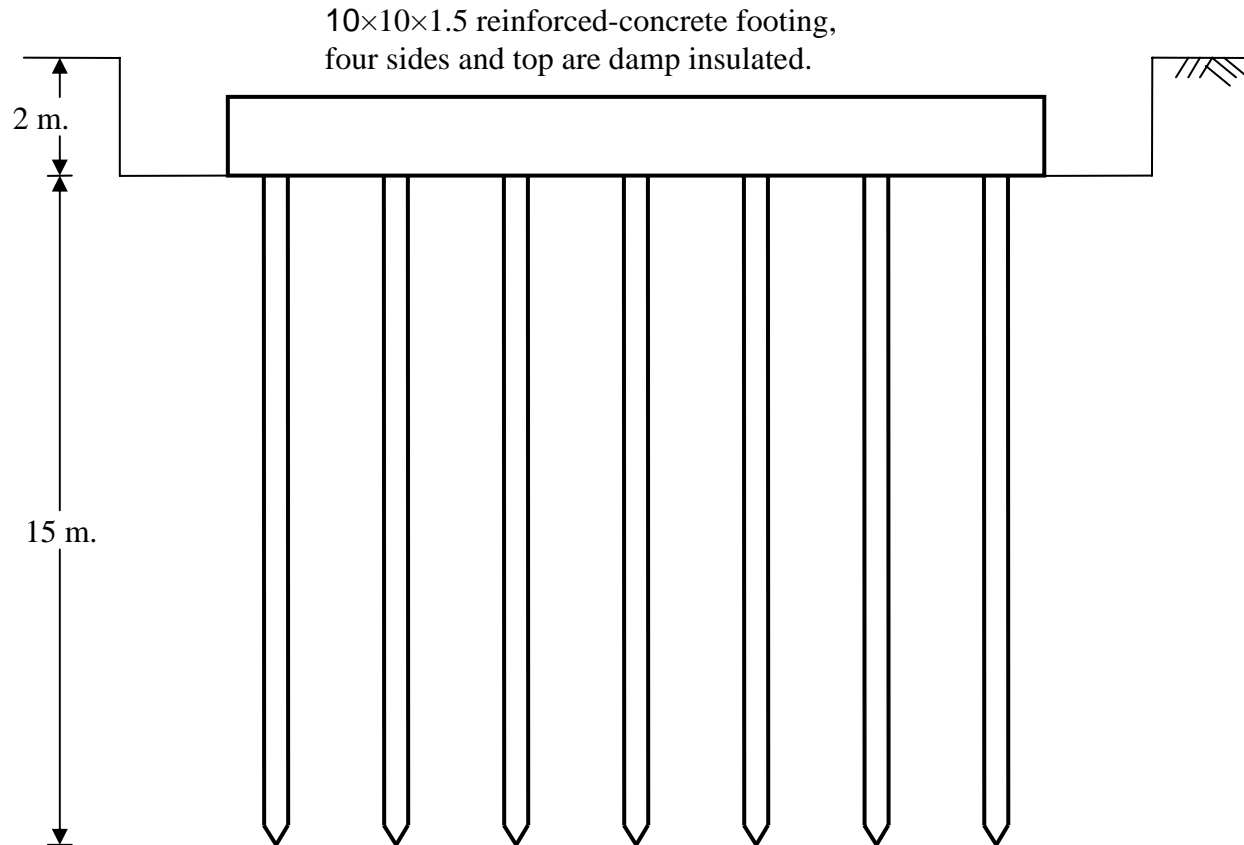


King Fahd University of Petroleum & Minerals
College of Environmental Design
Construction Engineering & Management Department
CEM 511
Construction Estimating
Fall 2005/2006



Pile-supported RC footing

- Scope of work:



Bid form

Work item No.	Work item	Unit	Quantity	Unit price	Total price
1	Excavation	m ³	392		
2	Concrete piles	m	735		
3	R.C footing	m ³	150		
4	Insulation	m ²	160		
Total bid price					



Summary sheets (Excavation)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Excavation	392	m ³	<u>Labor:</u> Excavator operator 30 SR/day Excavation rate of 200 m ³ /day It takes two days to do the job Labor cost = $30 \times 2 = 60$ SR <u>Equipment:</u> Excavator 300 SR/day Excavator cost = $300 \times 2 = 600$ SR	60	30	600		
			Total account cost	60	30	600		
Total cost of excavation				60	30	600		690
				90				



Summary sheets (Concrete piles)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Pile-driving rig, mobilize and demobilize	job		<u>Labor:</u> 2 laborers 15 SR/day = 30 SR/day 2 pile-drive men 20 SR/day = 40 SR/day 1 truck driver 30 SR/day 1 crane driver 30 SR/day Total cost of the crew = 130 SR/day It takes one day to mobilize and demobilize Total cost = 130 SR <u>Equipment:</u> 50-ton Crane 300 SR/day Truck 200 SR/day Equipment cost = 500 SR/day Total equipment cost = $500 \times 1 = 500$ SR/day	130	65	500		
			Total account cost	130	65	500		695



Summary sheets (Concrete piles)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Pile driving	735	m	<u>Labor:</u> 2 laborers 15 SR/day = 30 SR/day 2 piledrivermen 20 SR/day = 40 SR/day 1 crane driver 30 SR/day Total cost of the crew = 100 SR/day Production rate = 150 m/day It takes 5 days to dive the piles Total cost = $5 \times 100 = 500$ SR <u>Equipment:</u> 50-ton Crane 300 SR/day Air compressor 150 SR/day Driving hammer 100 SR/day Equipment cost = 550 SR/day Total equip. cost = $550 \times 5 = 2750$ SR/day <u>Material:</u> Pile cost = 100 SR/m Total pile costs = $100 \times 735 = 73500$ SR	500	250	2750	73500	
			Total account cost	500	250	2750	73500	77000



Summary sheets (Concrete piles)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Trimming pile heads	job		<u>Labor:</u> 6 laborers 20 SR/day = 120 SR/day It takes 2 days to trim pile heads Total cost = $120 \times 2 = 240$ SR <u>Equipment:</u> 2 power-hammer 100 SR/day = 200 SR/day Total equipment cost = $200 \times 2 = 400$ SR/day	240	120	400		
			Total account cost	240	120	400		760
Total cost of Concrete piles				870	435	3650	73500	78455
				1305				



Summary sheets (R.C footing)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Fabricate forms	60	m ²	<u>Labor:</u> Labor unit cost 10 SR/ m ² Total labor cost = $60 \times 10 = 600$ SR <u>Material:</u> Plyform: 2 uses, 50% salvage, 8 SR/m ² $60 \times 8 \times 0.5 = 240$ SR Lumber: 0.05 m ³ /m ² , 4-time usage $60 \times 0.05 \times 0.25 \times 1200 = 900$ SR	600	300		240 900	
			Total account cost	600	300		1140	2040
Place & strip forms	120	m ²	<u>Labor:</u> Labor unit cost 4 SR/ m ² Total labor cost = $120 \times 4 = 480$ SR <u>Material:</u> Nail, hardware, coatings 0.2 SR/m ² material cost = $0.2 \times 120 = 24$ SR	480	240		24	
			Total account cost	480	240	24	--	744



Summary sheets (R.C footing)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Fixing steel bars	30	ton	<u>Labor:</u> Labor unit cost 50 SR/ton Total labor cost = $50 \times 30 = 1500$ SR <u>Equipment:</u> Equipment unit cost 5 SR/ton Total Equip. cost = $5 \times 30 = 150$ SR <u>Material:</u> Cut and shaped bars 1300 SR/ton Steel cost = $1300 \times 30 = 39000$ SR	1500	750	150	39000	
			Total account cost	1500	750	150	39000	2040



Summary sheets (R.C footing)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Concrete place	150	m ³	<p><u>Labor:</u> 4 laborers 20 SR/day = 80 SR/day 1 crane driver 30 SR/day Cost of crew = 110 SR/day Production rate = 75 SR/ m³ It takes 2 days to place concrete Total cost = 110 × 2 = 220 SR</p> <p><u>Equipment:</u> crane 300 SR/day Vibrator & bucket 80 SR/day Equip. cost = 380 SR/day Total equipment cost = 380 × 2 = 760 SR/day</p>	220	110	760		



Summary sheets (R.C footing)

Work	Quantity	Unit	Calculations	Labor cost		Equipment cost	Material cost	Total cost
				direct	indirect			
Concrete place	150	m ³	<u>Material:</u> Transit mix @ 250 SR/ m ³ , 5% waste Material cost = $150 \times 1.05 \times 250 = 39375$ SR				39375	
			Total account cost	220	110	760	39375	40465
Total cost of R.C. footing				2800	1400	934	79515	84649
				4200				



Recap. sheet

Work items	Unit	Quantity	Labor cost	Equip. cost	Material cost	Subcontractor cost	Total direct cost	Bid price		
								total	Unit price	
Excavation	m ³	392	90	600	--	--	690	851.68	2.17	
Concrete piles	m	735	1305	3650	73500	--	78455	96838,85	131,75	
R.C footing	m ³	150	4200	934	79515	--	84649	104484,24	696,56	
Insulation	m ²	160	--	--	--	1900	1900	2345,21	14,66	
Totals			5955	5184	153015	1900	165694	204520		
Factor = $204520 \div 165694 = 1.2343235$				Overheads 10%			16569			
							182263			
				Tax 1%			1823			
							184086			
				Markup 10%			18409			
							202495			
				Bond 1%			1997			
Total bid price							204520			



Bid form

Work item No.	Work item	Unit	Quantity	Unit price	Total price
1	Excavation	m ³	392	2.17	851.68
2	Concrete piles	m	735	131,75	96838,85
3	R.C footing	m ³	150	696,56	104484,24
4	Insulation	m ²	160	14,66	2345,21
Total bid price					204520

