ANNEX A
SOIL CLASSIFICATION FOR SPECIFICATION OF SEISMIC GROUND MOTION

A.1. Soil classification procedure

A.1.1 – For the purpose of specifying elastic response spectrum, the site soil shall be classified according to **Table A.1**. Where the soil properties given in **Table A.1** are not known in sufficient detail to determine the soil class, it shall be permitted to assume Soil Class D unless Dubai Municipality determines that Soil Class E or F could apply at the site or in the event that Site Class E or F is established by geotechnical data.

Table A.1. Soil classification parameters

Soil Class	$\overline{v}_s$ (m/s)	$\overline{N}$ or $\overline{N}_{ch}$	$\overline{s}_u$ (kPa)
A. Hard rock	> 1500	NA	NA
B. Rock	760 – 1500	NA	NA
C. Very dense soil and soft rock	360 – 760	> 50	100
D. Stiff soil	180 – 360	15 – 50	50 – 100
E. Soft clay soil	< 180	< 15	< 50
	or any profile with more than 3 m of soil with Plasticity index: $PI > 20$ Moisture content: $w \geq 40\%$ Undrained shear strength: $\overline{s}_u < 25$ kPa		
F. Soils requiring site response analysis	1. Soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils, quick and highly sensitive clays, collapsible weakly cemented soils 2. Peat and/or highly organic clays with more than 3 m. 3. Very high plasticity clays with more than 7.5 m and $PI > 75$ 4. Very thick, soft/medium stiff clays with more than 35 m and $s_u < 50$ kPa		

A.1.2 – The parameters used in **Table A.1** to define the Soil Class are based on the upper 30 m of the site profile. Profiles containing distinctly different soil and rock layers shall be subdivided into those layers designated by a number that ranges from 1 to n at the bottom where there are a total of n distinct layers in the upper 30 m. The symbol i then refers to any one of the layers between 1 and n. Parameters characterizing upper 30 m is defined as follows:

(a)

$$\overline{v}_s = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{n} \frac{d_i}{v_{si}}} \qquad \textbf{(A.1)}$$

where v_{si} = shear wave velocity in m/s