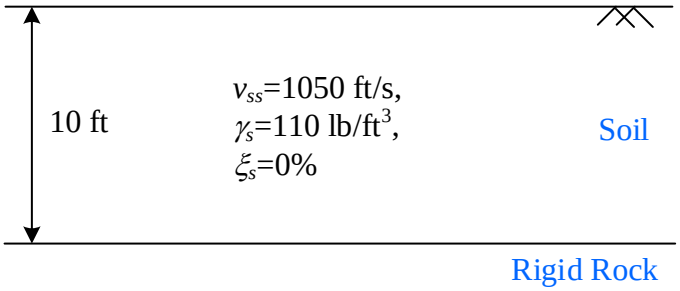
Question 1: Given the soil profile shown in the figure below, (1) calculate the transfer function relating ground surface to the bedrock outcrop [i.e., $F_1(f)$], (2) plot out the amplification factor [i.e., $|F_1(f)|$ vs. f for $f = 0$ to 25 Hz], and (3) compute the time history of acceleration at the surface of the linear elastic soil deposit shown in the figure below in response to the E-W component of Gilroy Array 1 motion from the Loma Prieta earthquake. (lead: Python command may be used)



Question 2: Given the soil profile shown in the figure below, (1) calculate the transfer function relating ground surface to the bedrock outcrop [i.e., $F_2(f)$] and (2) plot out the amplification factor [i.e., $|F_2(f)|$ vs. f for $f = 0$ to 25 Hz]. (lead: Python command may be used for calculation involving complex numbers)