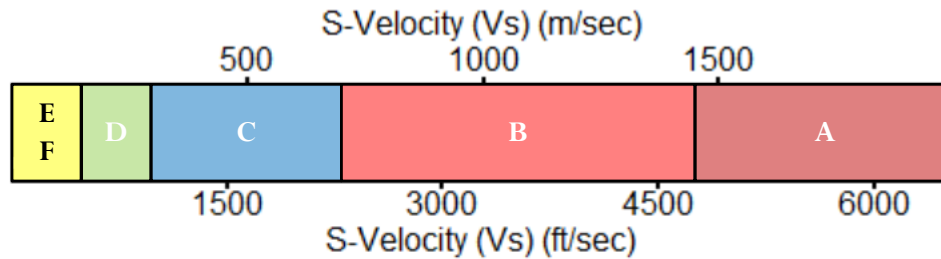


Seismic Site Classification ($V_s^{30\text{-m}}$ or $V_s^{100\text{-ft}}$)

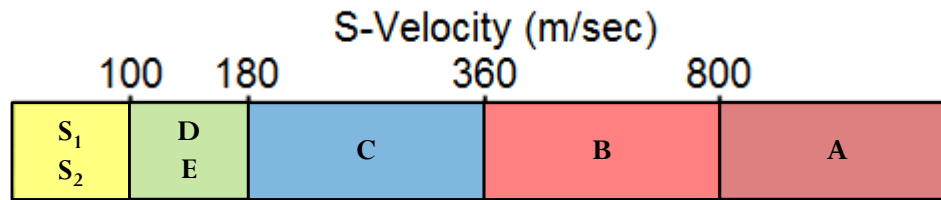


NEHRP* Seismic site classification based on shear-velocity (V_s) ranges.

Site Class	S-Velocity (V_s) (ft/sec)	S-Velocity (V_s) (m/sec)
A (Hard Rock)	> 5,000	> 1500
B (Rock)	2,500 – 5000	760 – 1500
C (Very Dense Soil and Soft Rock)	1,200 – 2,500	360 – 760
D (Stiff Soil)	600 – 1,200	180 – 360
E (Soft Clay Soil)	< 600	< 180
F (Soils Requiring Add'l Response)	< 600, and meeting some additional conditions.	< 180, and meeting some additional conditions.

* National Earthquake Hazard Reduction Program (www.nehrp.gov)

Ground Types - Euro Code*



Type	Description	Parameters		
		Vs30 ^a	N _{SPT} ^b	C _U ^c
A	Rock or other rock-like geological formation, including at most 5 m of weaker material at the surface.	> 800	–	–
B	Deposits of very dense sand, gravel, or very stiff clay, at least several tens of meters in thickness, characterized by a gradual increase of mechanical properties with depth.	360 – 800	> 50	> 250
C	Deep deposits of dense or medium-dense sand, gravel or stiff clay with thickness from several tens to many hundreds of meters.	180 – 360	15 – 50	70 – 250
D	Deposits of loose-to-medium cohesionless soil (with or without some soft cohesive layers), or of predominantly soft-to-firm cohesive soil.	< 180	< 15	< 70
E	A soil profile consisting of a surface alluvium layer with Vs values of type C or D and thickness varying between about 5 m and 20 m, underlain by stiffer material with Vs > 800 m/s.			
S₁	Deposits consisting, or containing a layer at least 10 m thick, of soft clays/silts with a high plasticity index (PI > 40) and high water content	< 100 (indicative)	–	10 – 20
S₂	Deposits of liquefiable soils, of sensitive clays, or any other soil profile not included in types A – E or S1			

* defined by shear wave velocities (Vs's) in the top 30 m, and also by values for N_{SPT} and C_U [from "[Eurocode 8: Seismic Design of Buildings Worked Examples \(EUR 25204 EN – 2012\)](#)" by Bisch et al. (2011)]

^a shear wave velocities in the top 30 m (m/sec), ^b standard penetration test (blows/30cm), ^c undrained cohesive resistance (kPa)