Appendix B

Table A1 Input parameters of numerical examples

Structural characteristics	
Pile diameter (m)	1.8
Length of cap (m)	14
Width of cap (m)	7.7
Height of cap (m)	3
Wave characteristics	
Wave height (m)	2-4.5
Wave period (s)	6-14
Water depth (m)	30
Submerged coefficient	0-2

Table A2 Input parameters of five numerical cases

Case No	Wave height(m)	Wave period(T)	KC number
1	2	6	3.46
2	3	8	5.46
3	3.5	10	7.13
4	4	12	9.35
5	4.5	14	12.16

List of Figures

Figure. A1. Offshore bridge with Pile-Cap system

Figure. A2. Sketch of wave and pile-cap system interaction

Figure. A3. Variations of wave induced maximum horizontal forces (F_H*= F_{Hmax} /$D\rho g H$) on pile for different mesh numbers

Figure. A4. Variations of pile group effect K_G versus different KC numbers for side by side arrangement with S_G/D=1

Figure. A5. Variations of pile group effect K_G versus different KC numbers for tandem arrangement with S_G/D=1

Figure. A6. Variations of flow velocity around the pile without cap

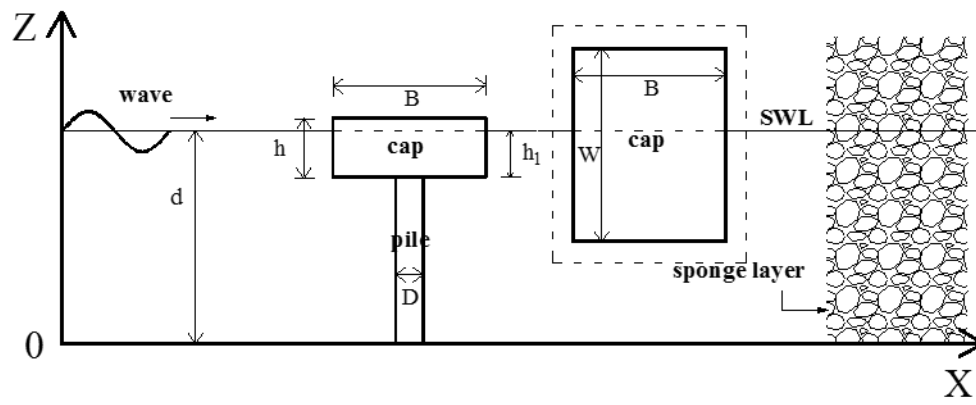**Figure. A7**. Variations of flow velocity around the connection part between the cap and pile

Figure. A8. Variations of pile group effect versus varies KC numbers with side by side arrangement of pile group

Figure. A9. Variations of pile group effect versus varies KC numbers with tandem arrangement of pile group
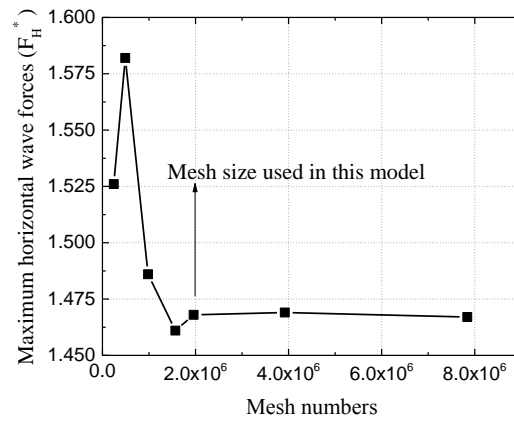
Figure. A10. Variations of pile group effect versus varies submerged coefficients of cap with different arrangements of pile group
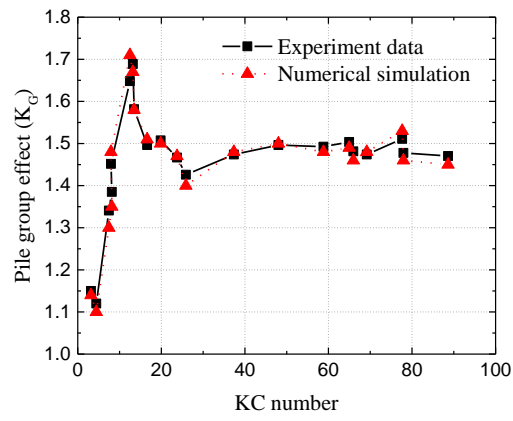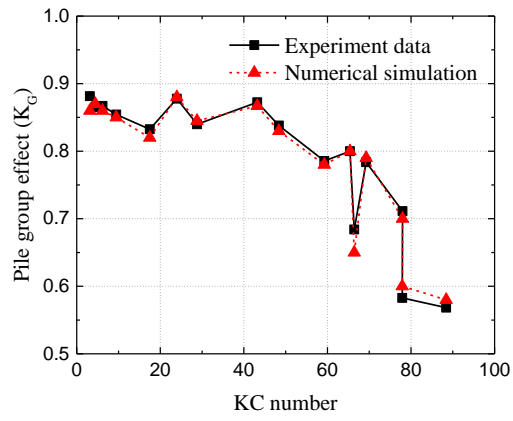
Figure1. Offshore bridge with Pile-Cap system

Figure 2. Sketch of wave and pile-cap system interaction

Figure 3. Variations of wave induced maximum horizontal forces ($F_H^* = F_{Hmax}/D\rho gH$) on pile for different mesh numbers
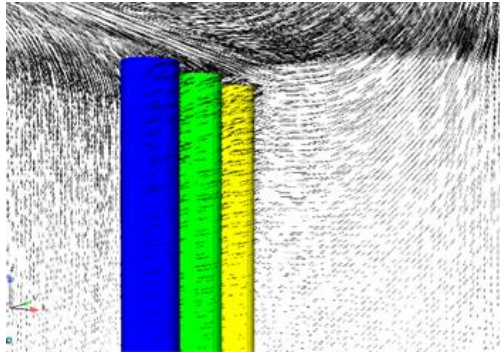
Figure 4. Variations of pile group effect K_G versus different KC numbers for side by side arrangement with S_G/D=1
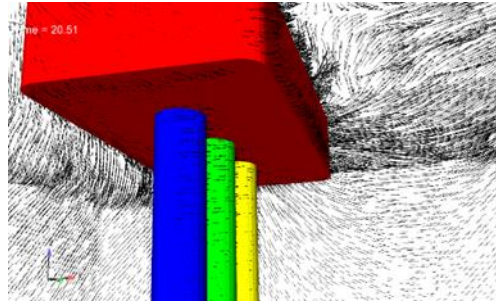
Figure 5. Variations of pile group effect K_G versus different KC numbers for tandem arrangement with S_G/D=1
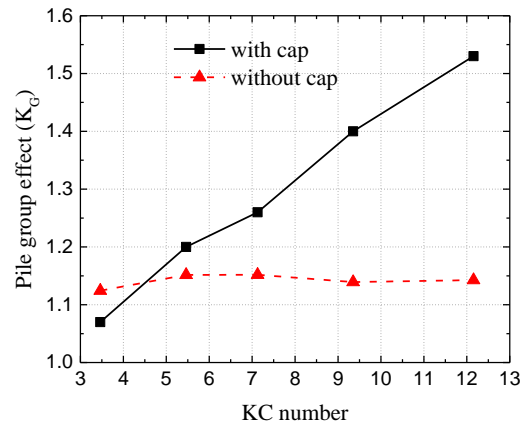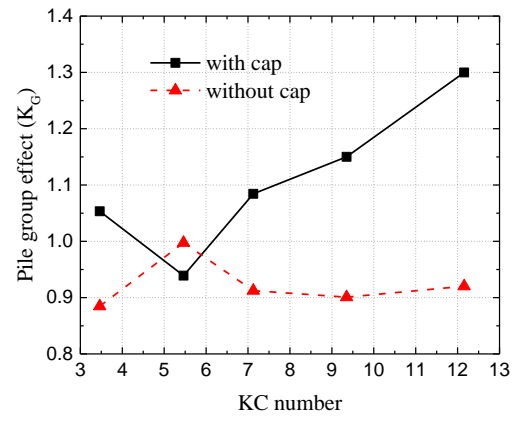
**Figure 6.** Variations of flow velocity around the pile without cap

Figure 7. Variations of flow velocity around the connection part between the cap and pile

Figure 8. Variations of pile group effect versus varies *KC* numbers with side by side arrangement of pile group

Figure 9. Variations of pile group effect versus varies *KC* numbers with tandem arrangement of pile group
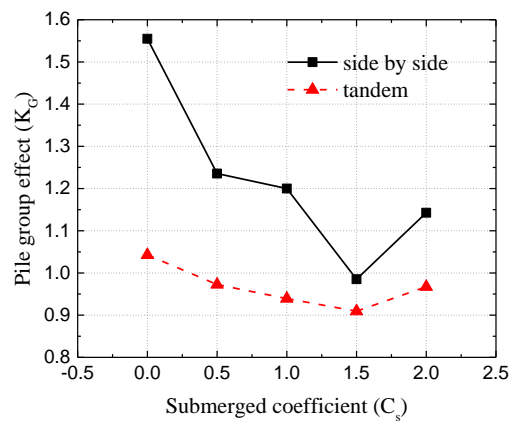
Figure 10. Variations of pile group effect versus varies submerged coefficients of cap with different arrangements of pile group