

Table 1

SOME TYPICAL GEOTECHNICAL DESIGN CRITERIA FOR ROAD WORKS

DESIGN COMPONENT		MODE OF FAILURE	MINIMUM FACTOR OF SAFETY	DESIGN LIFE (durability of materials)	REMARK		
1. Slope / Embankment (not on soft ground)	Unreinforced	1.1 Local & Global Stability	1.3	75 yrs	Analysis should be according to GEOTECHNICAL MANUAL FOR SLOPES (1984), GEO Hong Kong		
	Reinforced or Treated	1.2 Local & Global Stability	1.5	75 yrs			
2. Embankment on Soft Ground		2.1 Bearing (short term) 2.2 Local & global slope stability (short term) 2.3 Local & global slope stability (long term)	1.4 1.3 1.2	75 yrs	5 years post construction settlement : (i) within 50m from structures approach < 100mm (ii) within 100m remote from structures < 150mm (iii) road < 250mm (Total Settlement) } Differential Settlement		
3. Permanent Anchors		3.1 Tensile Resistance 3.2 Resistance at Soil Grout Interface 3.3 Creep/corrosion	2.0 3.0	75 yrs	Geo Spec 1 (1989), GEO Hong Kong BS 8081		
4. Rigid Retaining Structures		4.1 Overturning 4.2 Sliding 4.3 Overall Stability 4.4 Bearing	1.8 1.6 1.5 2.0	75 yrs	Max. permissible vertical movement : 15mm along face of wall Geoguide 1 (1983), GEO Hong Kong	Max. permissible lateral movement : 15mm along face of wall	Max. permissible differential movement : 1 : 150 along face of wall
5. Reinforced fill walls/structures		External Stability Internal Stability	BS 8006	120 yrs	Verticality: ± 5mm per metre height	Alignment along top (horizontal) : ± 15mm from reference alignment	Max. permissible differential movement : 1 : 100 along face of wall
6. Individual Foundation Piles (mainly under axial loads)		6.1 Shaft Resistance 6.2 Base Resistance	2.0 3.0	75 yrs	Allowable settlement: 12mm along axis of pile at pile head at design load. 38mm or 10% pile size at pile head at twice design load. Residual settlement not exceed 6.5mm BS 8004 & JKR Road Specification		
7. Individual Foundation Piles (mainly under lateral & bending loads perpendicular to axis of pile)		Ultimate Lateral Resistance	2.5	75 yrs	Allowable settlement: 12mm along axis of pile at pile head at design load BS 8004	Max. permissible lateral movement : 12mm perpendicular to axis of pile at design load	
8. Pile Group		Block Bearing Capacity	2.0	75 yrs	Allowable settlement: 12mm at Working Load BS 8004		
9. Piles as Retaining Structures		As for 4, 6 & 7 above	As for individual foundation piles	75 yrs	As 4 above for rigid retaining structures BS 8004		