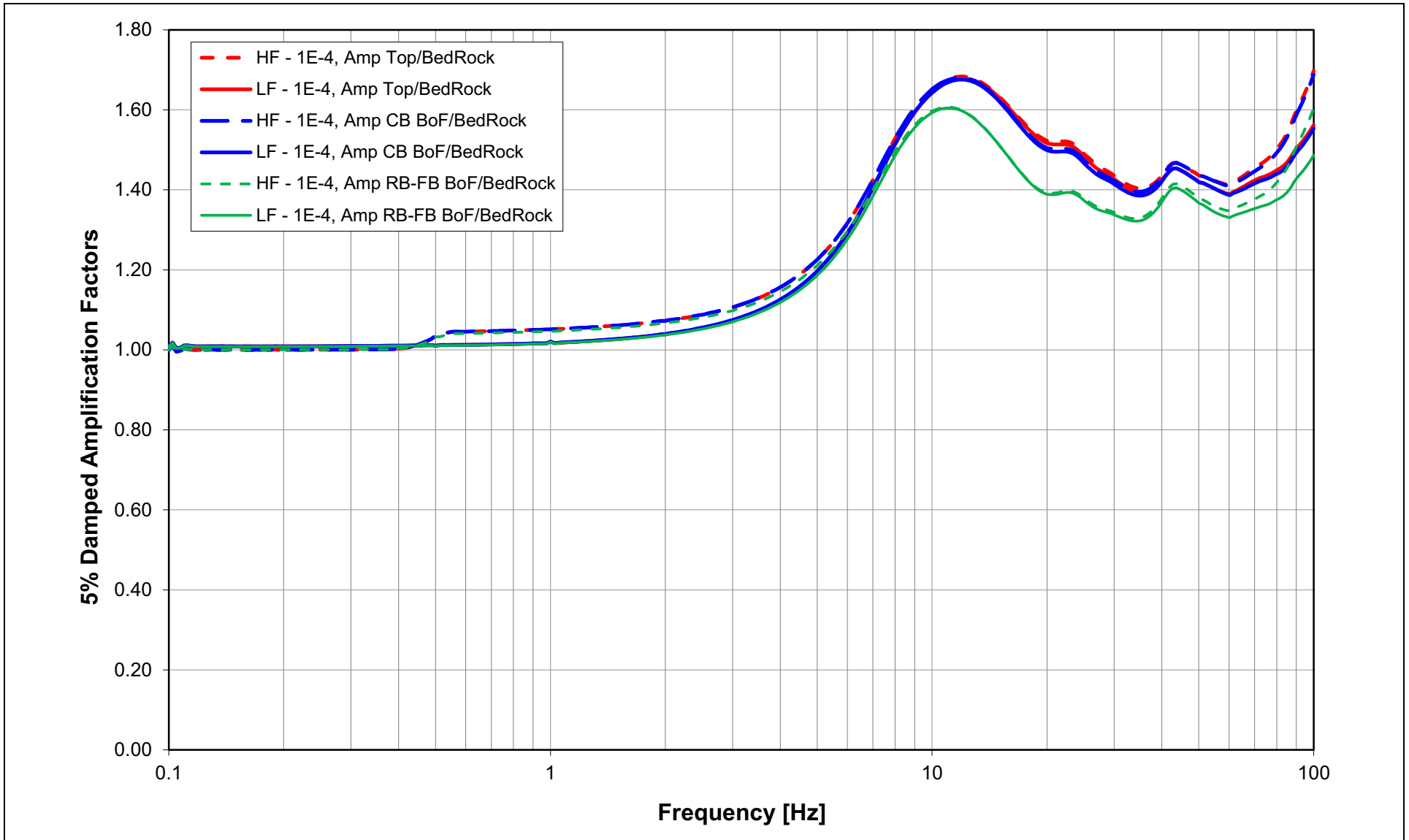


Figure 2.5.2-281 Mean Full Column Outcrop ARS for RB/FB Soil Column at 10<sup>-5</sup> Hazard Level Input Ground Motion

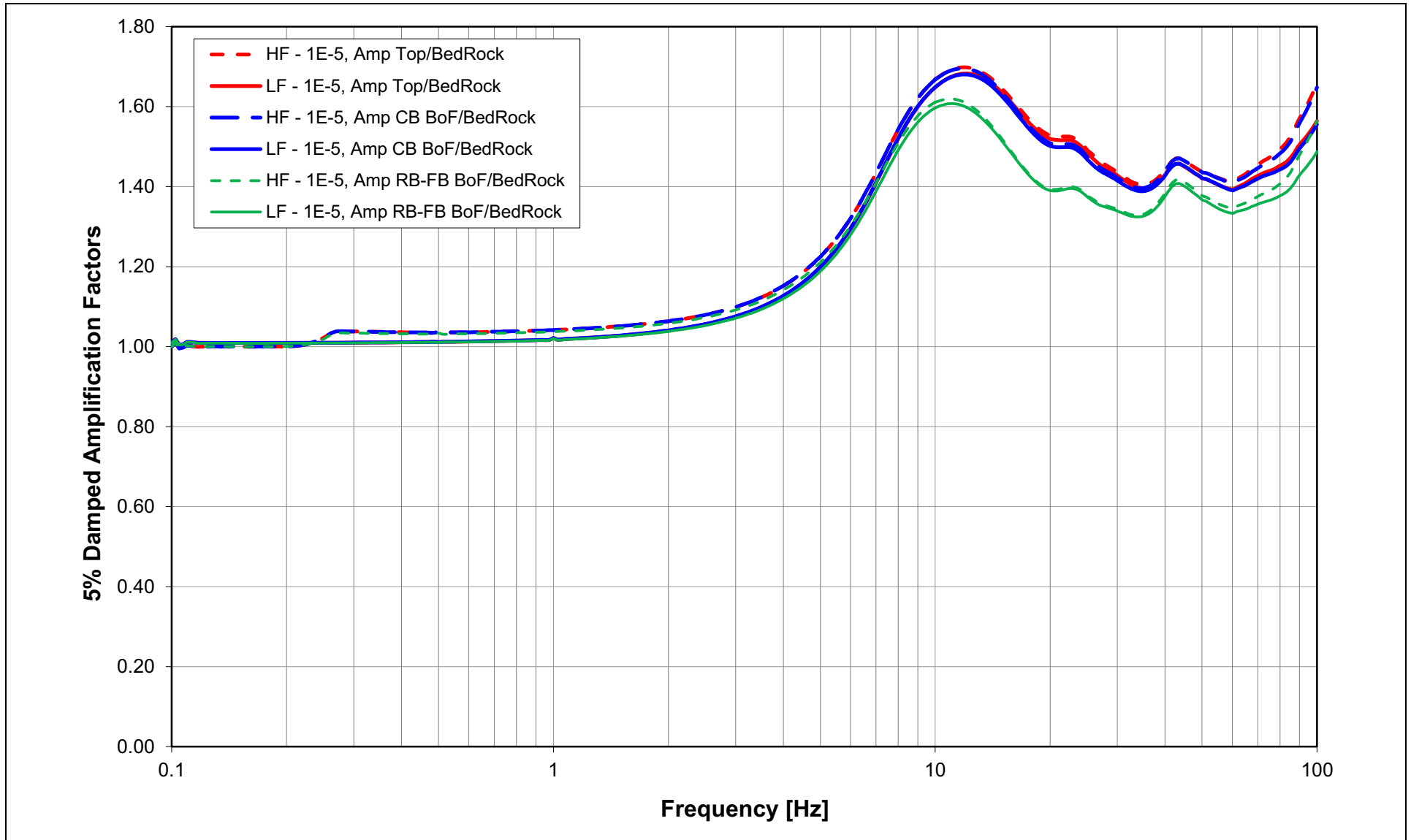




NAPS COL 2.0-27-A Figure 2.5.2-282 Mean Partial Column Outcrop ARS Amplification Factors for RB/FB Soil Column at  $10^{-4}$  Hazard Level Input Ground Motion



Mean Partial Column Outcrop ARS Amplification Factors for RB/FB Soil Column at  $10^{-5}$  Hazard Level Input Ground Motion



NAPS COL 2.0-27-A Figure 2.5.2-284 Mean Partial Column Outcrop ARS for RB/FB Soil Column at  $10^{-4}$  Hazard Level Input Ground Motion

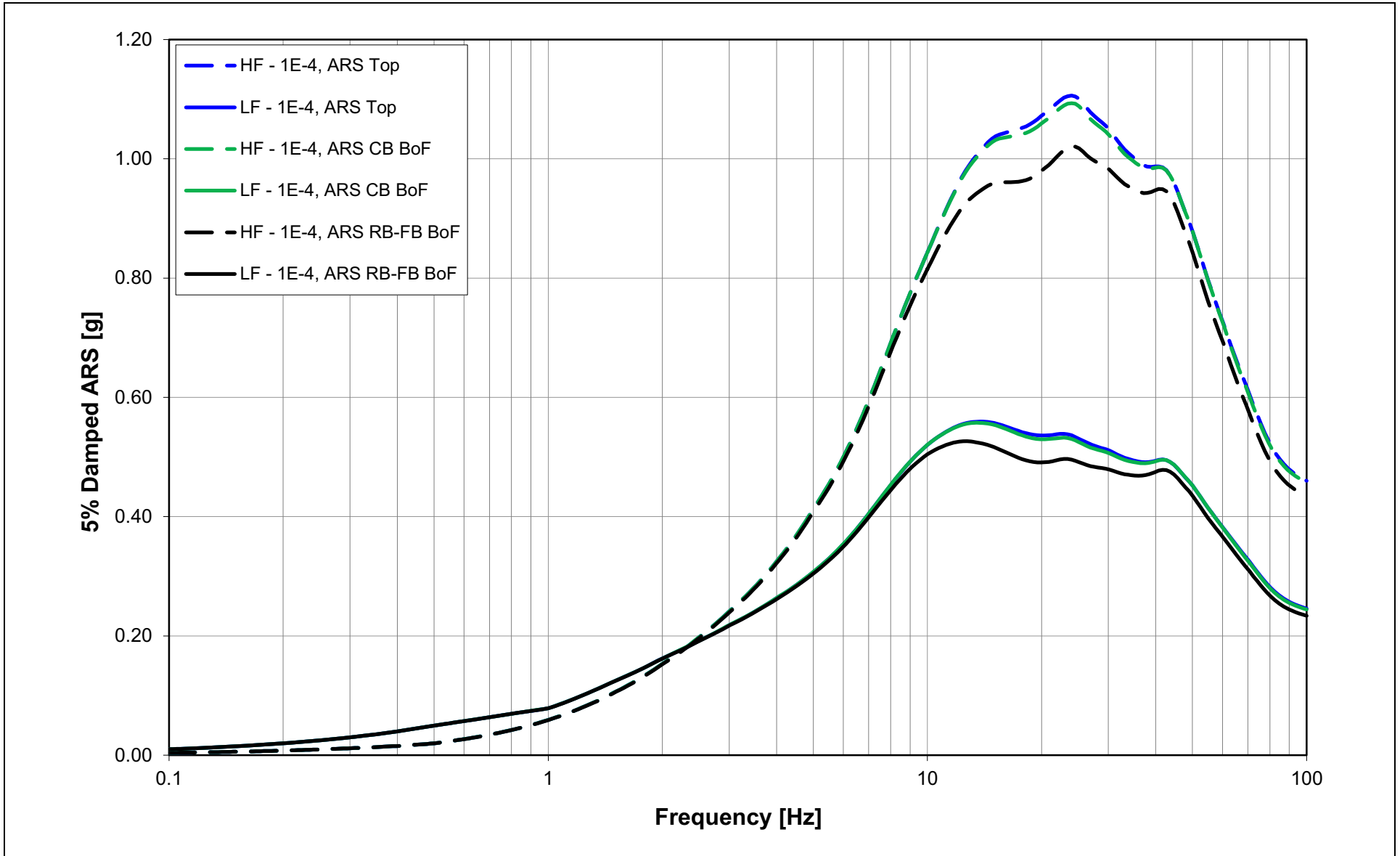
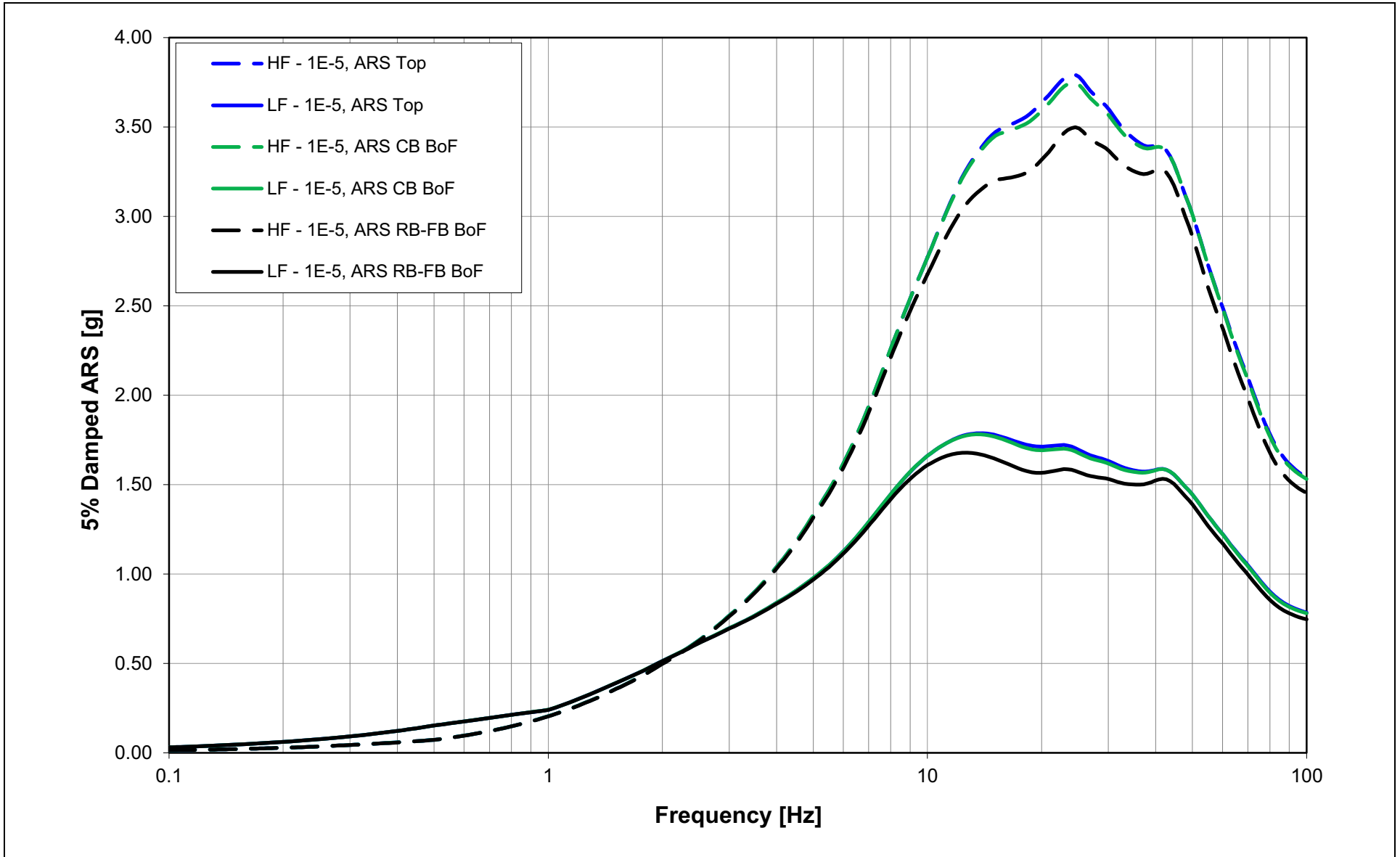
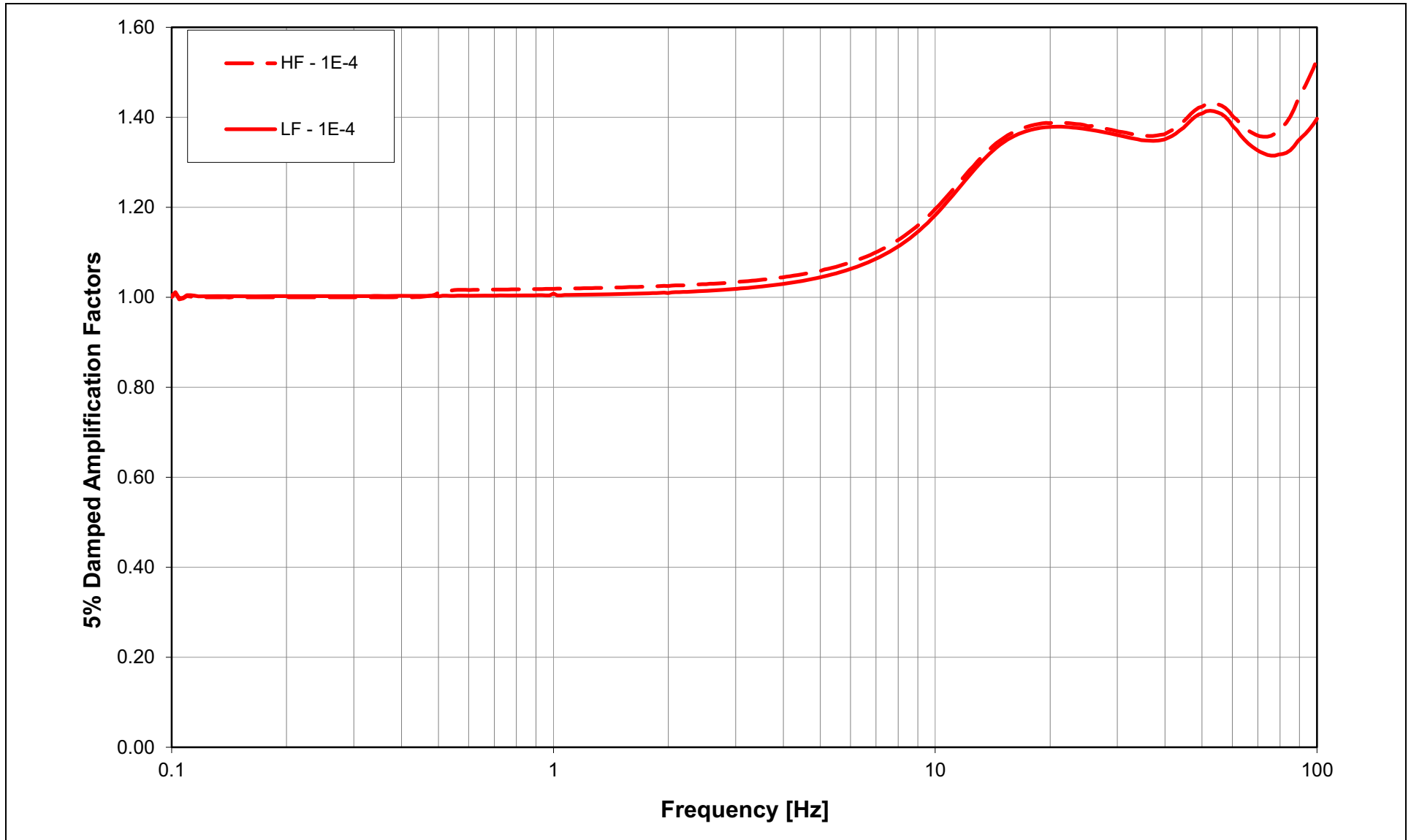


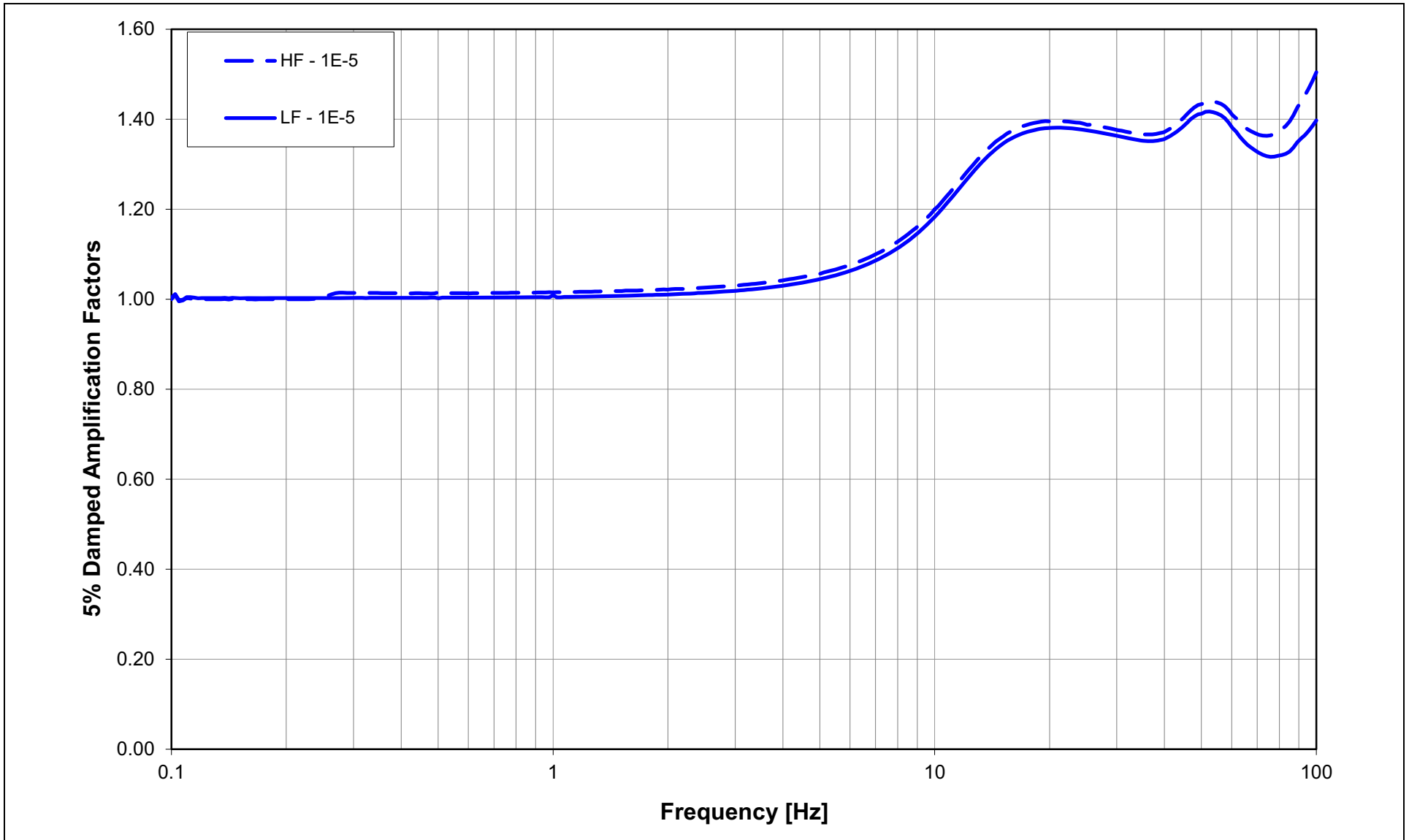
Figure 2.5.2-285 Mean Partial Column Outcrop ARS for RB/FB Soil Column at 10<sup>-5</sup> Hazard Level Input Ground Motion



Mean Geologic Outcrop ARS Amplification Factors for RB/FB Soil Column at  $10^{-4}$  Hazard Level Input Ground Motion



Mean Geologic Outcrop ARS Amplification Factors for RB/FB Soil Column at  $10^{-5}$  Hazard Level Input Ground Motion



NAPS COL 2.0-27-A Figure 2.5.2-288 Mean Geologic Outcrop ARS for RB/FB Soil Column at  $10^{-4}$  Hazard Level Input Ground Motion

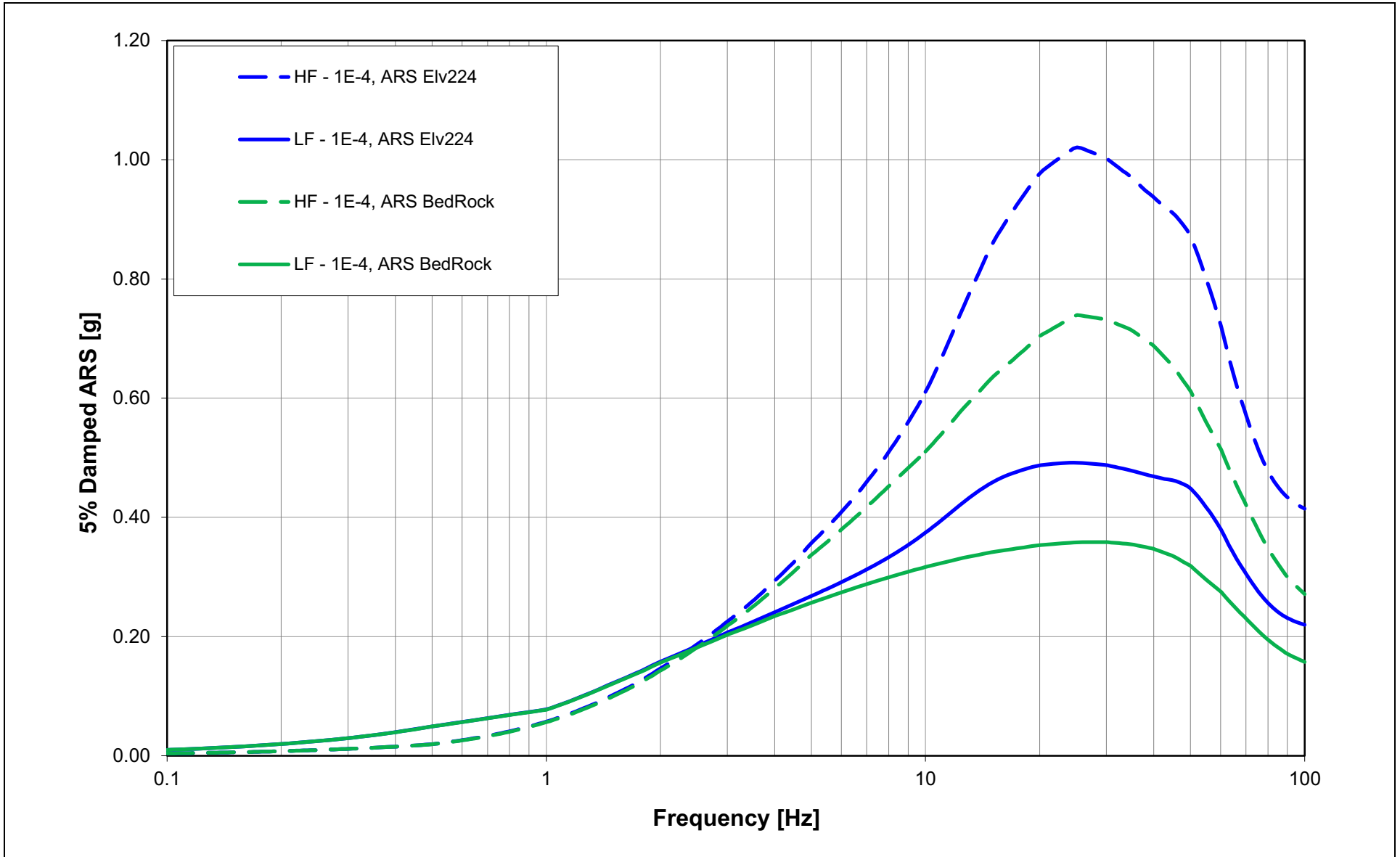
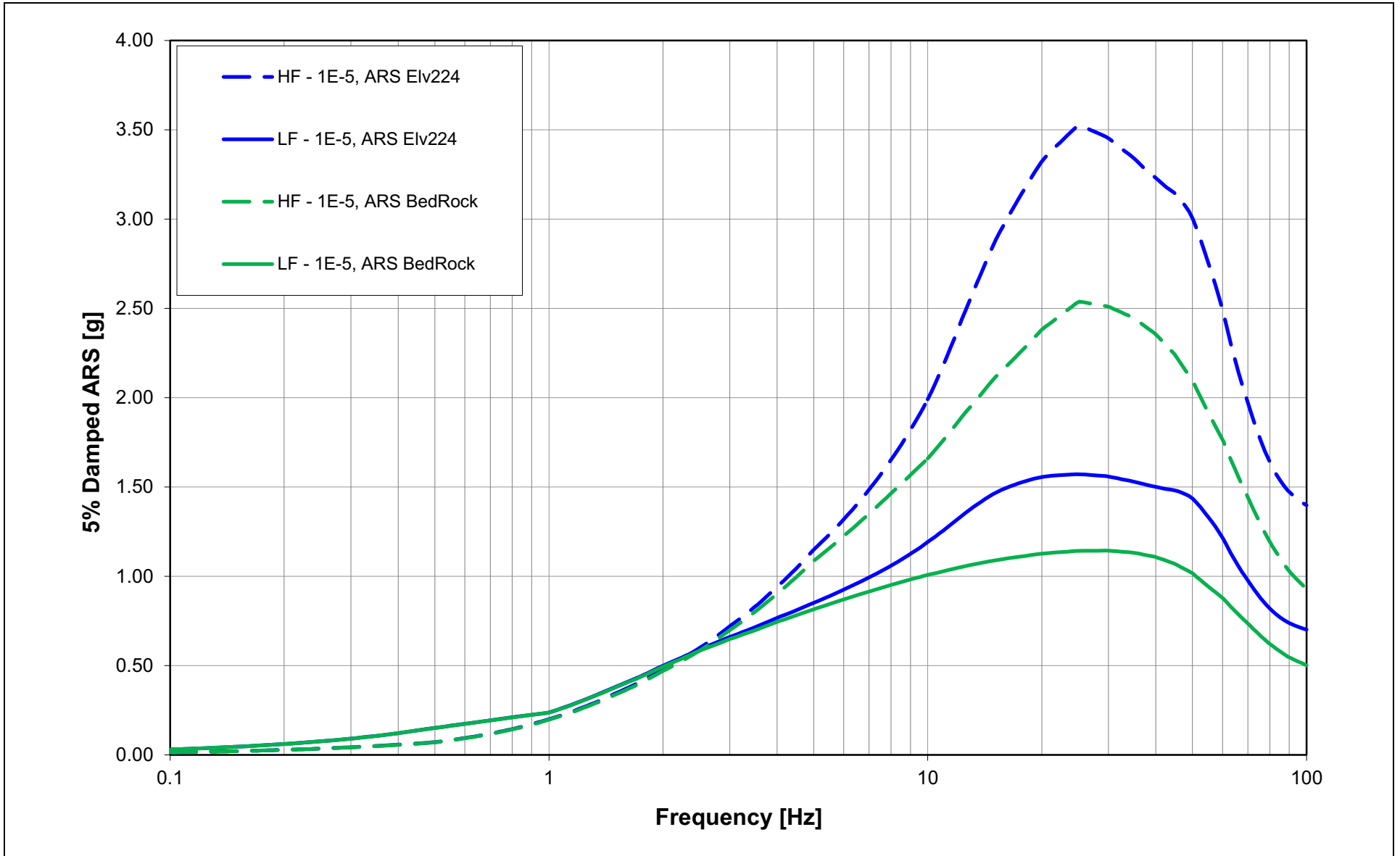


Figure 2.5.2-289 Mean Geologic Outcrop ARS for RB/FB Soil Column at 10<sup>-5</sup> Hazard Level Input Ground Motion





NAPS COL 2.0-27-A Figure 2.5.2-290 Mean Full Column Outcrop ARS for CB Soil Column at  $10^{-4}$  Hazard Level Input Ground Motion

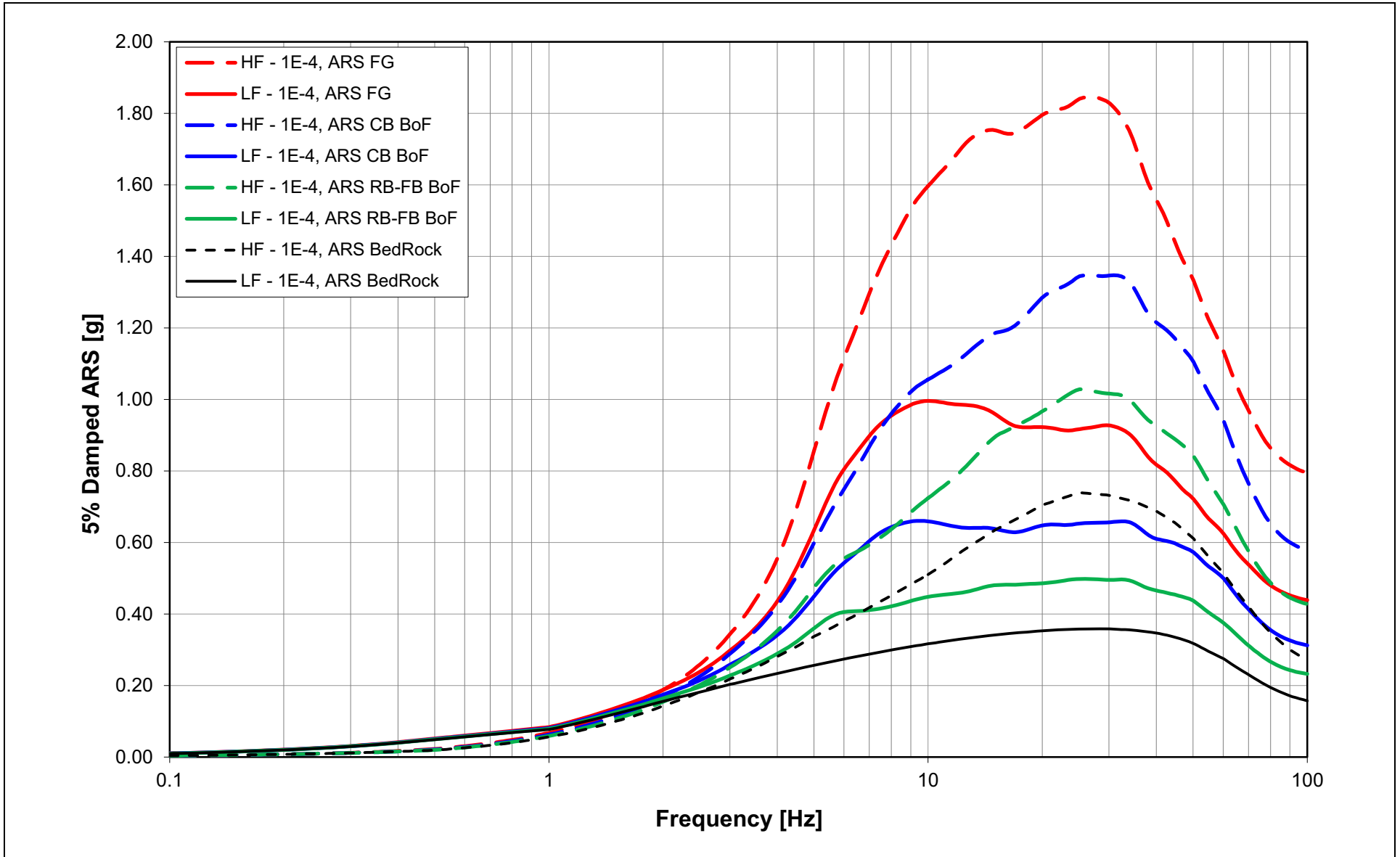


Figure 2.5.2-291 Mean Full Column Outcrop ARS for CB Soil Column at  $10^{-5}$  Hazard Level Input Ground Motion

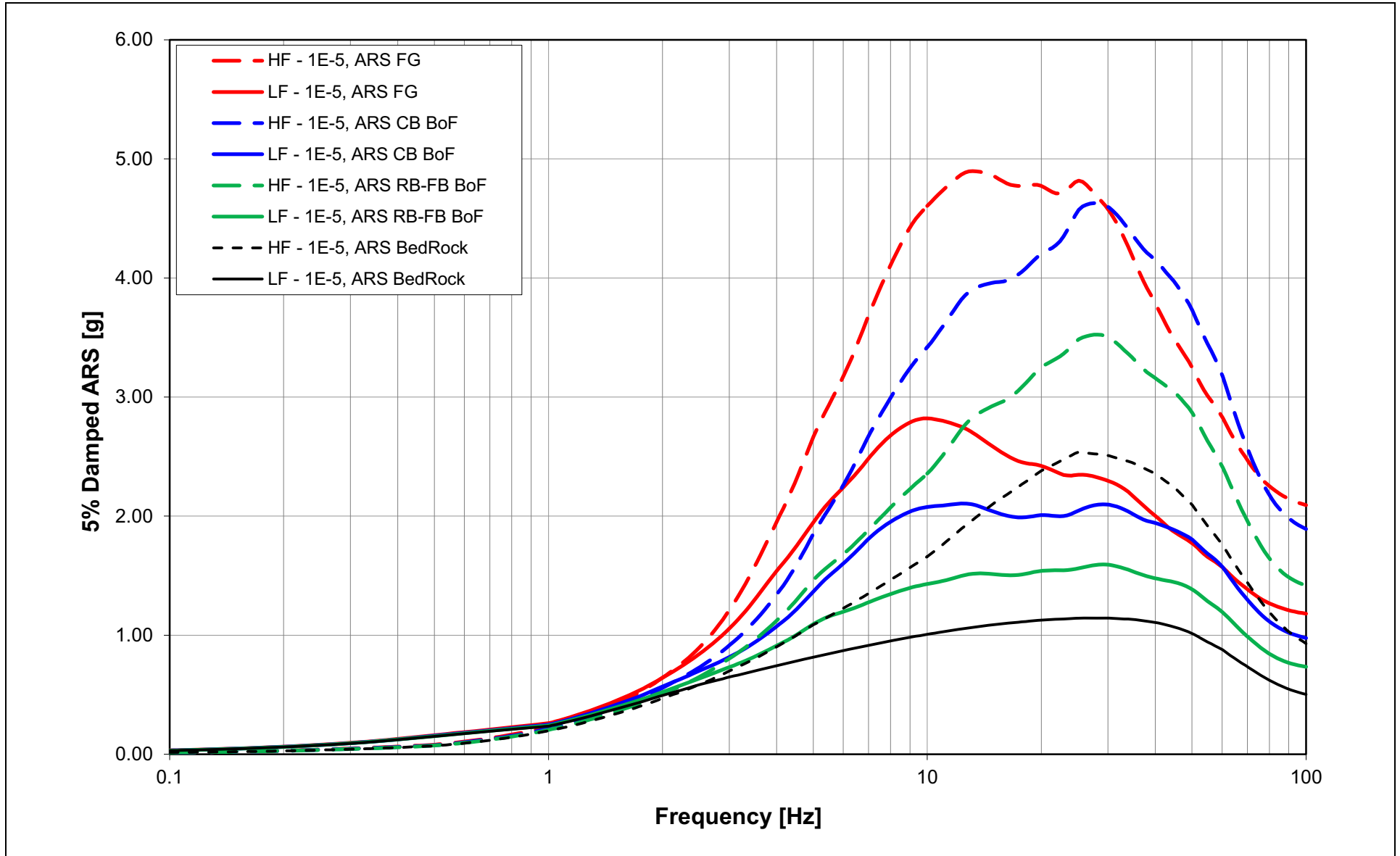


Figure 2.5.2-292 Mean Full Column Outcrop ARS for FWSC Soil Column at 10<sup>-4</sup> Hazard Level Input Ground Motion

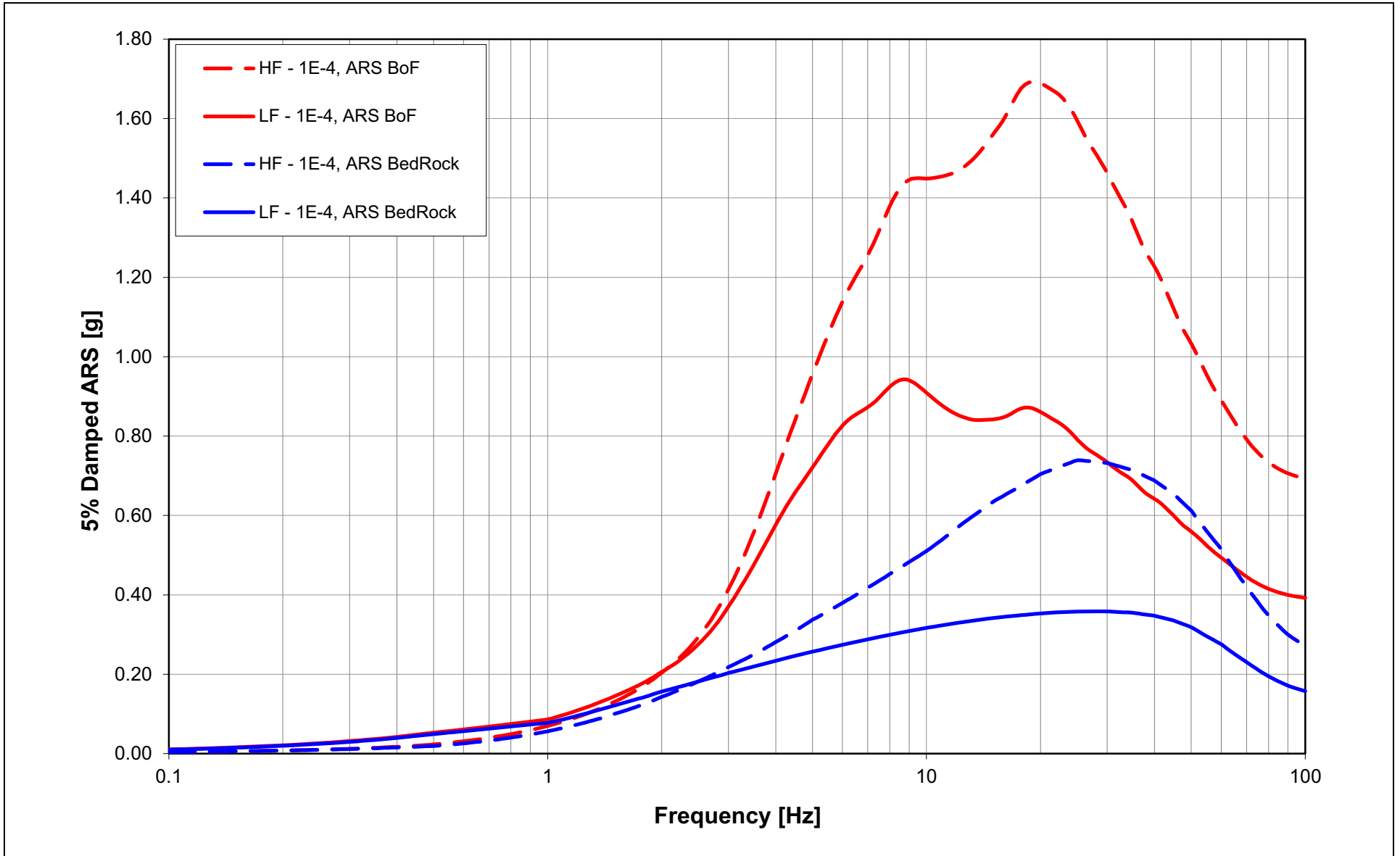
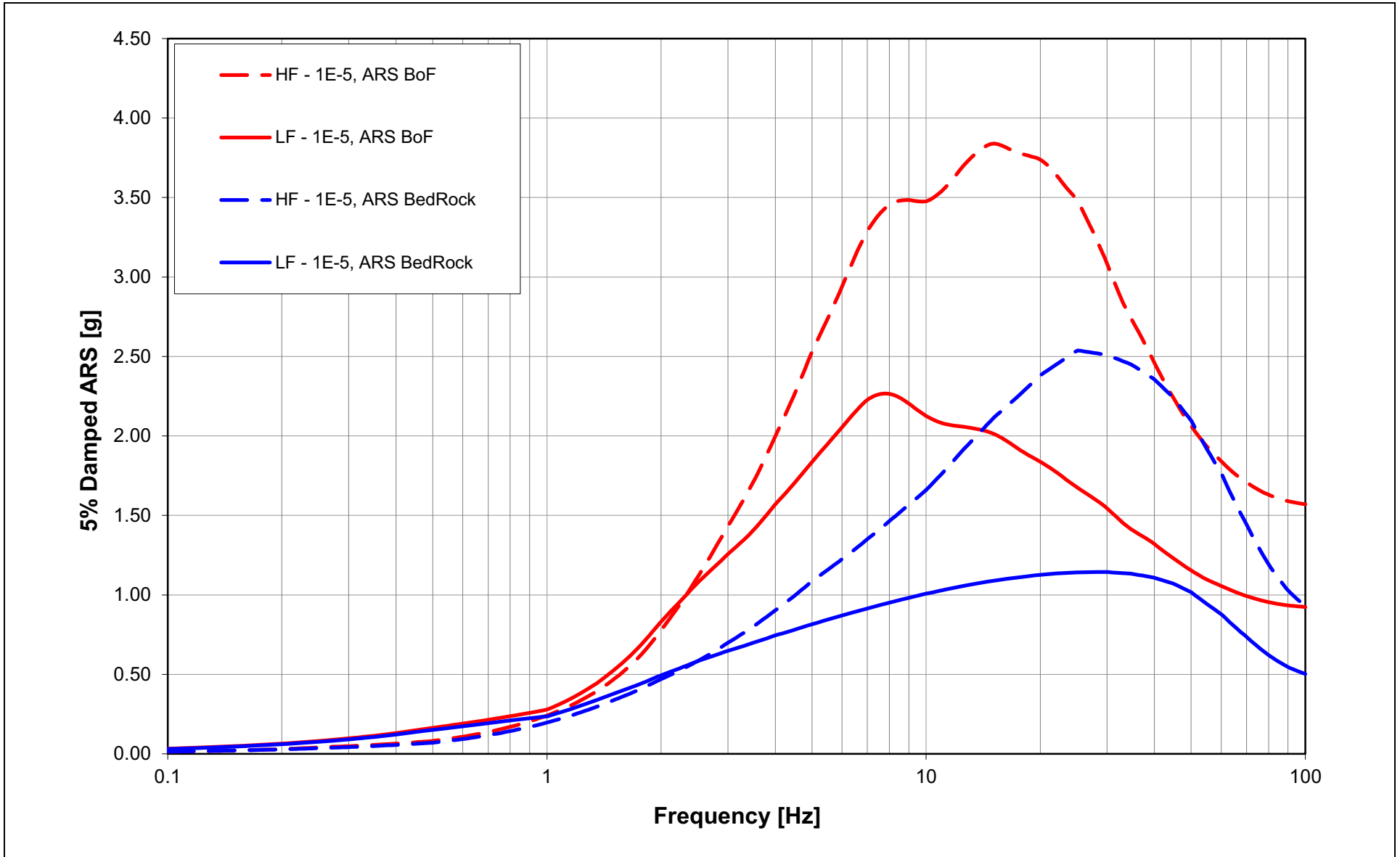


Figure 2.5.2-293 Mean Full Column Outcrop ARS for FWSC Soil Column at 10<sup>-5</sup> Hazard Level Input Ground Motion



Mean Horizontal Full Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Full Column Outcrop DRS for RB/FB Soil Column at Elevation 224 ft (BoF for RB/FB)

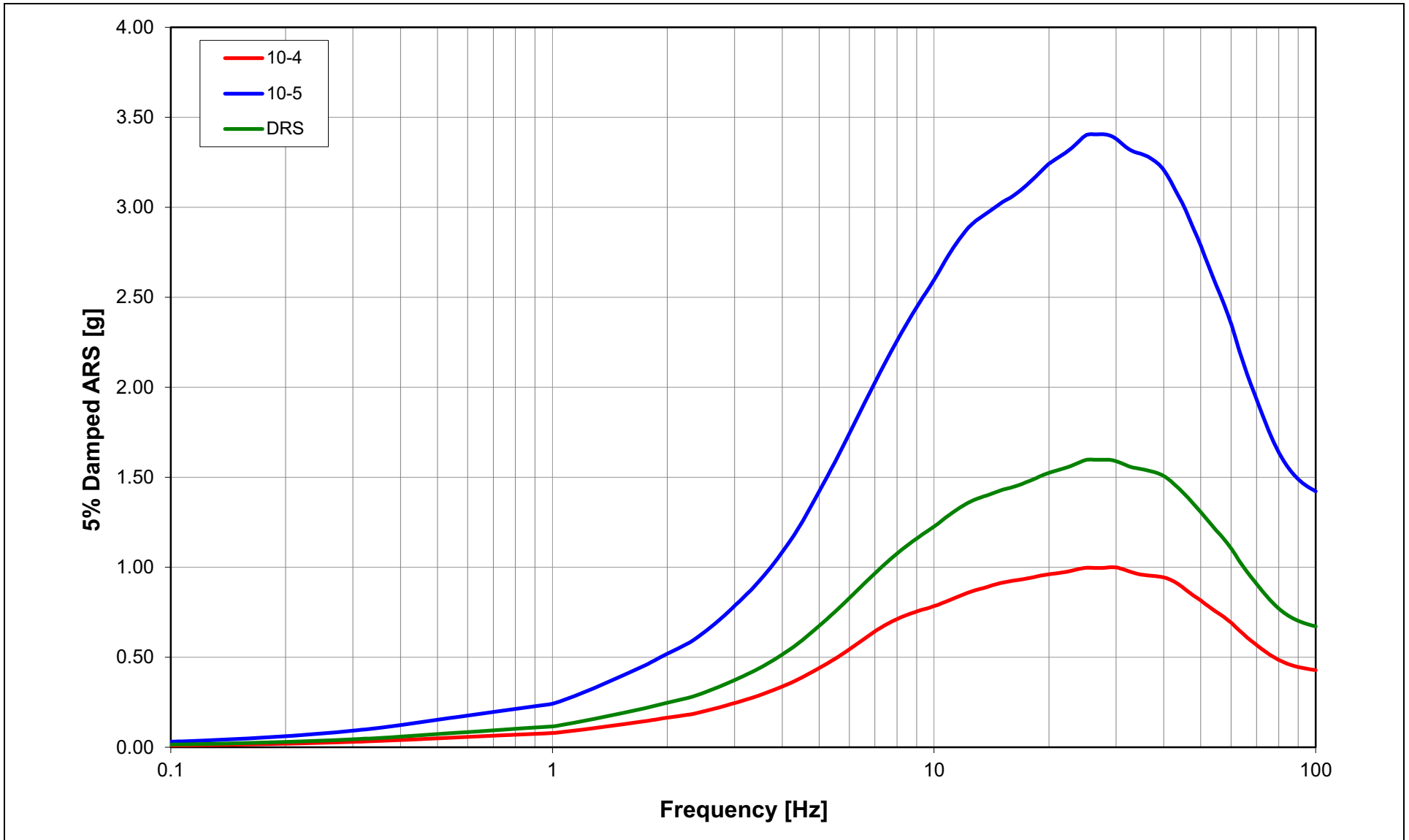
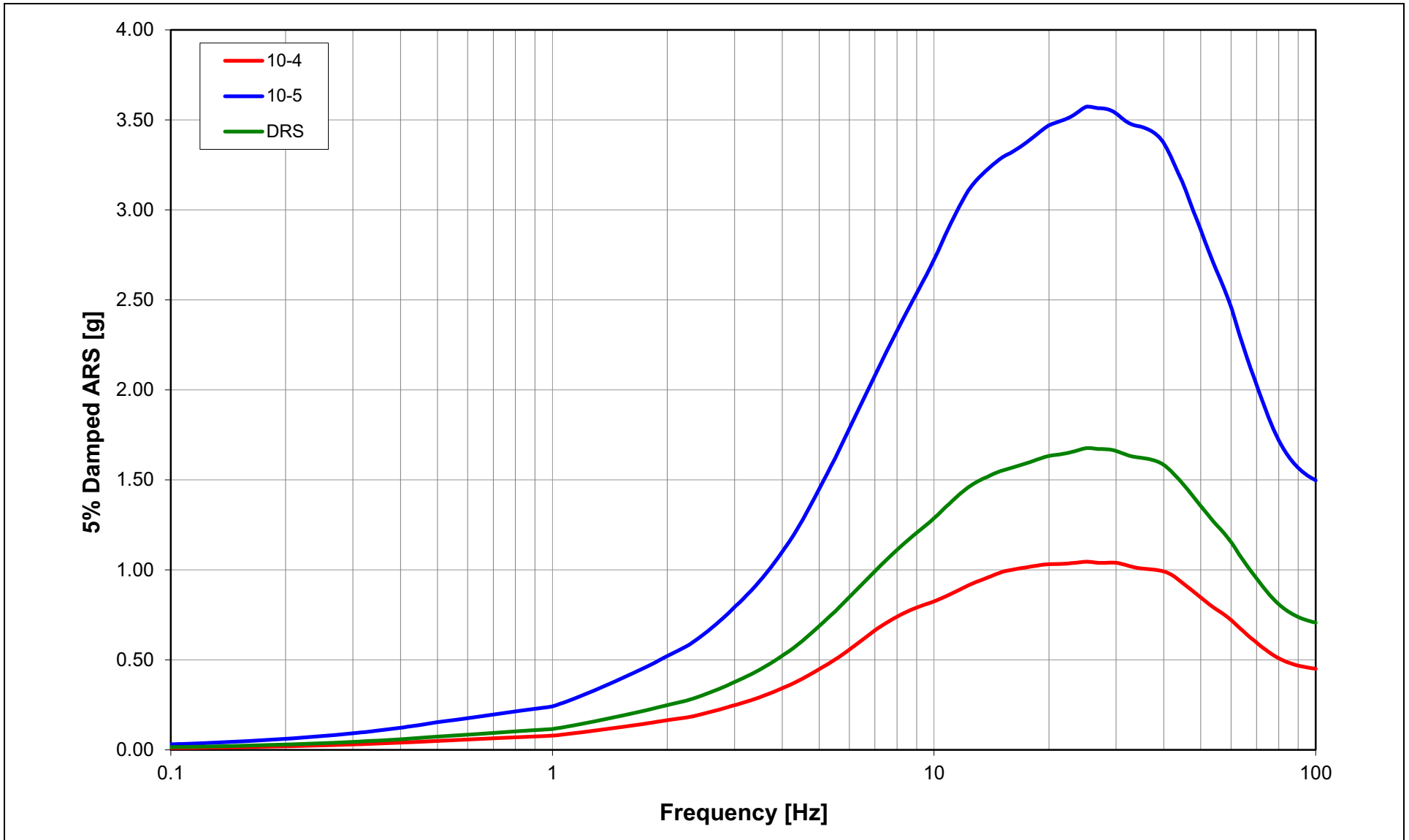
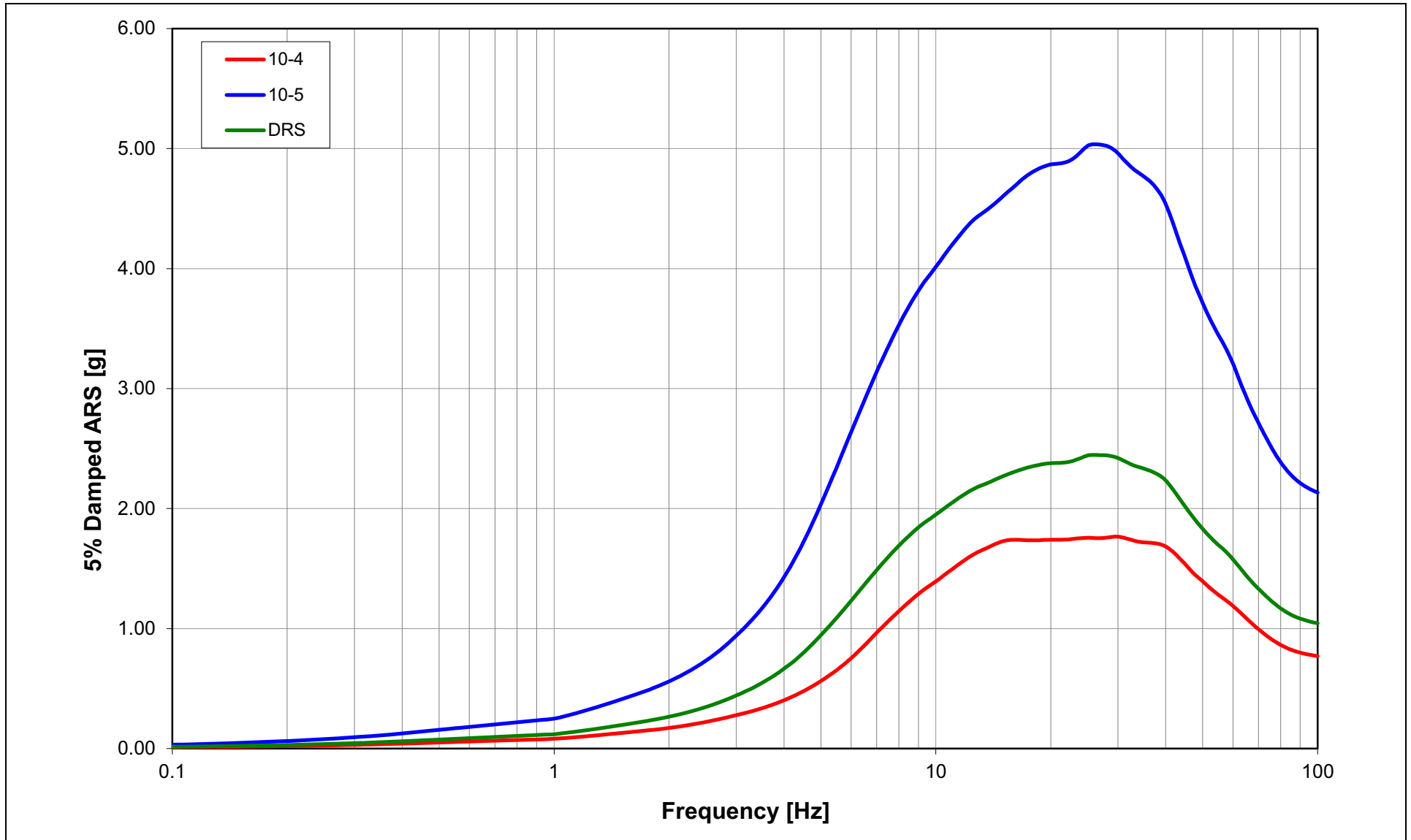


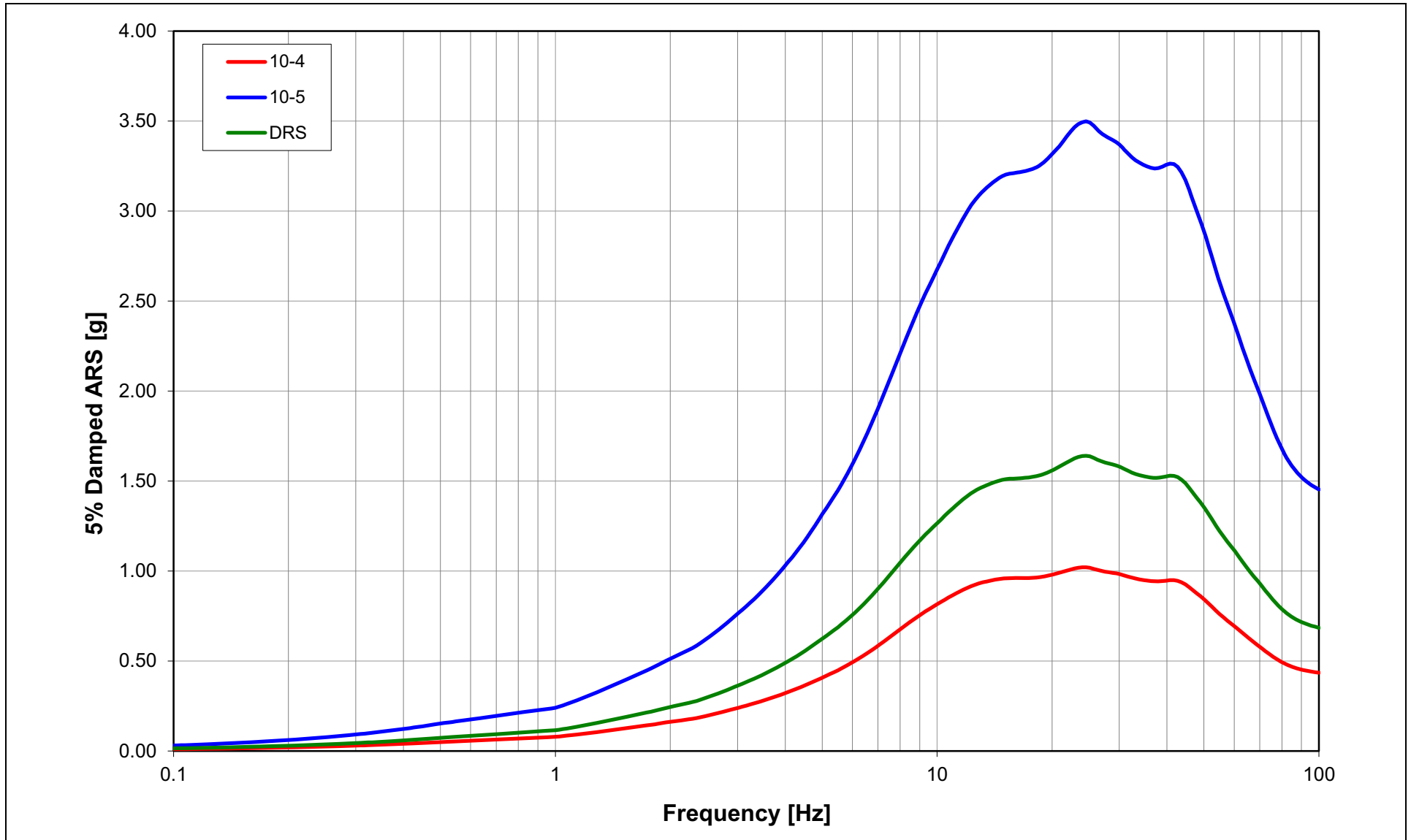
Figure 2.5.2-295 Mean Horizontal Full Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Full Column Outcrop DRS for RB/FB Soil Column at Elevation 241 ft (BoF for CB)



Mean Horizontal Full Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Full Column Outcrop DRS for RB/FB Soil Column at Elevation 290 ft (Finished Grade)

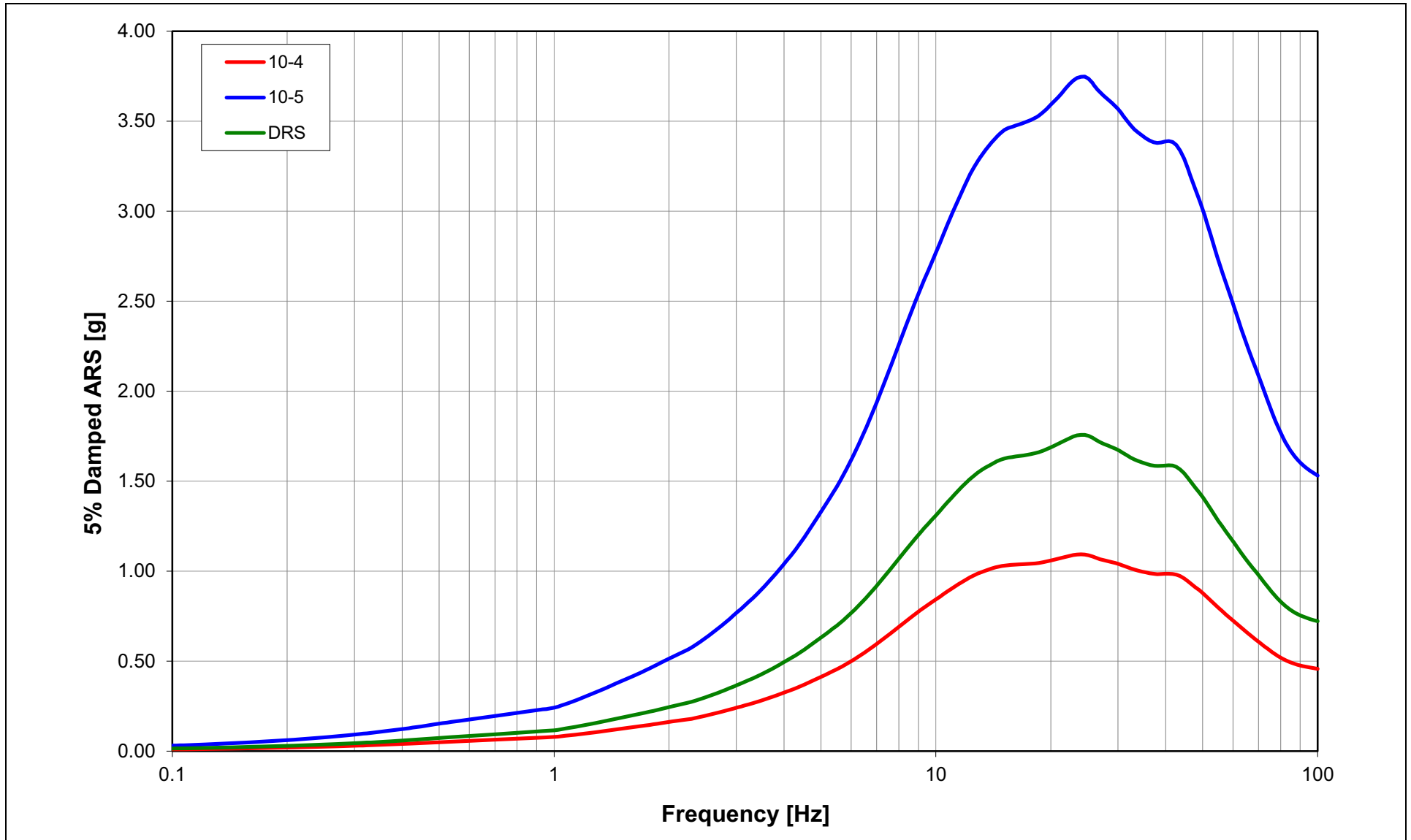


Mean Horizontal Partial Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Partial Column Outcrop DRS for RB/FB Soil Column at Elevation 224 ft (BoF for RB/FB)

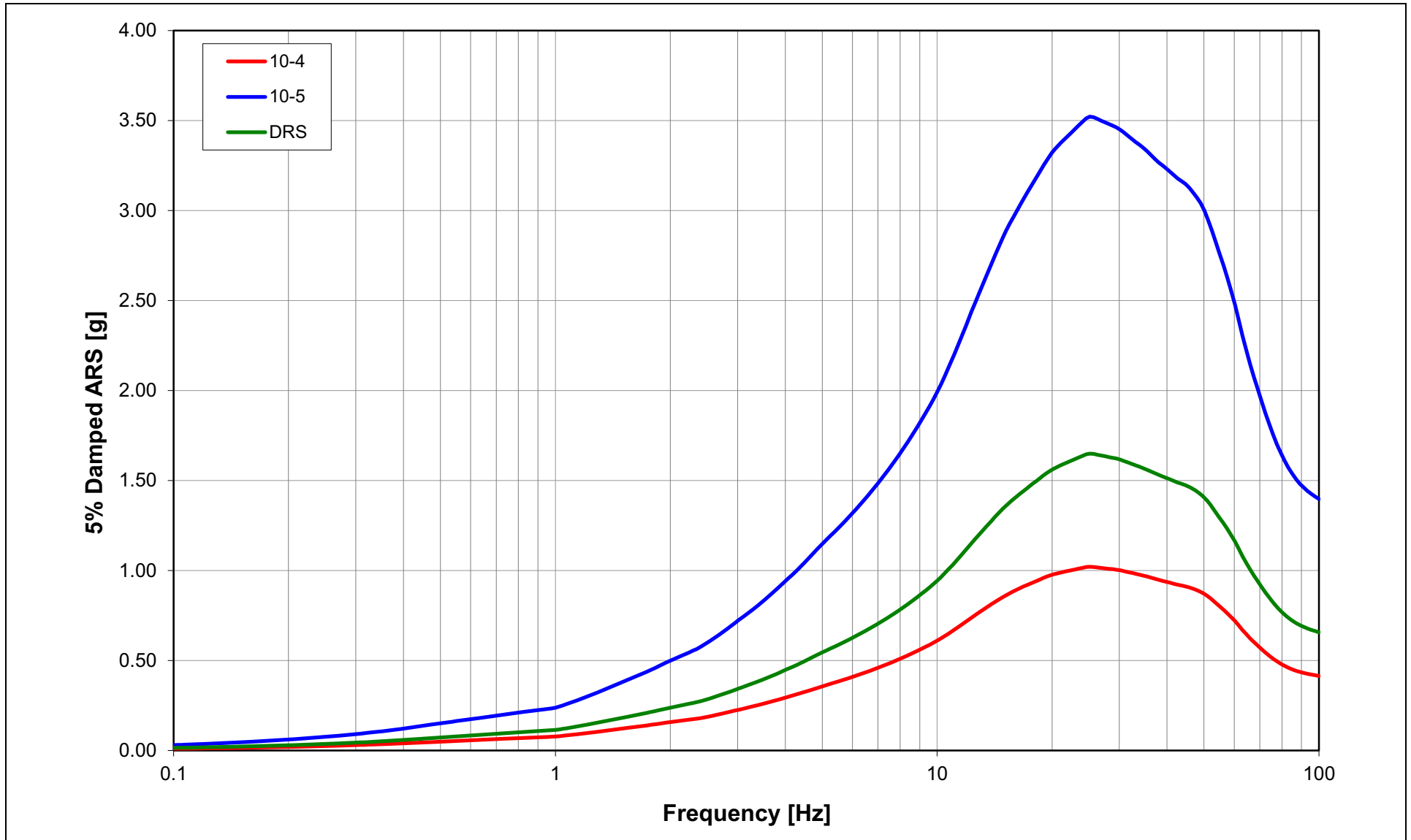




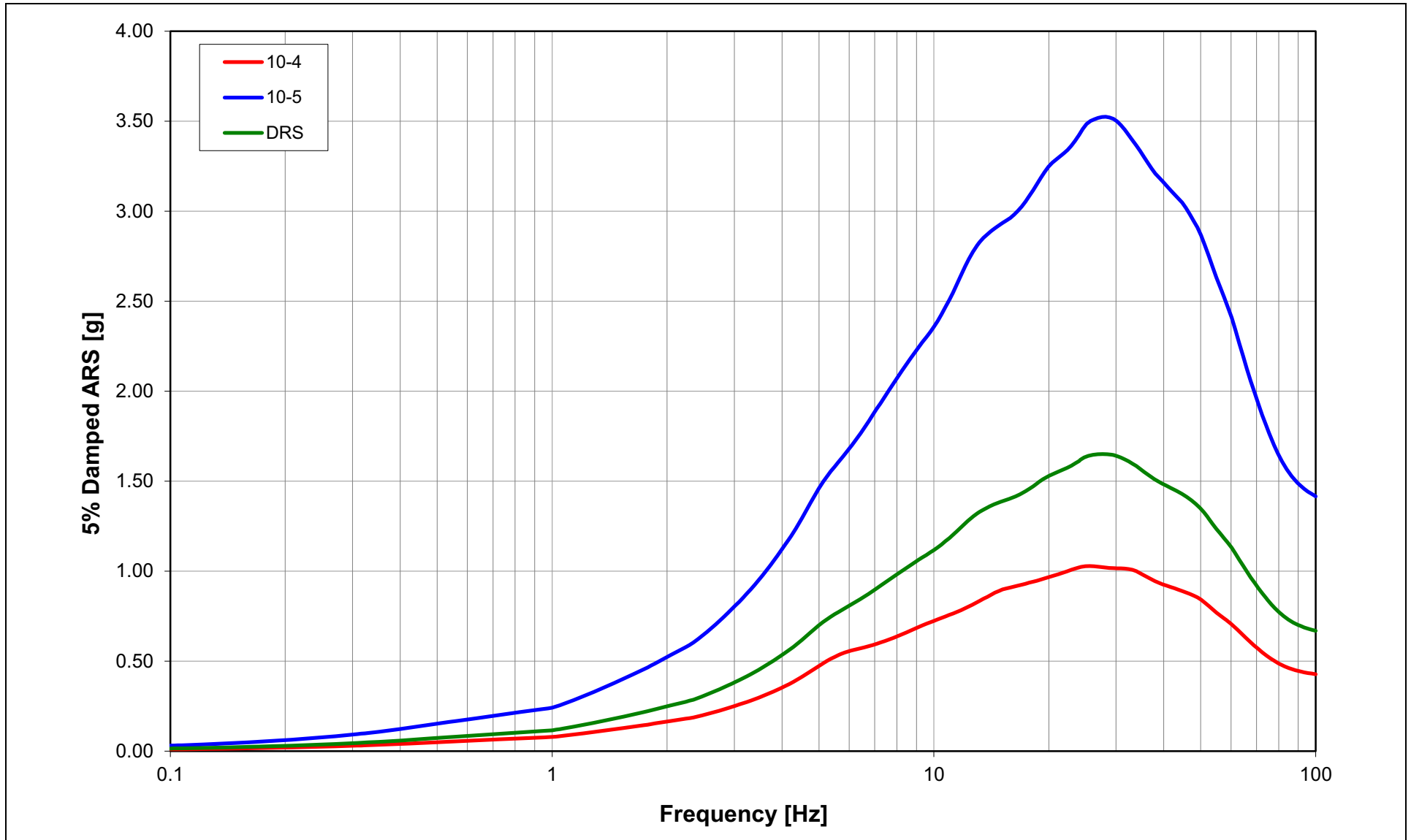
Mean Horizontal Partial Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Partial Column Outcrop DRS for RB/FB Soil Column at Elevation 241 ft (BoF for CB)



Mean Horizontal Geologic Outcrop UHS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Geologic Outcrop DRS for RB/FB Soil Column at Elevation 224 ft (GMRS Horizon)



Mean Horizontal Full Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Full Column Outcrop DRS for CB Soil Column at Elevation 224 ft (BoF for RB/FB)



Mean Horizontal Full Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Full Column Outcrop DRS for CB Soil Column at Elevation 241 ft (BoF for CB)

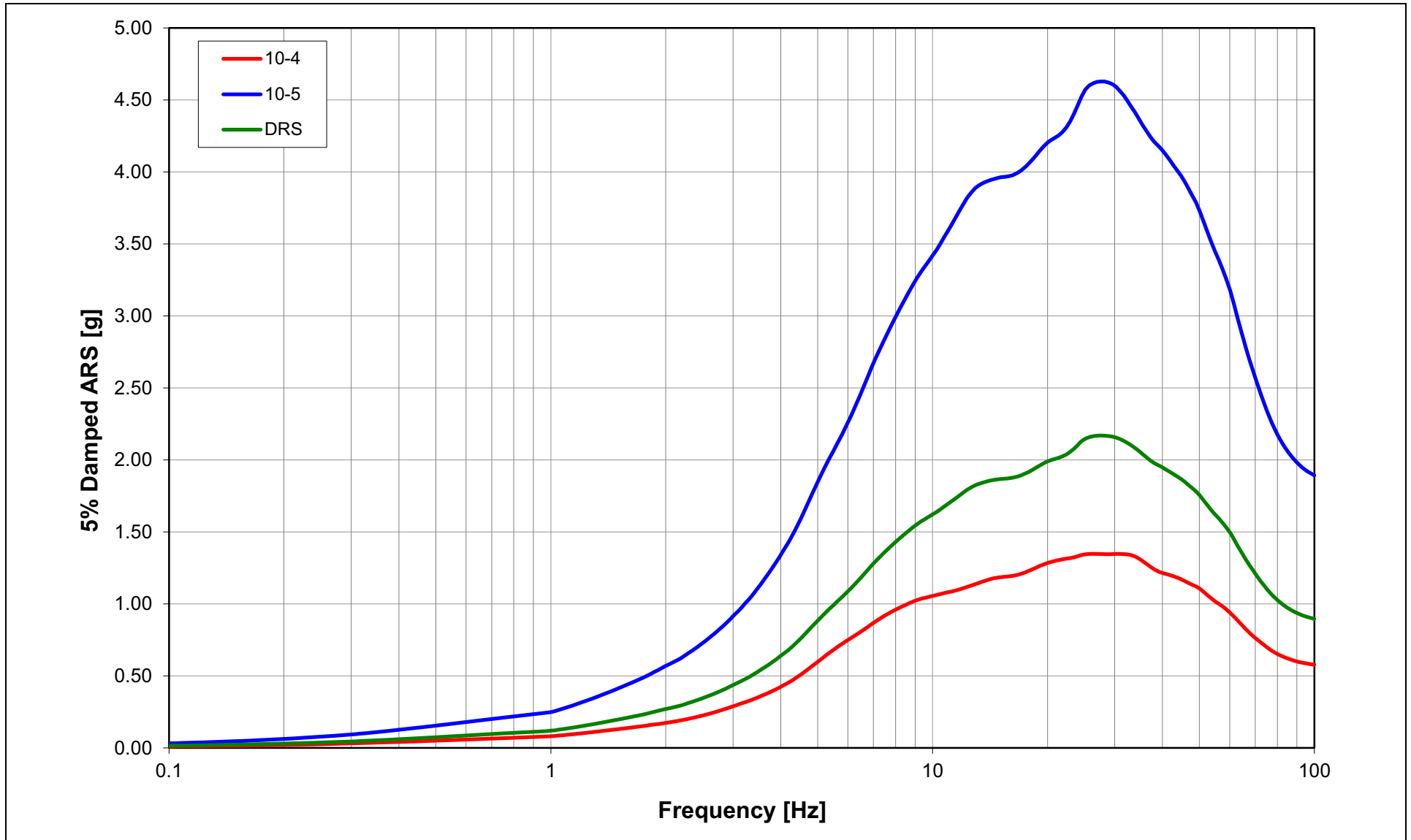
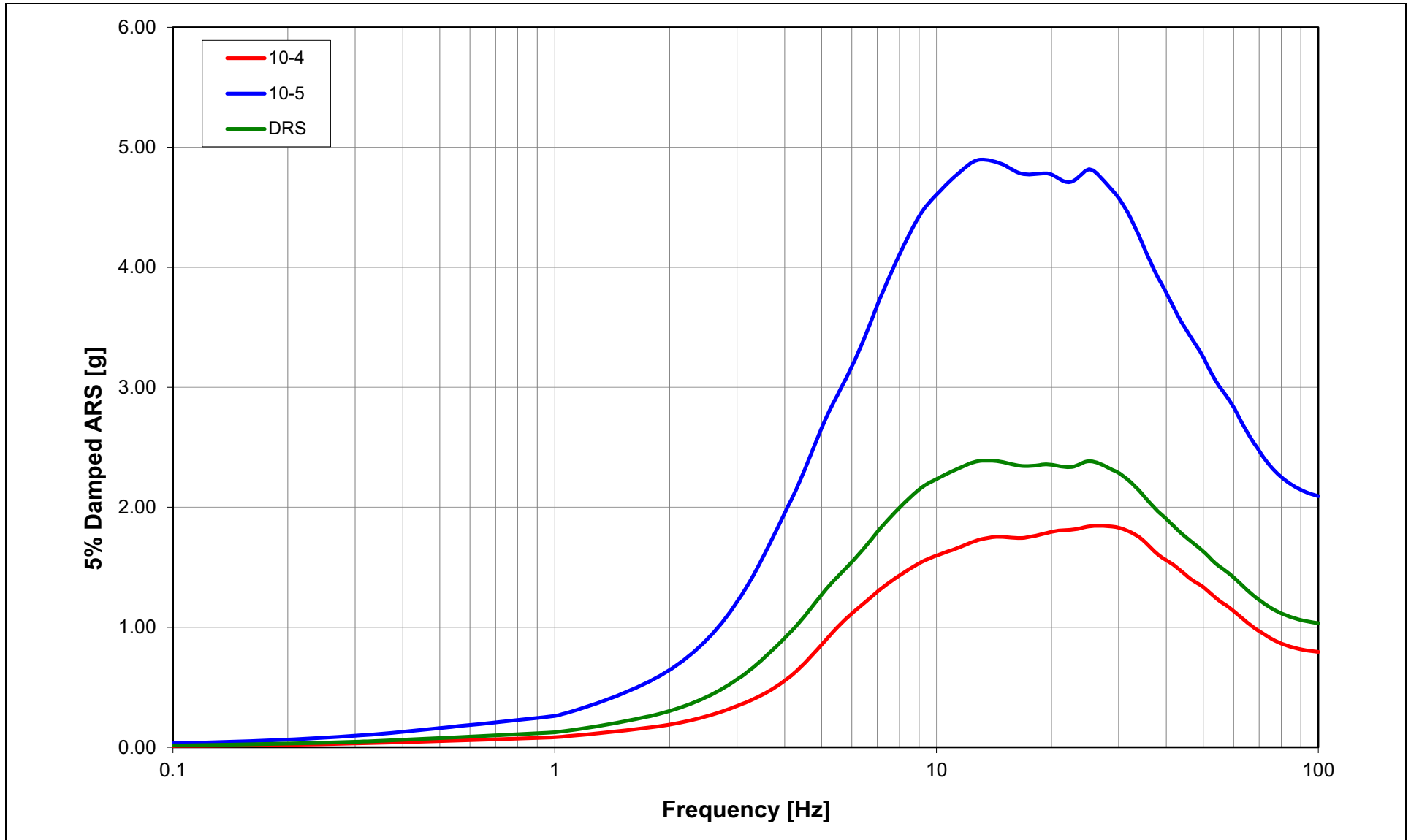
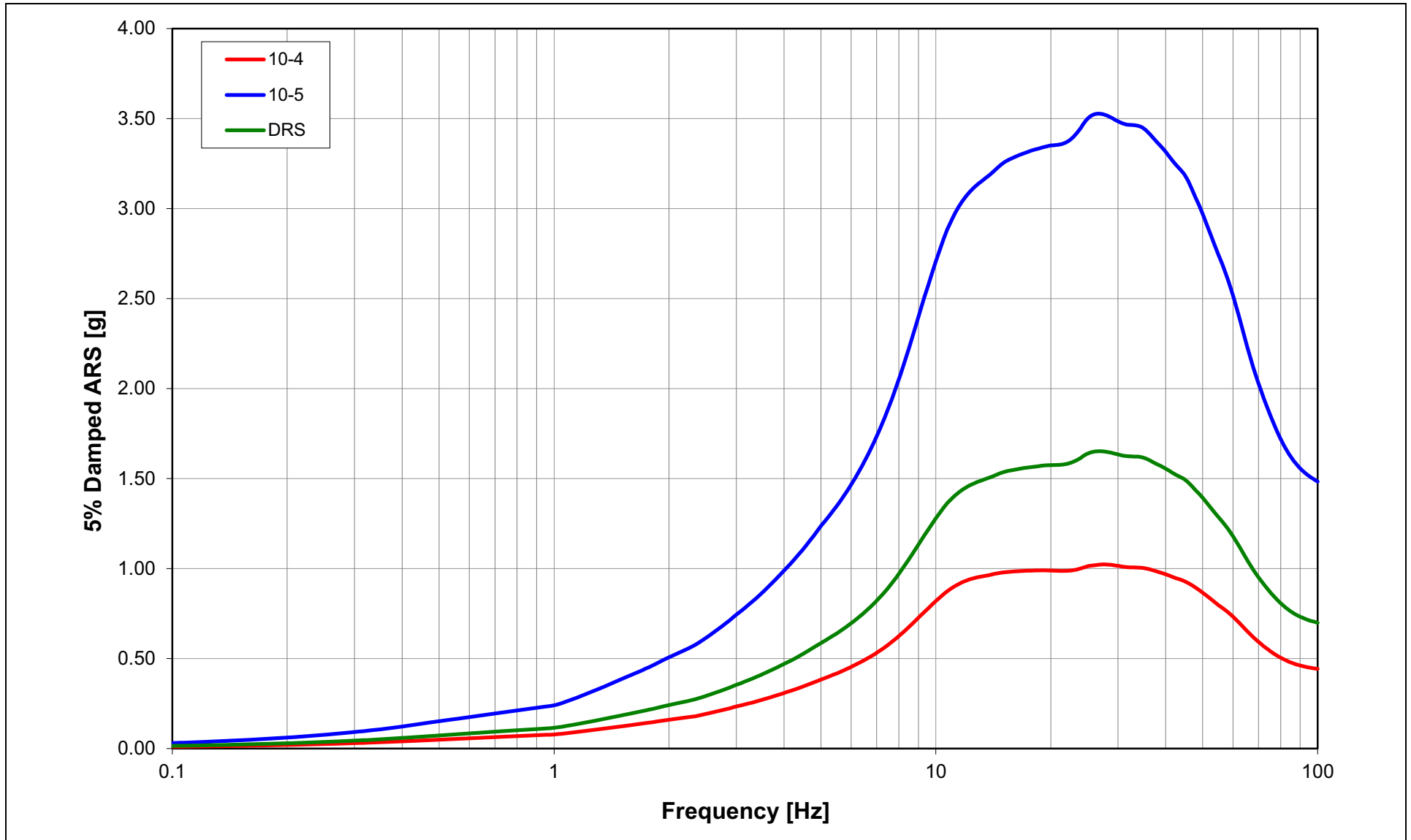


Figure 2.5.2-302 Mean Horizontal Full Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Full Column Outcrop DRS for CB Soil Column at Elevation 290 ft (Finished Grade)



Mean Horizontal Partial Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Partial Column Outcrop DRS for CB Soil Column at Elevation 224 ft (BoF for RB/FB)



Mean Horizontal Partial Column Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Partial Column Outcrop DRS for CB Soil Column at Elevation 241 ft (BoF for CB)

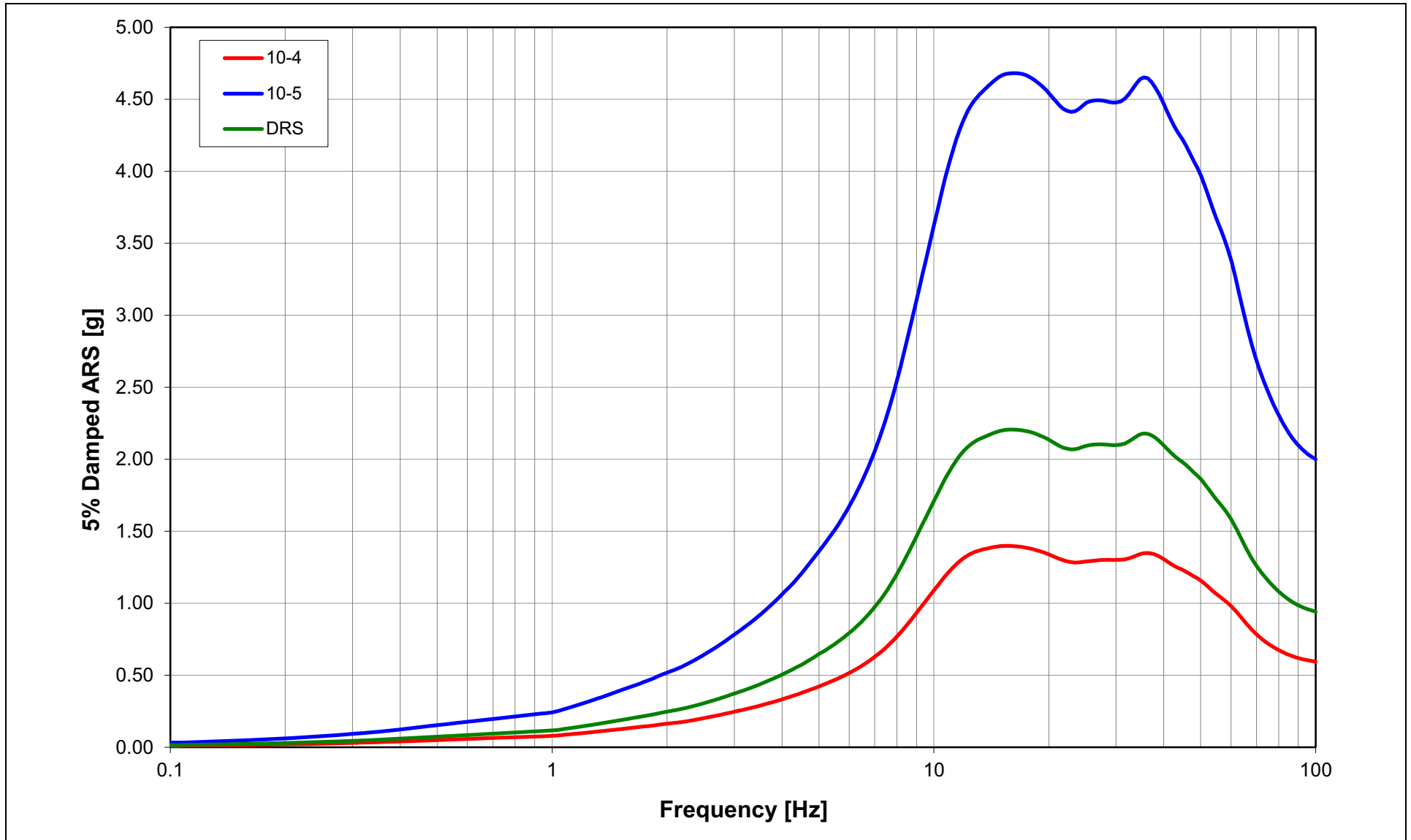
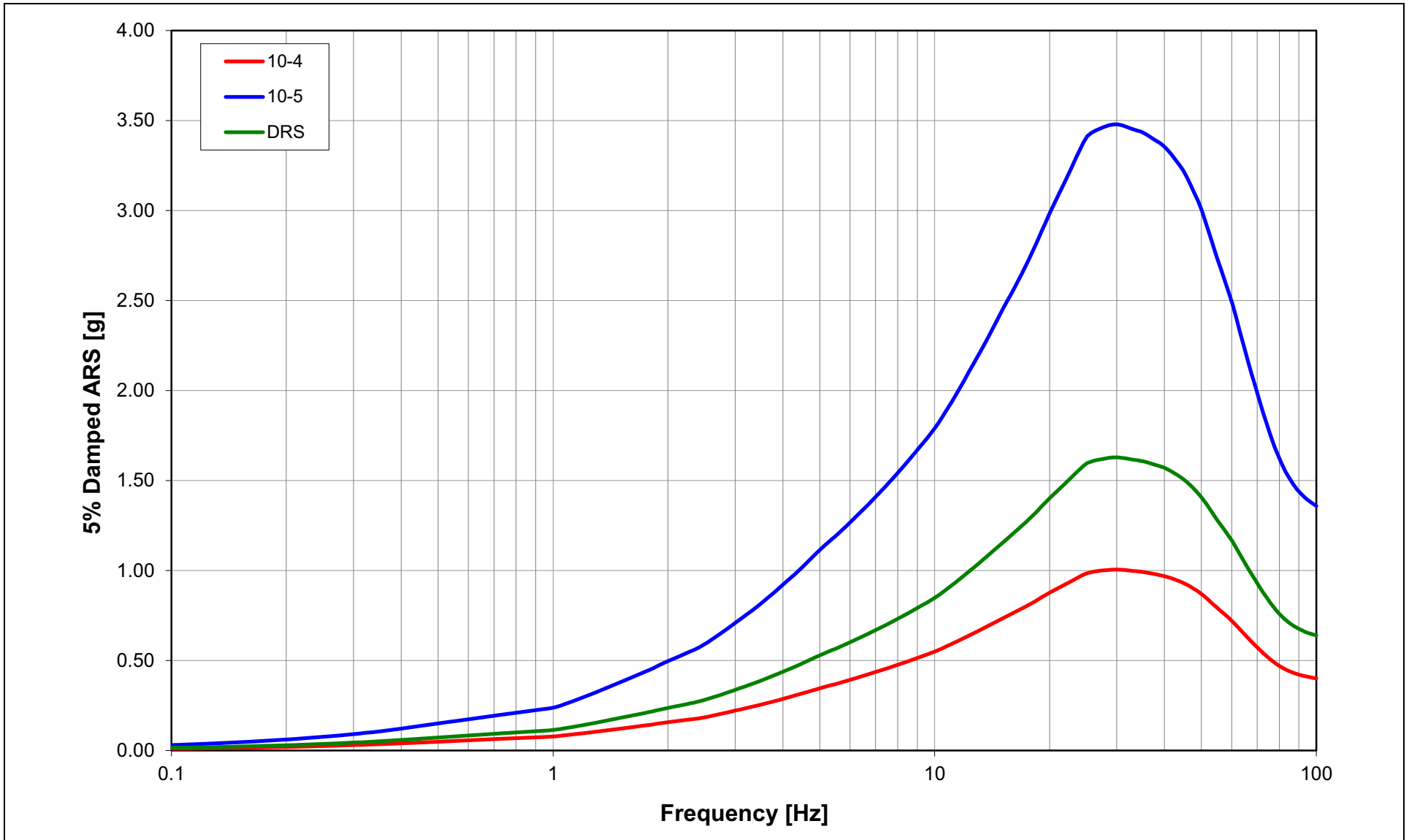


Figure 2.5.2-305 Mean Horizontal Geologic Outcrop UHS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Geologic Outcrop DRS for CB Soil Column at Elevation 224 ft (GMRS Horizon)





Mean Horizontal Geologic Outcrop UHRS at  $10^{-4}$  and  $10^{-5}$  Hazard Levels and Geologic Outcrop DRS for FWSC Soil Column at Elevation 282 ft (BoF for FWSC)

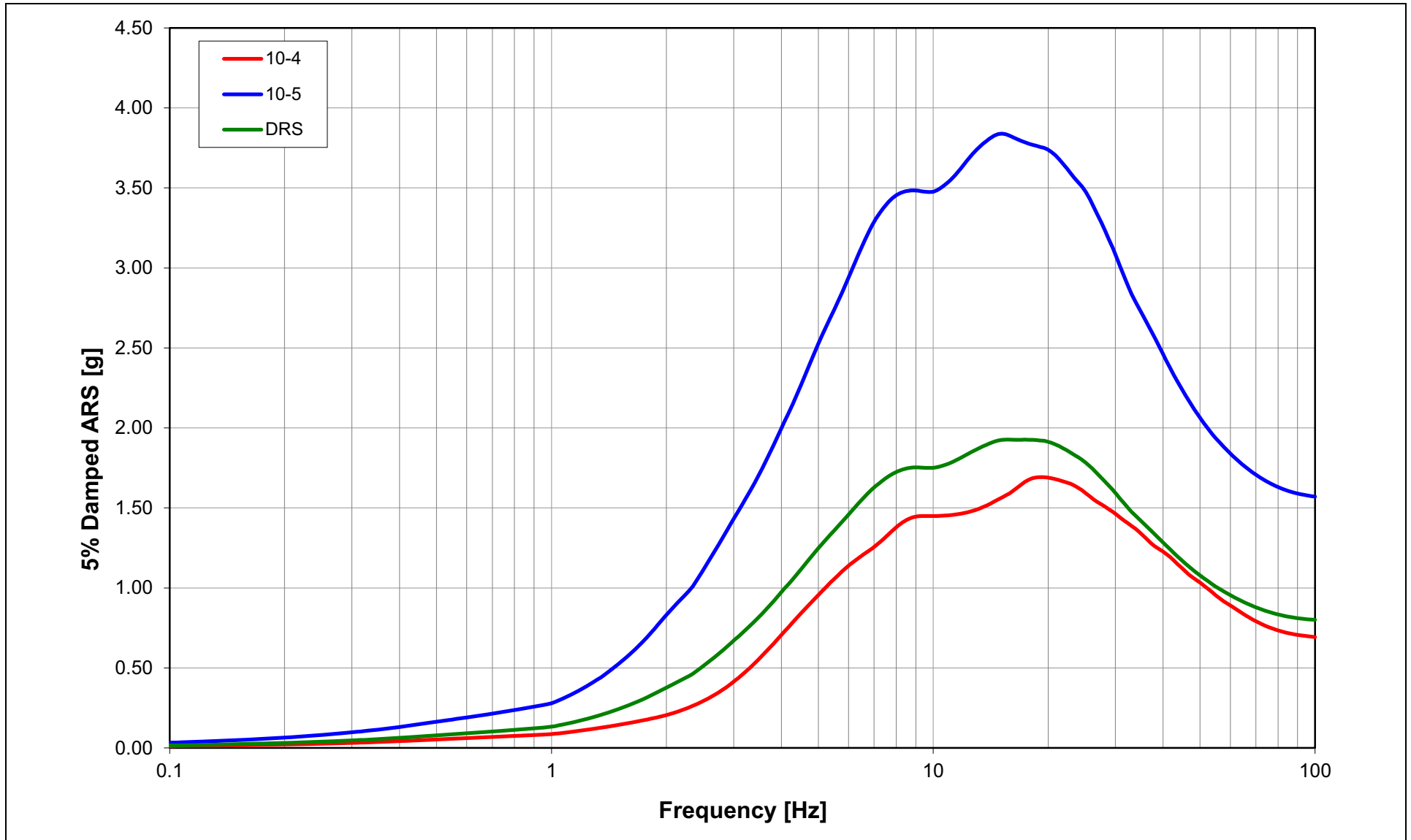


Figure 2.5.2-307 Horizontal and Vertical RB/FB Full Column Outcrop FIRS

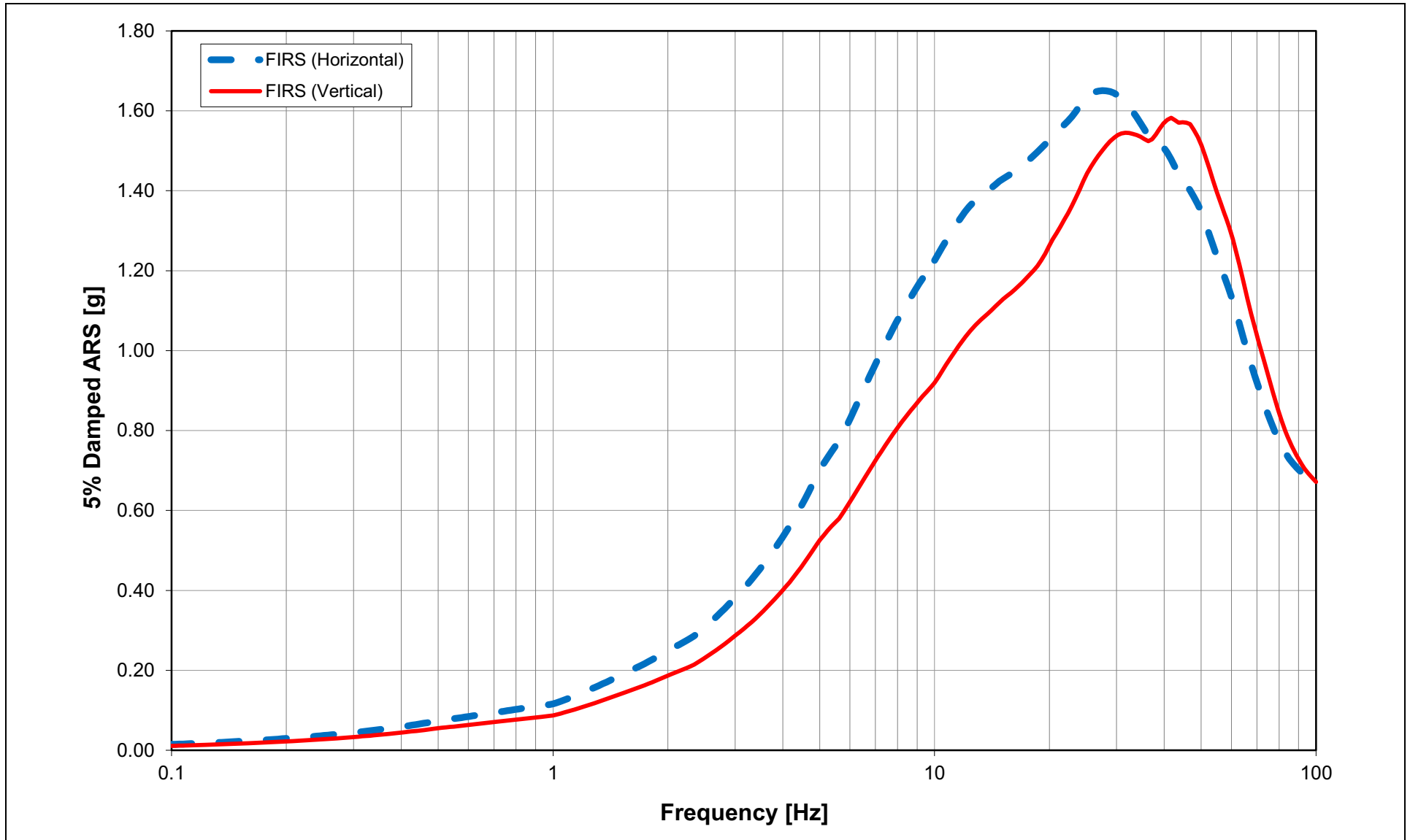


Figure 2.5.2-308 Horizontal and Vertical CB Full Column Outcrop FIRS

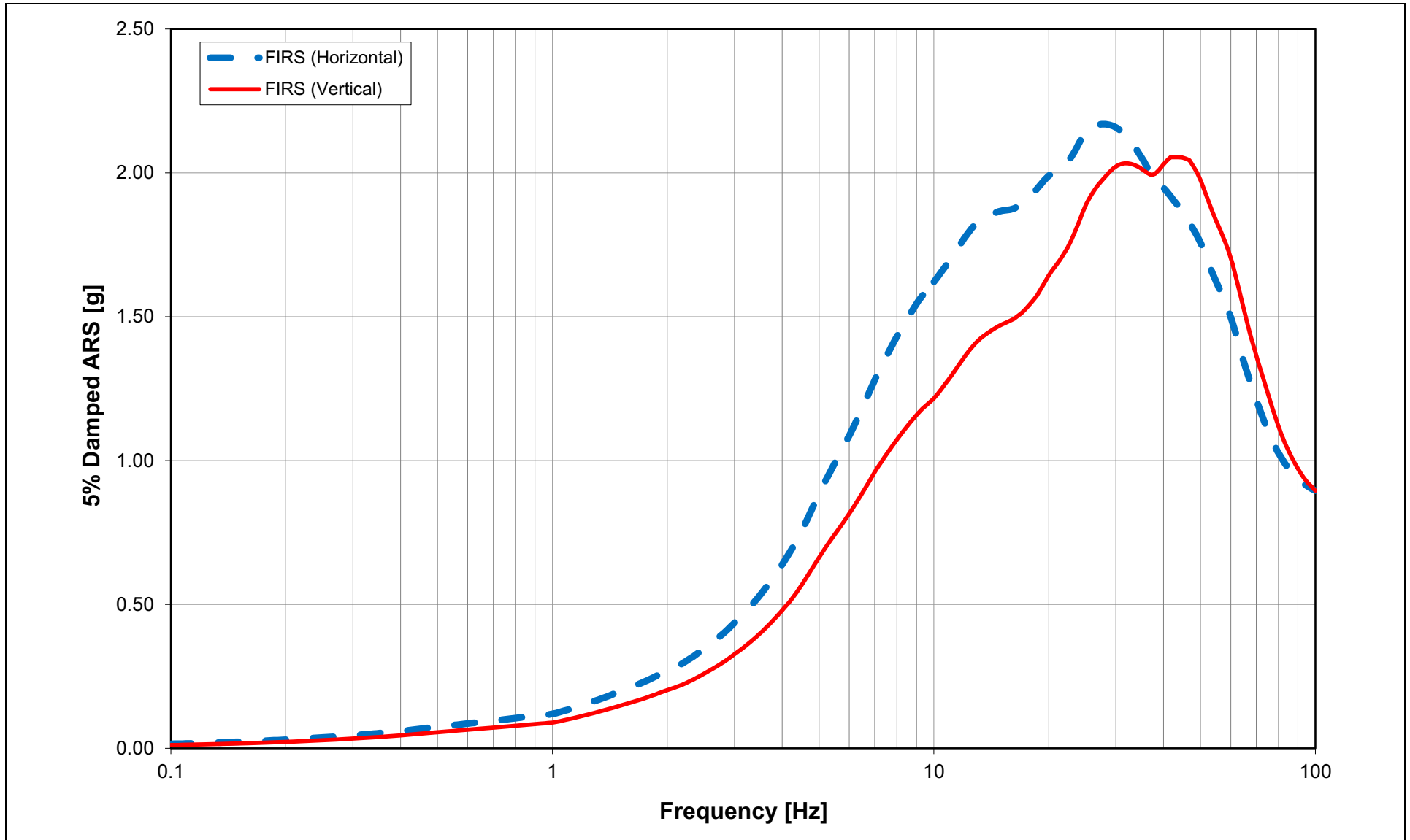


Figure 2.5.2-309 Horizontal and Vertical RB/FB Partial Column Outcrop FIRS

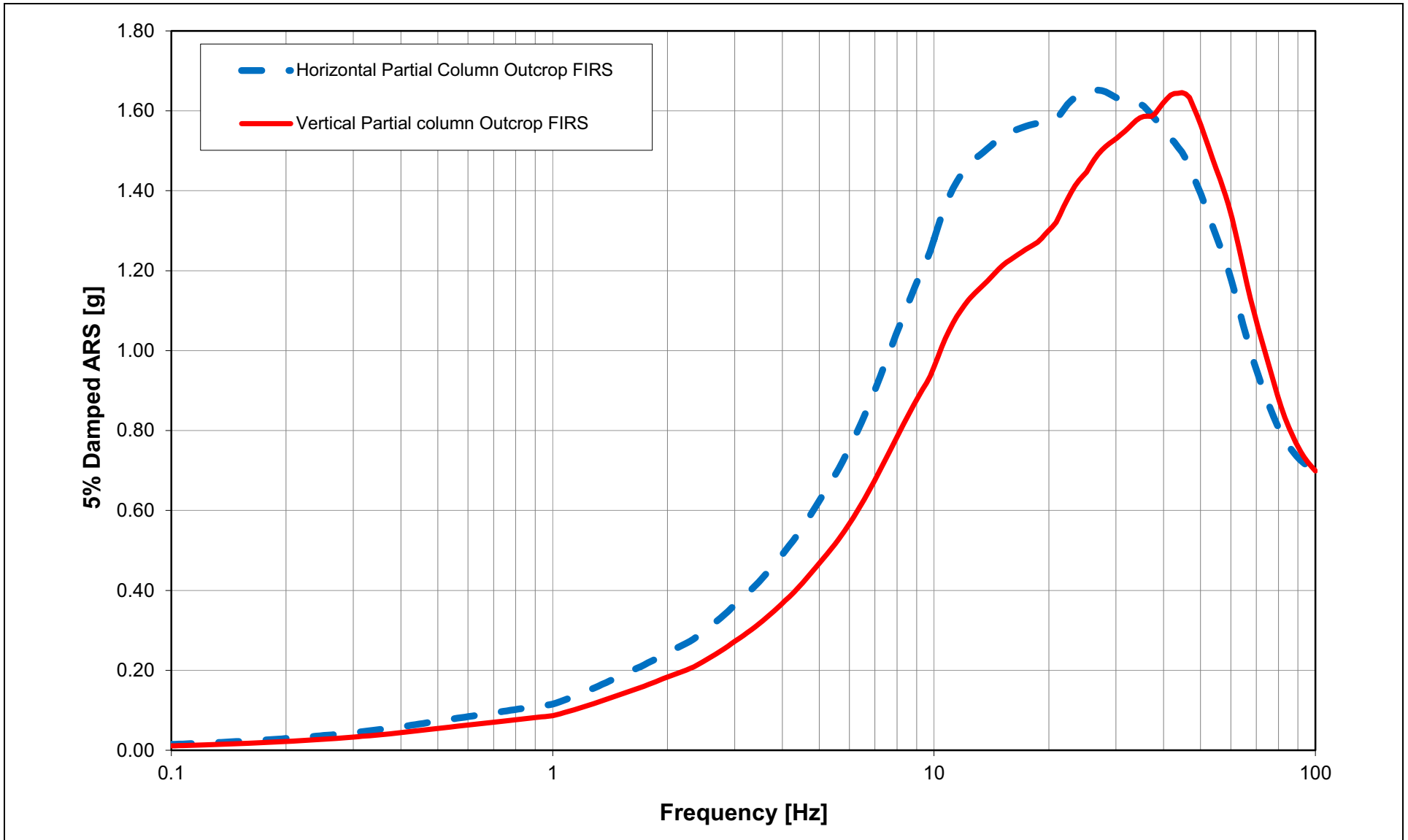
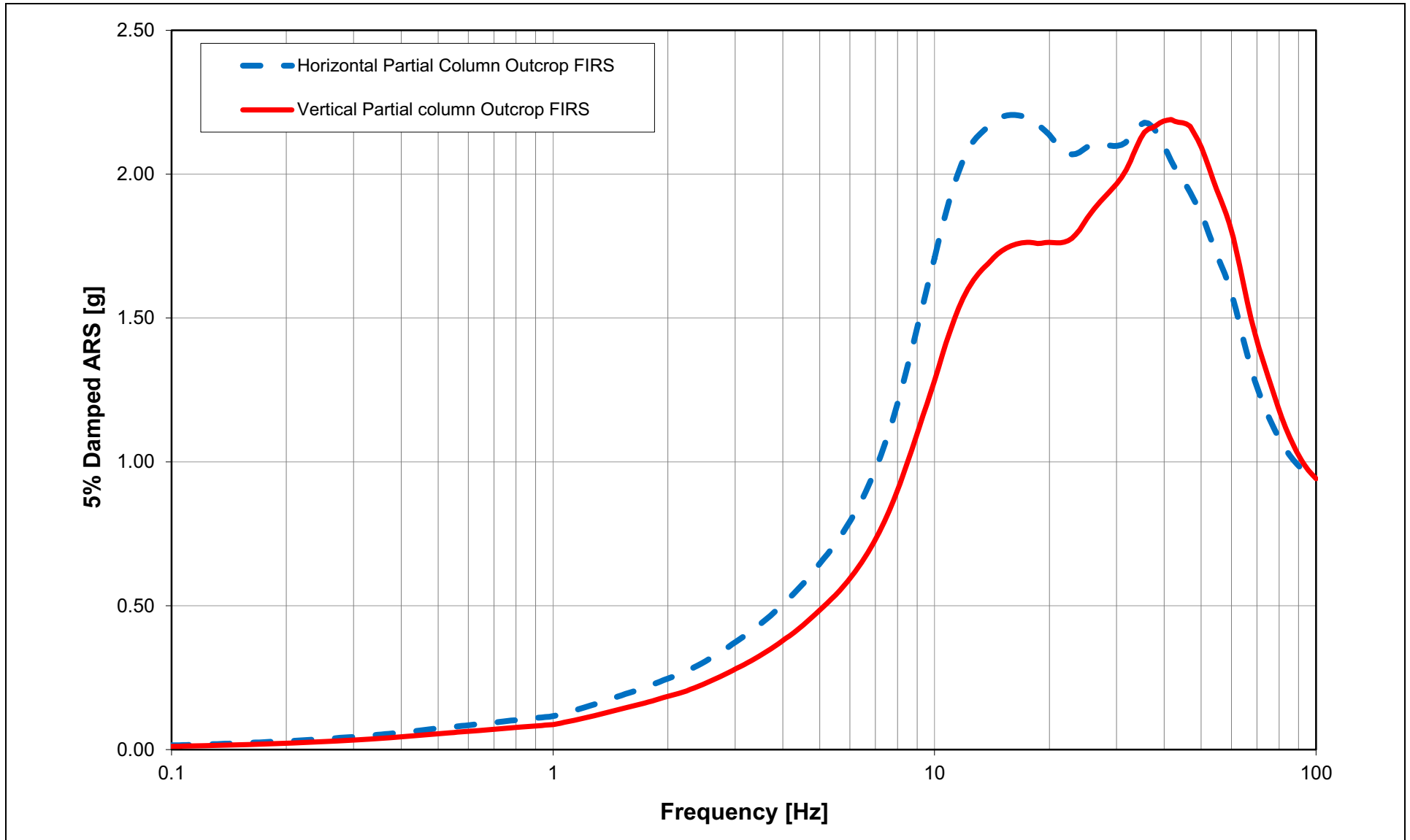


Figure 2.5.2-310 Horizontal and Vertical CB Partial Column Outcrop FIRS



NAPS COL 2.0-27-A Figure 2.5.2-311 Horizontal and Vertical PBSRS for RB/FB and CB

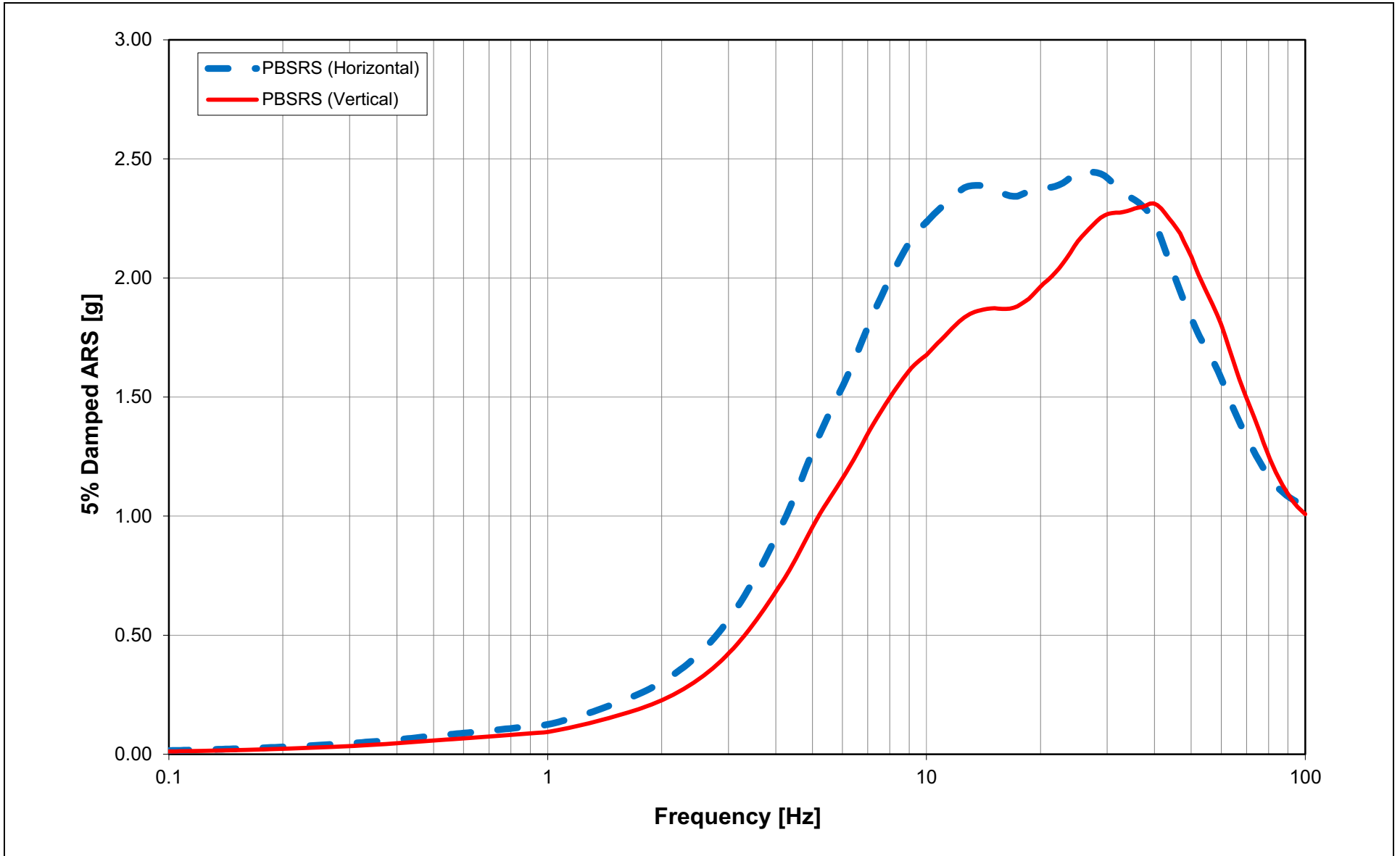
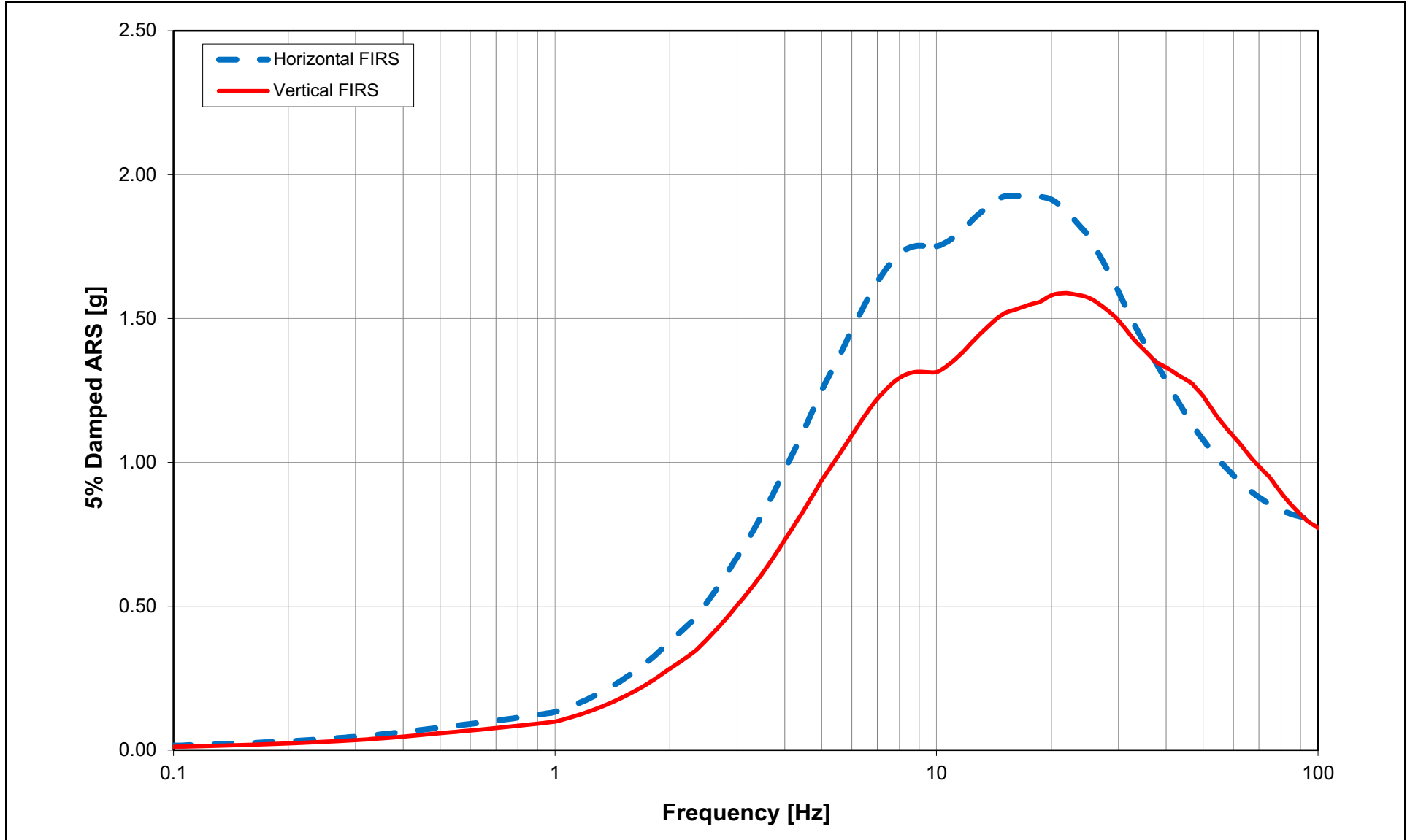


Figure 2.5.2-312 Horizontal and Vertical FWSC Geologic Outcrop FIRS



NAPS COL 2.0-27-A Figure 2.5.2-313 Horizontal and Vertical GMRS  
NAPS ESP VAR 2.0-4

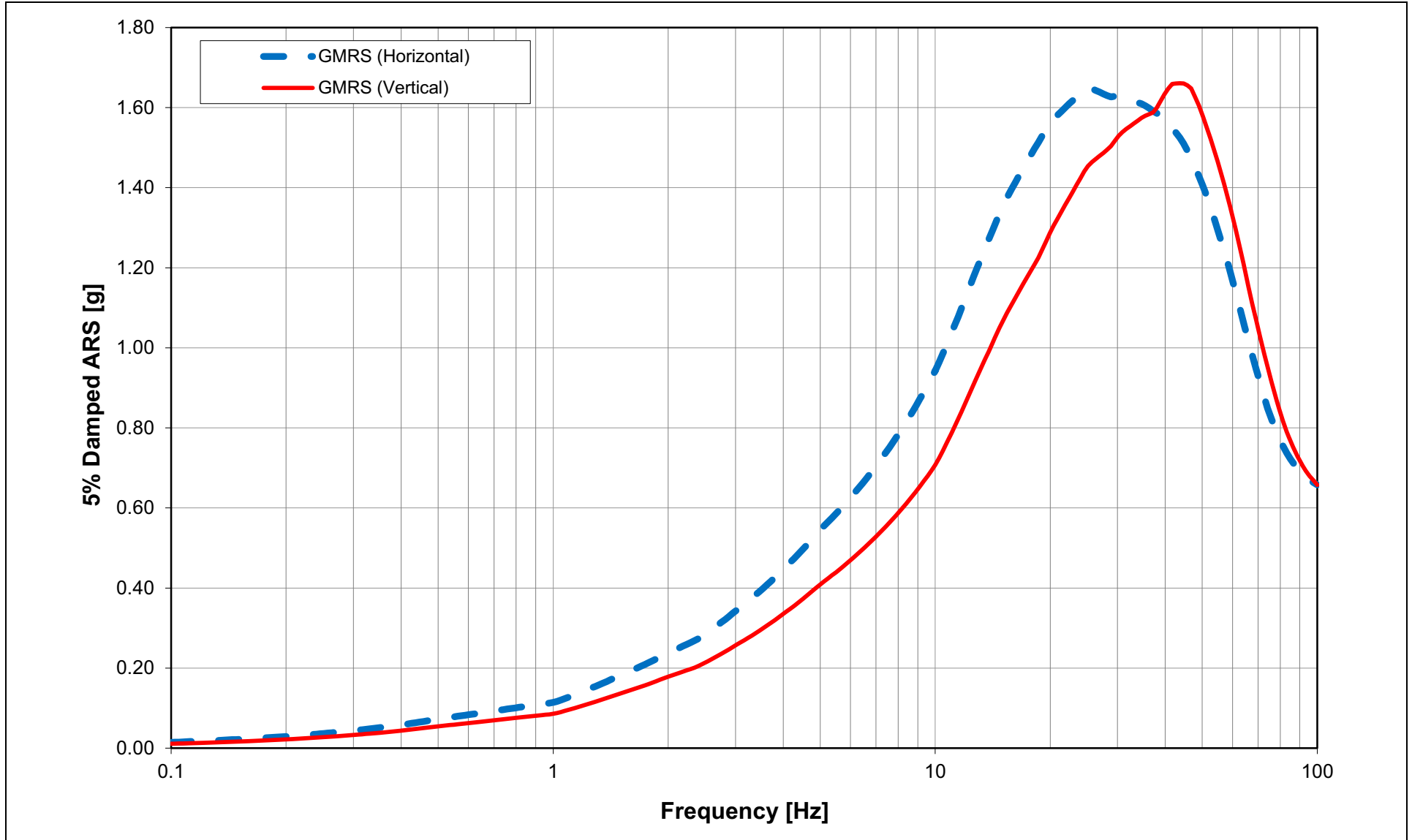




Figure 2.5.2-314 Rock V/H Ratios Recommended in NUREG/CR-6728 (Reference 2.5-385)

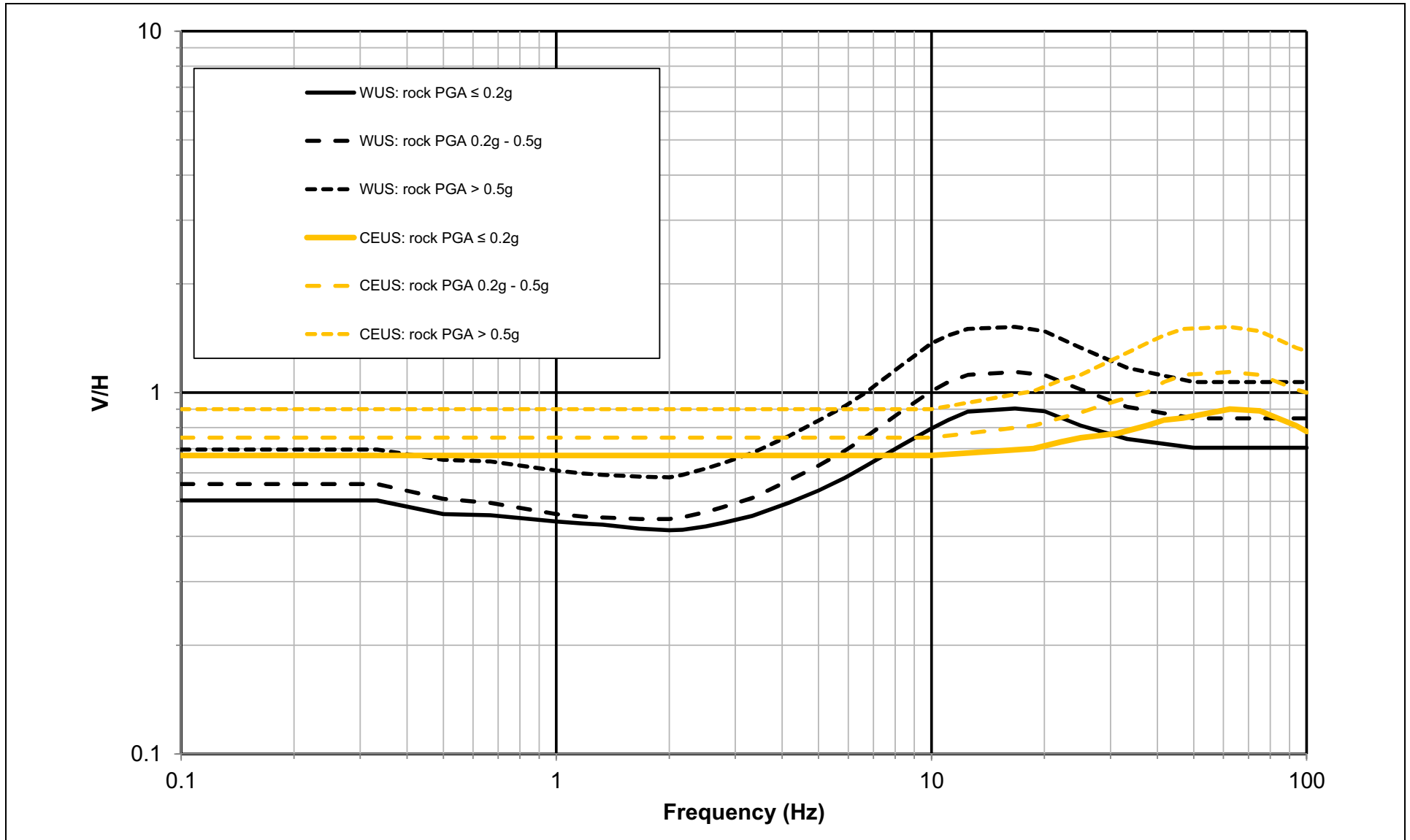
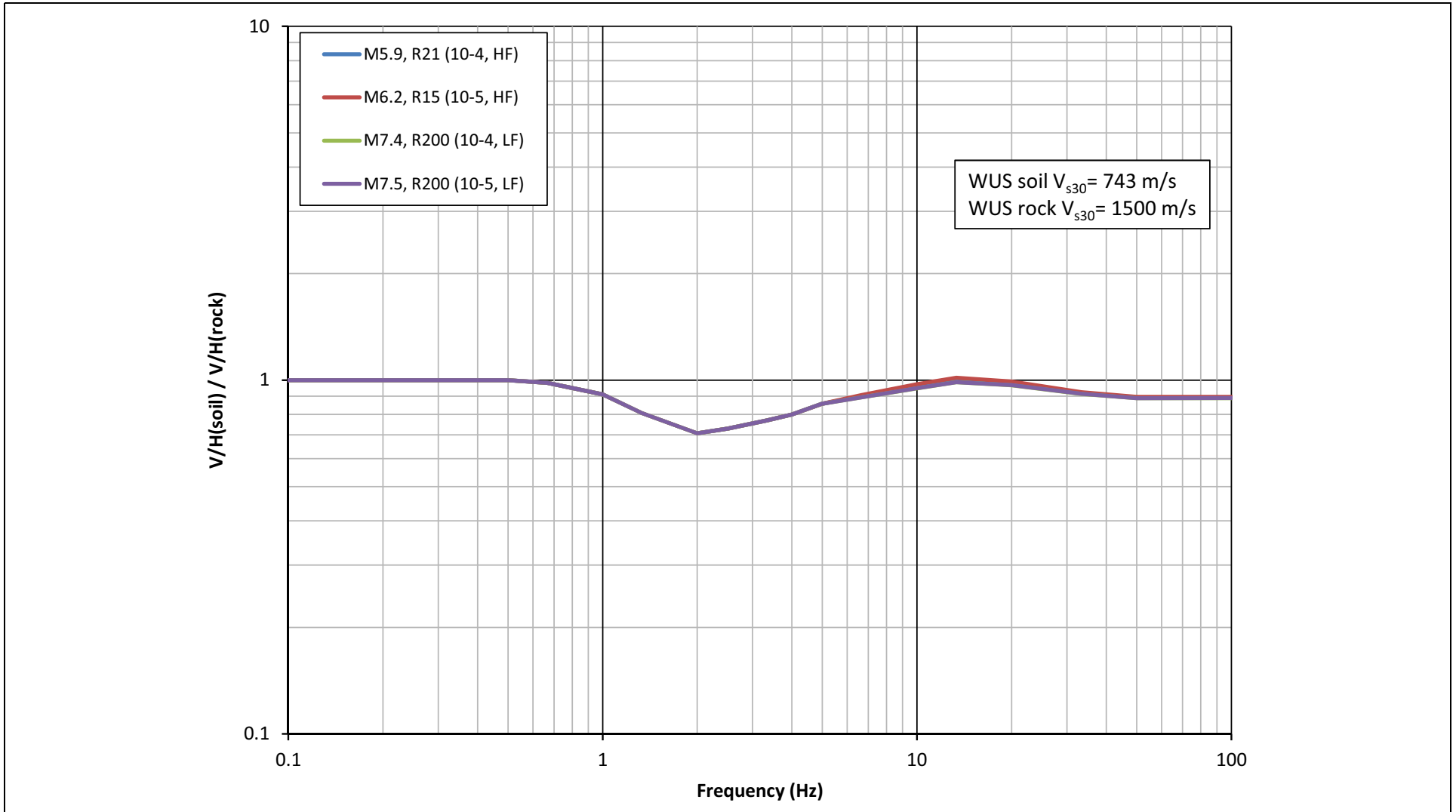


Figure 2.5.2-315  $V/H_{WUS,soil} / V/H_{WUS,rock} (f(\text{Rock-to-Soil}))$  from GA11 V/H Model for the Suite of Controlling Magnitudes and Distances for Soil  $V_{s30}$  of 2,439 ft/s (743 m/s) and Rock  $V_{s30}$  of ~5,000 ft/s (1,500 m/s)



NOTE: The LF distances have been capped to the maximum applicable distance (200 km) of the GA11 V/H model ([Reference 2.5-388](#))

Figure 2.5.2-316 Frequency-Shifted Versions of  $V/H_{WUS,soil} / V/H_{WUS,rock} (f(\text{Rock-to-Soil}) \times f(\text{WUS-to-CEUS}))$  from Figure 2.5.2-315

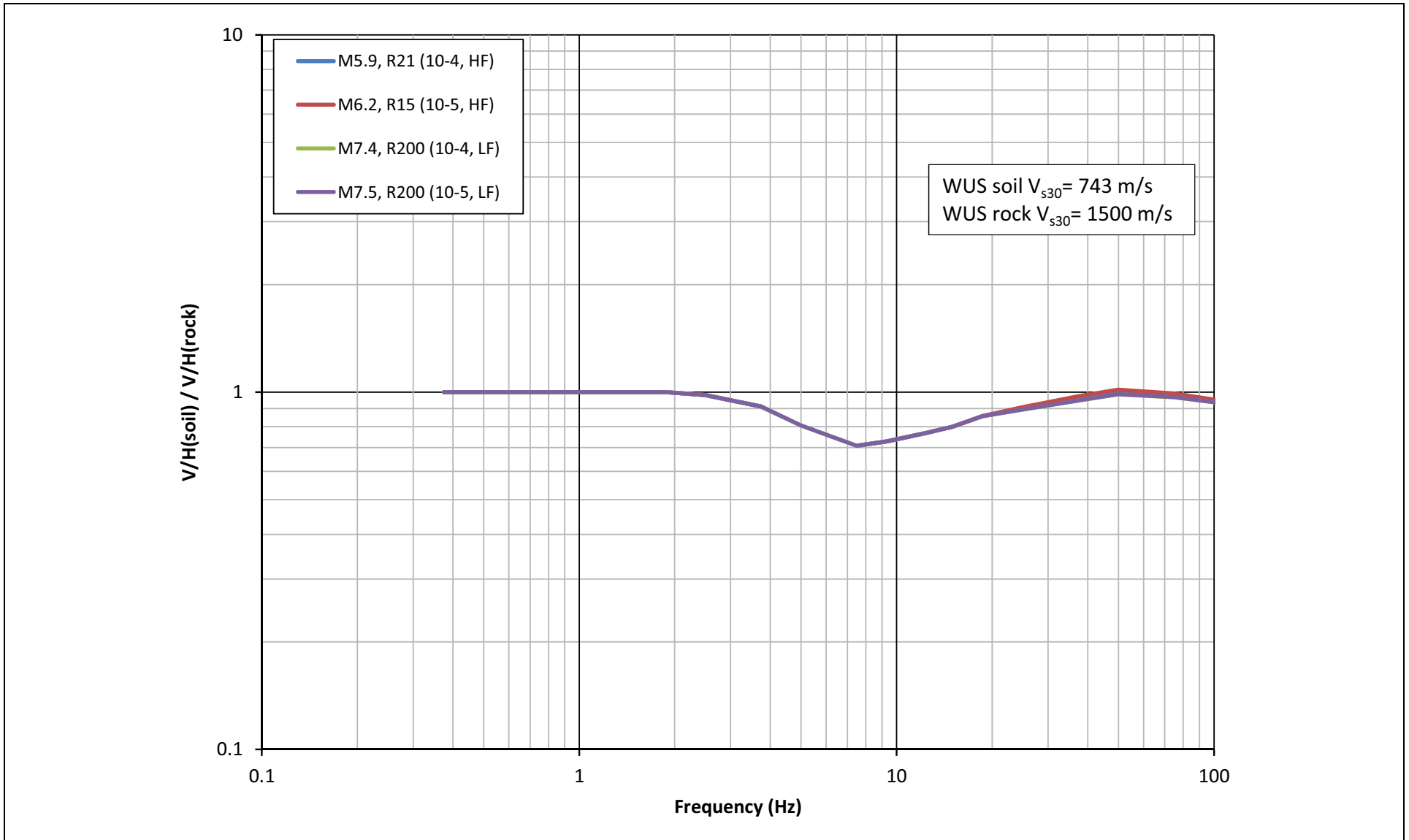
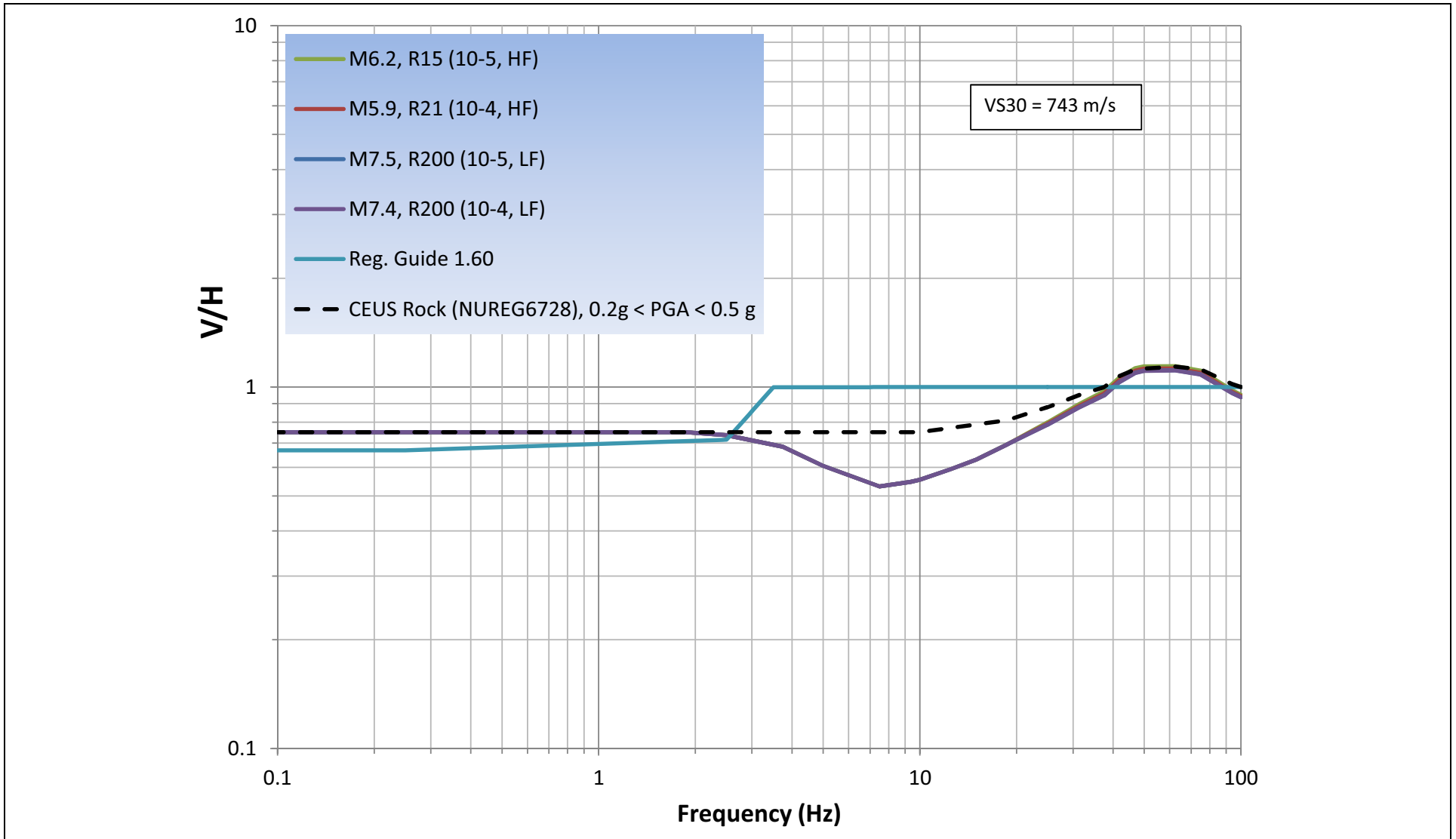
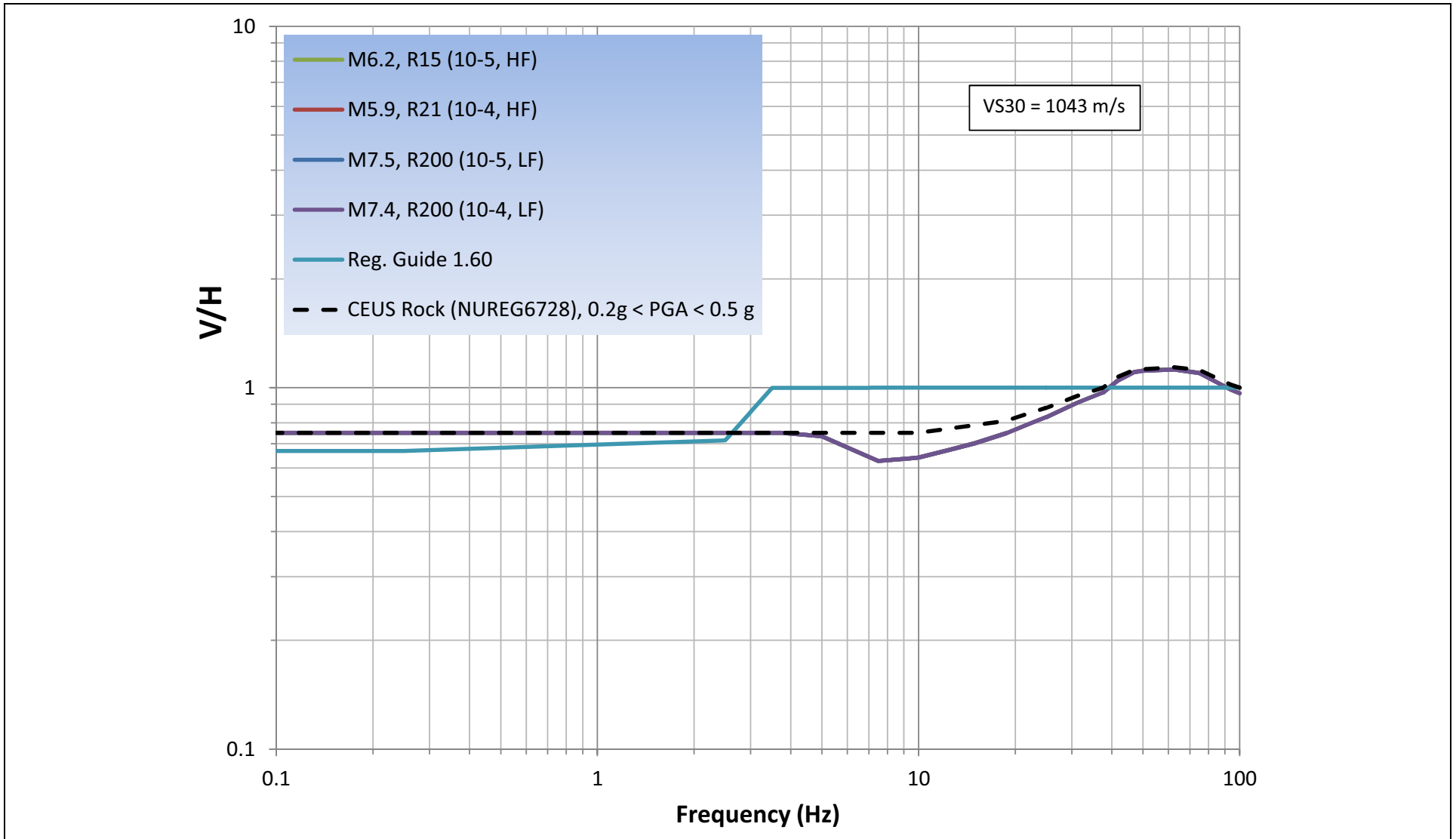


Figure 2.5.2-317 Initial  $V/H_{CEUS,soil}$  for a Suite of Controlling Magnitudes and Distances and  $V_{S30}$  of 2,439 ft/s (743 m/s)



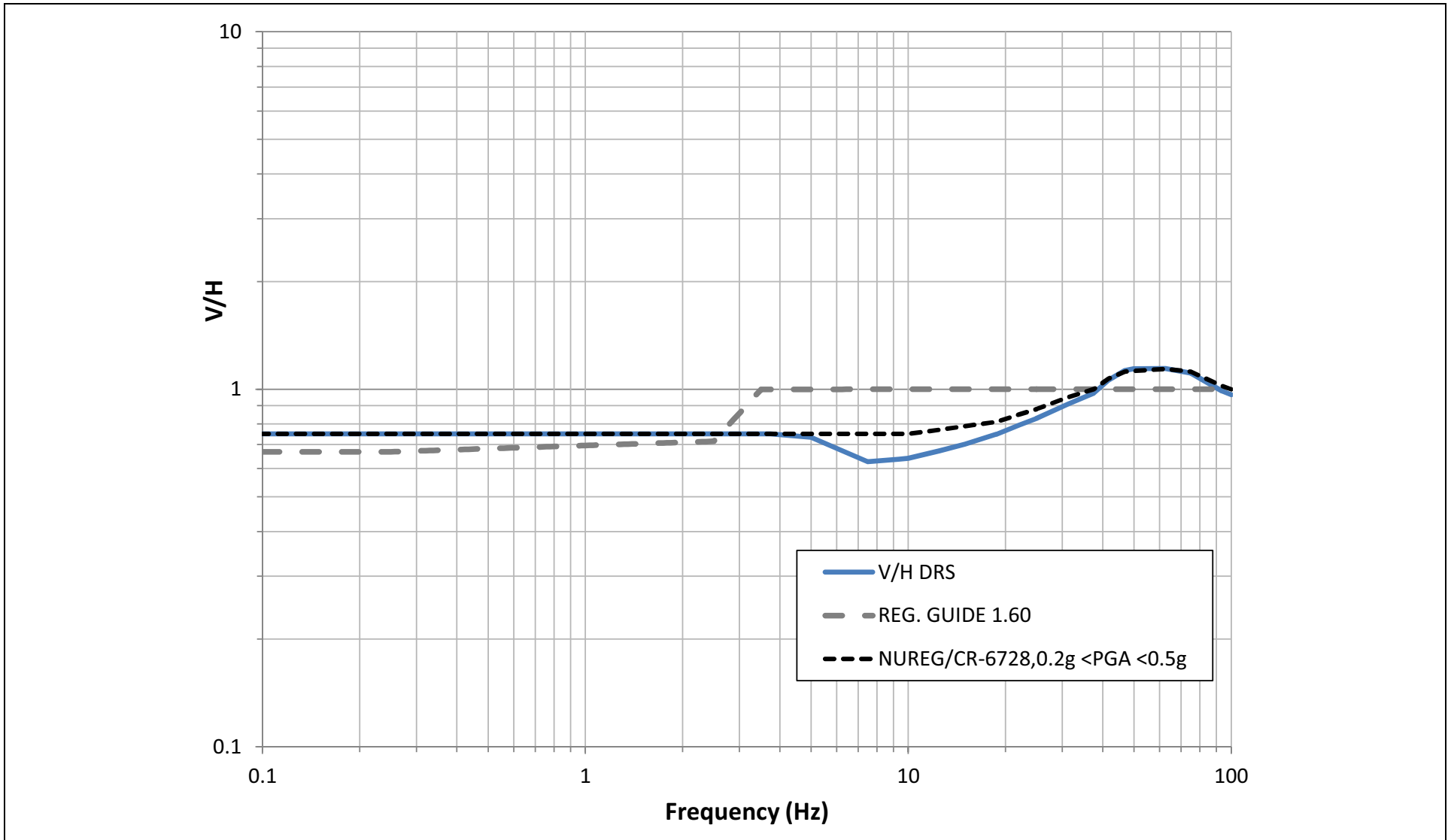
NOTE: Applicable  $V/H_{CEUS,rock}$  and the  $V/H$  from RG 1.60 are shown for comparison.

Figure 2.5.2-318 Initial  $V/H_{CEUS,soil}$  for a Suite of Controlling Magnitudes and Distances and  $V_{S30}$  of 3,423 ft/s (1,043 m/s)



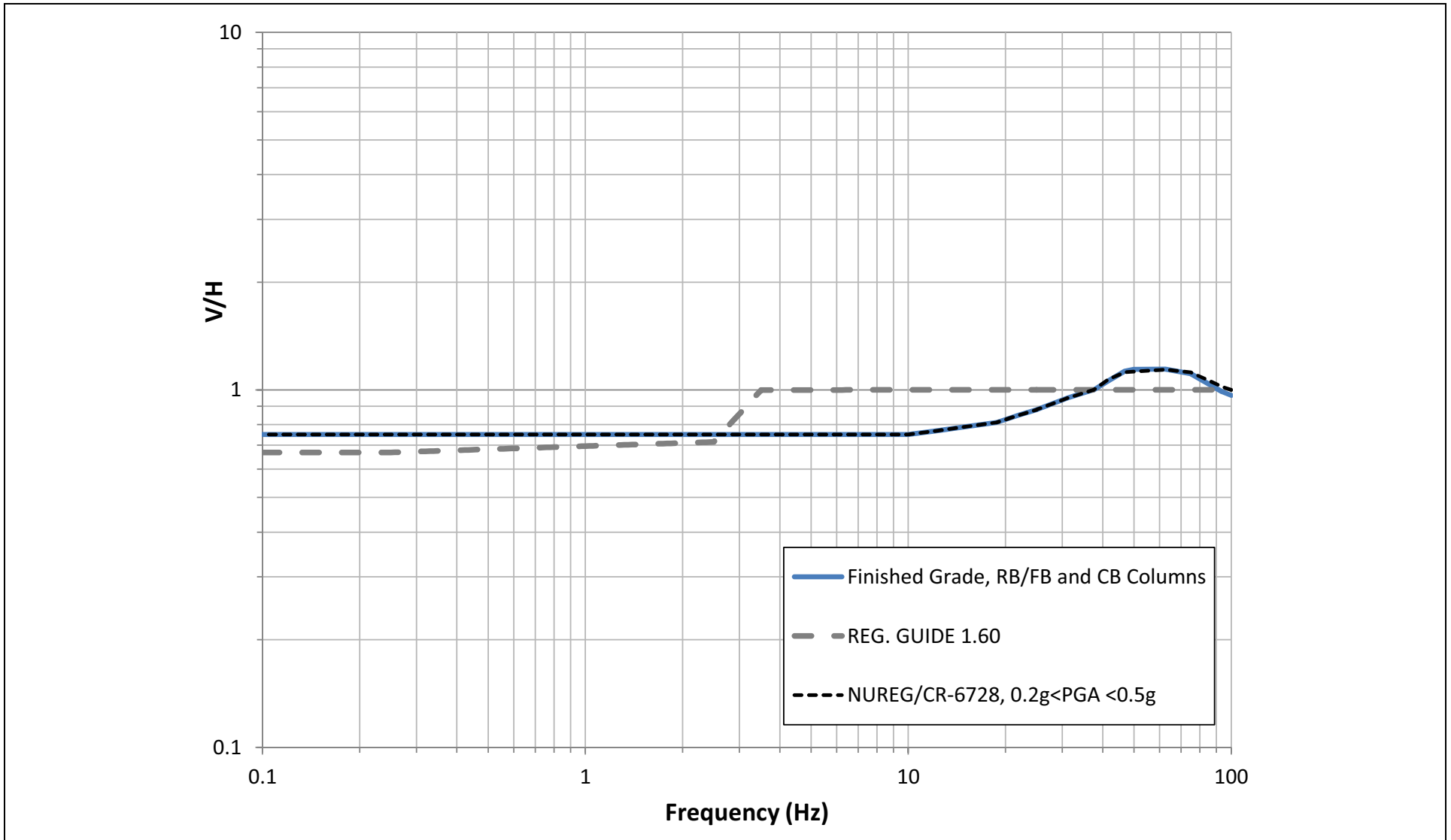
NOTE: Applicable  $V/H_{CEUS,rock}$  and the  $V/H$  from RG 1.60 are shown for comparison.

Figure 2.5.2-319 Initial PBSRS  $V/H_{CEUS,soil}$  Is the Envelope of 8  $V/H$  curves (Figures 2.5.2-317 and 2.5.2-318)



NOTE: Applicable  $V/H_{CEUS,rock}$  and the  $V/H$  from RG 1.60 are shown for comparison.

Figure 2.5.2-320 Final PBSRS  $V/H_{CEUS,soil}$  Where Mid-Frequency Dip Has Been Removed



NOTE: Applicable  $V/H_{CEUS,rock}$  and the  $V/H$  from RG 1.60 are shown for comparison.