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Table 1 Properties of the soils and stone columns used in the analysis

Soil Parameters	Stone Column	Estuarine cohesive	Estuarine cohesionless	Marine cohesive	Marine cohesionless
	Hardening Soil model	Hardening Soil model	Hardening Soil model	Hardening Soil model	Hardening Soil model
Type of material behaviour	Drained	Undrained	Drained	Undrained	Drained
Dry unit weight (γ) (kN/m^3)	18.6	15	15	17	17
Saturated unit weight (γ_{sat}) (kN/m^3)	21.6	19	19	20	20
Permeability (k_h) m/day	2×10^{-5}	2×10^{-8}	2×10^{-6}	2×10^{-8}	2×10^{-6}
Permeability (k_v) m/day	1×10^{-5}	1×10^{-8}	1×10^{-6}	1×10^{-8}	1×10^{-6}
Failure ratio R_f	0.86	0.87	0.69	0.84	0.67
Poisson's ratio (v)	0.2	0.2	0.2	0.2	0.2
Cohesion (c') (kPa)	0	0	0	0	0
Friction angle (Φ') (°)	41	34	38	34	37
Dilatancy angle (Ψ) (°)	0	0	0	0	-
Initial voids ratio, (e_0)	0.5	0.5	0.5	0.5	0.5
Reference pressure, p_{ref} (kPa)	100	100	100	100	100
Lateral earth coefficient $_{K0}$	0.5	0.5	0.5	0.5	0.5
m	0.65	0.69	0.65	0.90	0.59
E_{50}^{ref} (MPa)	29	8.5	17	8.7	12.6
E_{oed}^{ref} (MPa)	29	8.5	17	8.7	12.6
E_{ur}^{ref} (MPa)	14	42.5	85	43.5	63

Table 2 Properties of the foundation used in the analysis

Footing	Footing (concrete)	Fill
	Elastic-perfectly plastic	Elastic-perfectly plastic
Dry unit weight (γ) (kN/m^3)	25	16
Sat unit weight (γ_{sat}) (kN/m^3)	-	19
Cohesion (c') (kN/m^2)	4000	0
Friction angle (Φ') (°)	40	30
Poisson's ratio (v)	0.15	0.33
E (MPa)	2×10^4	10
Permeability (k_h) m/day	0	2×10^{-6}
Permeability (k_v) m/day	0	1×10^{-6}