Amendments to the Code of Practice for Foundations 2017

(July 2022)

Legends:

Amended

Deleted

Appendix

Amendments to the Code of Practice for Foundations 2017 (July 2022)

Item	Current version	Amendments
1. Clause 4.2.2(2)(a) [1]	**(2) Testing Requirements** When one of the following conditions applies, a sufficient number of plate load tests should be carried out to verify the allowable bearing pressure and settlement estimation for shallow foundations: (a) the allowable bearing pressure (q_a) based on the presumed values in Table 2.1 exceeds 300 kPa (unless the net increase in bearing pressure (i.e. q_a - q_o) is less than 50 kPa); or	**(2) Testing Requirements** When one of the following conditions applies, a sufficient number of plate load tests should be carried out to verify the allowable bearing pressure and settlement estimation for shallow foundations: (a) the allowable bearing pressure (q_a) based on the presumed values in Table 2.1 exceeds 300 kPa (unless the net increase in bearing pressure (i.e. q_a - q_o) is less than 50 kPa), except category 3 intermediate soil; or
2. Clause 5.3.3(1)(a) and (b) [2 & 3]	(a) Anchorage resistance of piles …… Proof test is normally required to justify the tension capacity of piles unless such capacity is taken as less than half of the compressive capacity resulting only from shaft friction and bond between the pile and the surrounding soil. In any case, the adequacy of the related soil mass and rock cone supporting the pile should be checked for uplifting effect.	(a) Anchorage resistance of piles …… Proof test is normally required to justify the tension capacity of piles. When the tension capacity of piles is taken as less than half of the compressive capacity resulting only from shaft friction and bond between the pile and the surrounding soil/rock, and the tension piles have already been considered for selection for compression proof test, then tension proof test is not

		required. In any case, the adequacy of the related soil column and rock or soil cone supporting the pile should be checked for uplifting effect.
	(b) Anchorage resistance limited by effective weight of soil mass/rock cone The anchorage resistance against uplifting force would be limited by the effective weight of the soil mass and rock cone that can be mobilised by the piles. The ultimate anchorage resistance of a pile or a pile group, R_u, therefore should not exceed the effective weight of the soil mass and rock cone as derived from sub-clauses (2)(b) and (3)(c) below such that:	(b) Anchorage resistance limited by effective weight of soil column and rock or soil cone The anchorage resistance against uplifting force would be limited by the effective weight of the soil column and rock or soil cone that can be mobilised by the piles. The ultimate anchorage resistance of a pile or a pile group, R_u, therefore should not exceed the effective weight of the soil column and rock or soil cone as derived from sub-clauses (2)(b) and (3)(c) below such that:

[1] Exclusion of category 3 intermediate soil from the requirement of plate load test.

[2] Clarification on the proof test requirement for tension piles.

[3] Clarification on the checking of the related soil column and rock or soil cone.

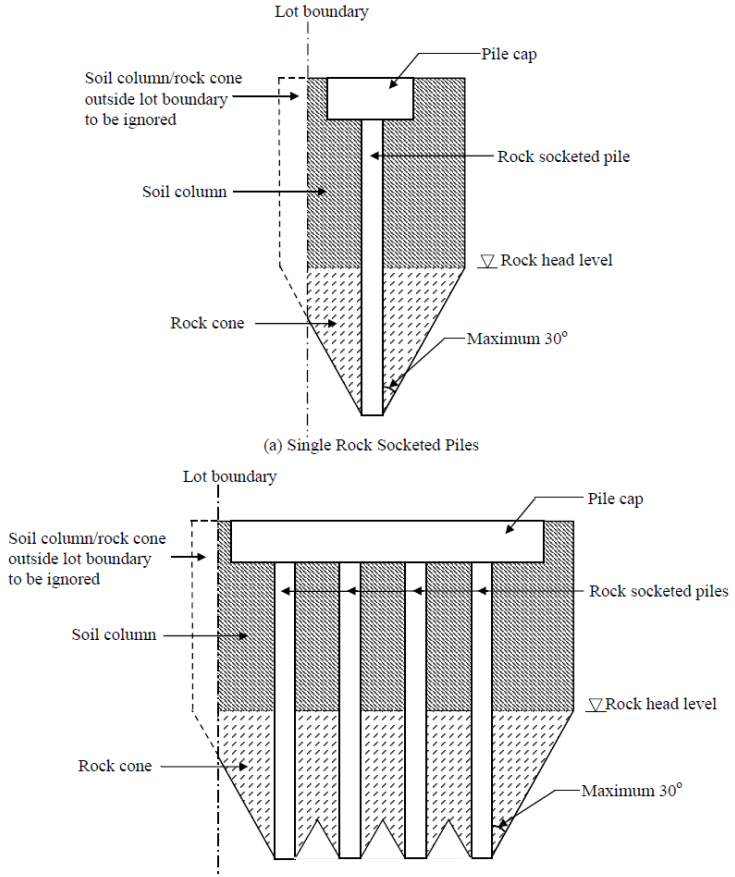
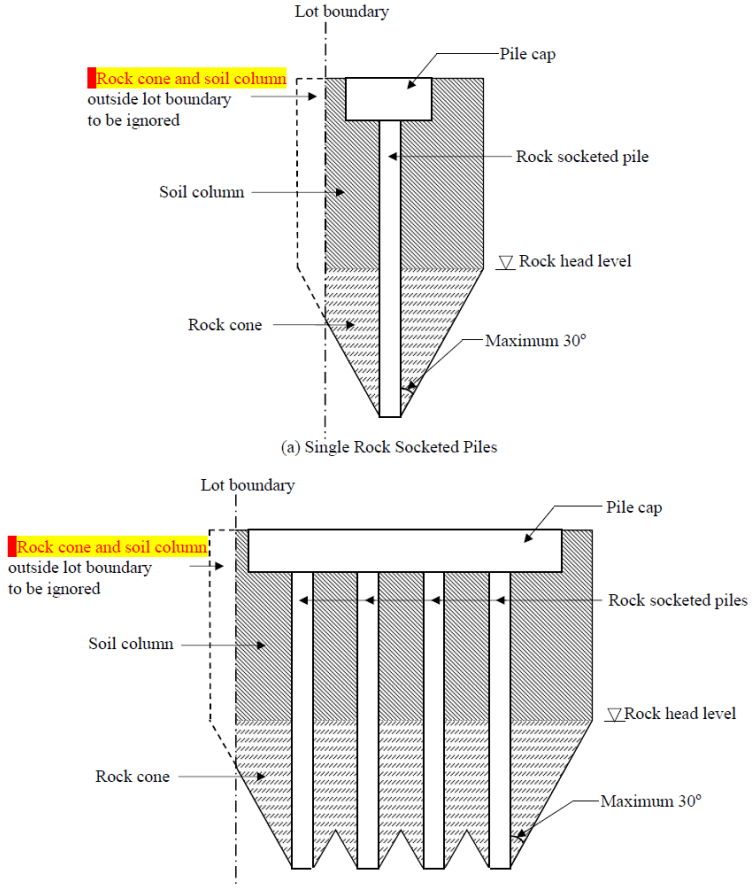
Appendix

Item	Current version	Amendments
3. Clause 5.3.3(2)(b) [4 & 5]	(b) Assessment of the effective weight of the rock cone and soil column For single or group of closely-spaced piles (i.e. with overlapping rock cone/soil column) that derive the ultimate tension resistance from rock socket, the configuration of the rock cone/soil column as given in Figure 5.1 may be used, and the assessment of the effective weight of the rock cone and soil column should be based on the following assumptions : (i) The half angle of the rock cone at the toe of the pile should not exceed 30 degree measuring from the vertical. (ii) Only the column of overburden soil directly above the rock cone should be considered, and the soil friction at the vertical face of such soil column above the rock cone should be ignored. (iii) Effective weight of the rock cone and the soil column should be adopted. Any part of the rock cone or soil column falling outside the lot boundary should be ignored. (iv) For a group of closely-spaced piles subjected to	(b) Assessment of the effective weight of the rock cone and soil column For single or group of closely-spaced piles (i.e. with overlapping rock cone and soil column) that derive the ultimate tension resistance from rock socket, the configuration of the rock cone and soil column as given in Figure 5.1 may be used, and the assessment of the effective weight of the rock cone and soil column should be based on the following assumptions : (i) The half angle of the rock cone at the toe of the pile should not exceed 30 degree measuring from the vertical. (ii) Only the column of overburden soil directly above the rock cone should be considered, and the soil friction at the vertical face of such soil column above the rock cone should be ignored. (iii) Effective weight of the rock cone and the soil column should be adopted. Any part of the rock cone and soil column falling outside the lot boundary should be ignored. (iv) For a group of closely-spaced piles subjected to

	tension, overlapping effect should be considered when assessing the volume of rock/soil cone to be used for resisting the combined uplift force.	tension, overlapping effect should be considered when assessing the volume of rock cone and soil column to be used for resisting the combined uplift force.
	(v) For a group of piles with same individual tension capacity, checking of rock/soil cone failure of individual pile is not necessary when the group effect has been considered as stated in (iv) above.	(v) For a group of piles of the same size with the same individual allowable anchorage resistance, checking of overlapping effect on rock cone failure of individual pile is not necessary when the group effect has been considered as stated in (iv) above.
	(vi) Where the tension capacities of piles within a pile group are not the same, checking of rock/soil cone failure of individual pile is required. The effective weight of the overlapping part of rock cones between piles may be distributed to each pile on a pro-rata basis according to the tension capacities of the piles.	(vi) Where the allowable anchorage resistances of piles within a pile group are not the same, checking of overlapping effect on rock cone failure of individual pile is required. The effective weight of the overlapping part of rock cones and soil columns between piles may be distributed to each pile on a pro-rata basis according to the allowable anchorage resistances of the piles.

[4] Clarification on the checking of overlapping effect on rock cone failure for piles with rock socket.

[5] Clarification on the assessment concerning the rock cone and soil column.

Item	Current version	Amendments
4. Figure 5.1 [6]	 **Figure 5.1 Configuration of Rock Cone/Soil Column for Rock Socketed Piles**	 **Figure 5.1 Configuration of Rock Cone and Soil Column for Rock Socketed Piles**

[6] Clarification on the assessment concerning the rock cone and soil column.

Appendix

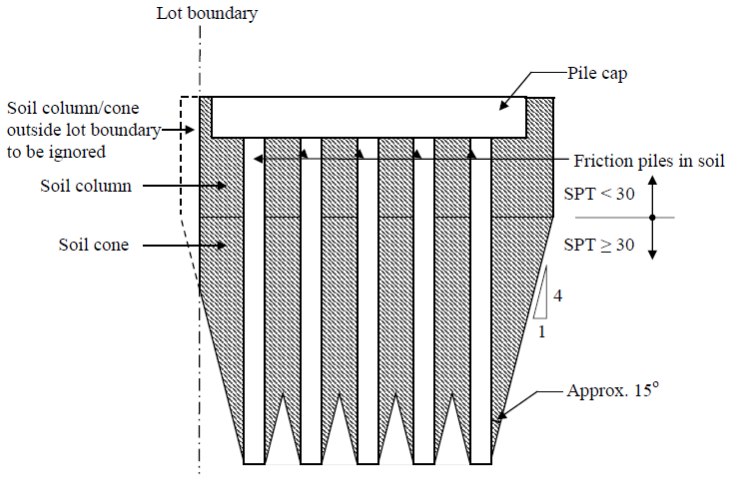
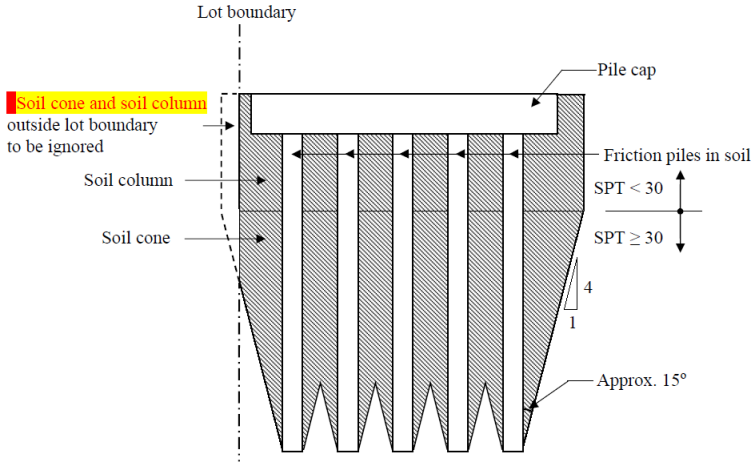
Item	Current version	Amendments
5. Clause 5.3.3(3)(c) [7 & 8]	(c) Assessment of the effective weight of the soil cone/soil column For a group of closely-spaced piles (i.e. with overlapping soil cone/soil column) that derive the ultimate tension resistance from friction in granular soil, the configuration of the soil cone/soil column as given in Figure 5.2 may be used, and the assessment of the effective weight of the soil cone/soil column should be based on the following assumptions: (i) For single pile subjected to tension, checking on soil cone failure is not required. (ii) For soil with an SPT N-value of not less than 30, the angle of dilation of the soil cone should not exceed 1 in 4 (i.e. approximate 15 degree). For soil with an SPT N-value of less than 30, the angle of dilation of the soil cone should be taken as zero. (iii) Skin friction on the face of the soil cone/soil column should be ignored. (iv) Effective weight of the soil cone/soil column should be adopted. Any part of the soil cone/soil column falling outside the lot boundary should be	(c) Assessment of the effective weight of the soil cone and soil column For a group of closely-spaced piles (i.e. with overlapping soil cone and soil column) that derive the ultimate tension resistance from friction in granular soil, the configuration of the soil cone and soil column as given in Figure 5.2 may be used, and the assessment of the effective weight of the soil cone and soil column should be based on the following assumptions: (i) For single pile subjected to tension, checking on soil cone failure is not required. (ii) For soil with an SPT N-value of not less than 30, the angle of dilation of the soil cone should not exceed 1 in 4 (i.e. approximate 15 degree). For soil with an SPT N-value of less than 30, the angle of dilation of the soil cone should be taken as zero. (iii) Skin friction on the face of the soil cone and soil column should be ignored. (iv) Effective weight of the soil cone and soil column should be adopted. Any part of the soil cone and soil column falling outside the lot boundary should

	ignored.	be ignored.
	(v) For a group of closely-spaced piles with same individual tension capacity, overlapping effect of the soil cones should be considered when assessing the volume of soil cone/soil column to be used for resisting the combined uplift force.	(v) For a group of closely-spaced piles of the same size with the same individual tension capacity, overlapping effect of the soil cones should be considered when assessing the volume of soil cones and soil columns to be used for resisting the combined uplift force.
	(vi) Where the tension capacities of piles within a pile group are not the same, checking of soil cone failure of individual pile is required. The effective weight of the overlapping part of soil cones and columns between piles may be distributed to each pile on a pro rata basis according to the tension capacities of the piles.	(vi) Where the tension capacities of piles within a pile group are not the same, checking of overlapping effect on soil cone failure of individual pile is required. The effective weight of the overlapping part of soil cones and soil columns between piles may be distributed to each pile on a pro-rata basis according to the tension capacities of the piles.

[7] Clarification on the checking of overlapping effect on soil cone failure for piles in granular soil.

[8] Clarification on the assessment concerning the soil cone and soil column.

Appendix

Item	Current version	Amendments
6. Figure 5.2 [9]	 **Figure 5.2 Configuration of Soil Cone/Soil Column for Group of Closely-spaced Friction Piles in Soil**	 **Figure 5.2 Configuration of Soil Cone and Soil Column for Group of Closely-spaced Friction Piles in Soil**
7. List of Figures[10]	…… Figure 5.1 Configuration of Rock Cone/Soil Column for Rock Socketed Piles Figure 5.2 Configuration of Soil Cone/Soil Column for Group of Closely-spaced Friction Piles in Soil	…… Figure 5.1 Configuration of Rock Cone and Soil Column for Rock Socketed Piles Figure 5.2 Configuration of Soil Cone and Soil Column for Group of Closely-spaced Friction Piles in Soil

[9] Clarification on the assessment concerning the soil cone and soil column.

[10] Corresponding amendment to the titles of the figures.