

UK · CESMM4

Bill excerpt: bridge foundations and substructure

NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
Class E: Earthworks					
Excavation for foundations; material other than topsoil, rock or artificial hard material; pile caps, around pile shafts					
E324.1	Maximum depth 1–2 m: abutments A1, A2, pier P5	m³	493.2	to price	
E325	Maximum depth 2–5 m: pier P1	m³	92.7	to price	
Ditto, below the river (the body of water identified in the Preamble); Commencing Surface river bed					
E322	Maximum depth 0.25–0.5 m: pier P2	m³	12.8	to price	
E324.2	Maximum depth 1–2 m: piers P3, P4	m³	72.9	to price	
Excavation ancillaries					
E522	Preparation of excavated surfaces, material other than topsoil, rock or artificial hard material: below blinding to pile caps	m²	288.2	to price	
E532	Disposal of excavated material other than topsoil, rock or artificial hard material	m³	671.7	to price	
Class F: In situ concrete					
Provision of concrete; designed mix to BS 8500-2 and Specification Series 1700; cement to BS EN 197-1; 20 mm aggregate; exposure class as Appendix 17/1					
F122	Strength class C12/15: blinding	m³	28.8	to price	
F152	Strength class C25/30: abutments	m³	140.2	to price	
F162	Strength class C28/35: pile caps, piers and pier caps	m³	796.7	to price	
Placing of mass concrete					
F611	Blinding, thickness not exceeding 150 mm, below pile caps	m³	28.8	to price	
Placing of reinforced concrete					
F724	Bases, footings, pile caps and ground slabs, thickness exceeding 500 mm: pile caps	m³	578.6	to price	
F742	Walls, thickness 150–300 mm: abutment rear, side, inner and dirt walls	m³	121.5	to price	
F743	Walls, thickness 300–500 mm: abutment front walls, 400 mm	m³	6.7	to price	
F764	Beams, cross-sectional area 0.25–1 m²: abutment caps, 1000 × 500 mm	m³	12.0	to price	
F755	Columns and piers, cross-sectional area exceeding 1 m²: circular piers, 2200 mm diameter	m³	53.2	to price	
F766	Special beam sections: pier caps PC1 to PC5, crosshead 10.0 × 2.5 m, 0.75 m deep at the ends and 1.5 m at the pier, on a 2.5 × 2.5 × 0.4 m bottom block	m³	164.8	to price	

Bill excerpt, continued

NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
Class G: Concrete ancillaries					
Formwork; rough finish, Class F1 to Specification Series 1700: faces to be buried or hidden					
G144	Plane vertical, width 0.4–1.22 m: abutment pile cap sides, two 900 mm tiers; inner face of abutment front walls, 700 mm	m ²	158.6	to price	
G145	Plane vertical, width exceeding 1.22 m: pier pile cap sides, 1800 mm; abutment rear walls, inner walls, inner faces of side and dirt walls	m ²	869.5	to price	
Formwork; other stated finish, Class F3 to Specification Series 1700: exposed faces					
G315	Plane horizontal, width exceeding 1.22 m: soffits of bottom blocks to pier caps, outside the pier	m ²	12.2	to price	
G325	Plane sloping, width exceeding 1.22 m: soffits of pier cap cantilevers	m ²	95.6	to price	
G343	Plane vertical, width 0.2–0.4 m: sides of bottom blocks to pier caps, 400 mm	m ²	20.0	to price	
G344	Plane vertical, width 0.4–1.22 m: pier cap sides, depth varying 0.75–1.5 m, and ends, 750 mm; abutment cap sides, 500 mm; outer face of abutment front walls, 700 mm	m ²	183.4	to price	
G345	Plane vertical, width exceeding 1.22 m: outer faces of abutment side walls; front faces of dirt walls	m ²	177.4	to price	
G355	Curved to one radius in one plane, radius 1100 mm, width exceeding 1.22 m: circular piers	m ²	96.8	to price	
Class P: Piles					
Bored cast in place concrete piles, diameter 1200 mm; concrete designed mix C28/35, 20 mm aggregate (1,102.8 m ³ in all, included in the rates)					
Commencing Surface existing ground: abutments A1, A2; piers P1, P5					
P161.1	Number of piles	nr	26	to price	
P162.1	Concreted length	m	649.3	to price	
P163.1	Depth bored to a maximum depth of 29 m	m	702.6	to price	
Commencing Surface existing river bed: piers P2 to P4					
P161.2	Number of piles	nr	12	to price	
P162.2	Concreted length	m	232.0	to price	
P163.2	Depth bored to a maximum depth of 23 m	m	242.5	to price	
Preliminary piles, for initial load tests (2 end-bearing, 2 friction); Commencing Surface existing ground					
P161.3	Number of piles	nr	4	to price	
P162.3	Concreted length, to working-pile cut-off level	m	93.8	to price	
P163.3	Depth bored to a maximum depth of 28 m	m	100.7	to price	

Bill excerpt, continued

NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
Class Q: Piling ancillaries					
Cast in place concrete piles, diameter 1200 mm					
Q126.1	Backfilling empty bore with excavated material: working piles	m	63.9	to price	
Q126.2	Backfilling empty bore with excavated material: preliminary piles	m	6.9	to price	
Q136	Permanent casings, 6 mm steel to BS EN 10025 S275, uncoated, each length not exceeding 13 m	m	105.4	to price	
Q146	Permanent casings, 6 mm steel to BS EN 10025 S275, uncoated, each length exceeding 13 m	m	672.5	to price	
Q176	Cutting off surplus lengths, including permanent casing: working piles (600 mm cast above cut-off level)	m	22.8	to price	
Q186	Preparing heads: working piles	nr	38	to price	
Pile tests					
Q815	Maintained loading with kentledge reaction; test load 420 t (4,120 kN): preliminary friction piles	nr	2	to price	
Q816	Maintained loading with kentledge reaction; test load 720 t (7,060 kN): preliminary end-bearing piles	nr	2	to price	
Q840.1	Non-destructive integrity tests, low strain: working piles	nr	38	to price	
Q840.2	Non-destructive integrity tests, low strain: preliminary piles	nr	4	to price	

Notes

01	Excerpt only: dewatering and cofferdams at the river-bed piers P2 to P4 are method-related charges (Class A), and filling is measured on the full bill once founding and formation levels are confirmed (clarification pack queries 02 and 03).
02	Reinforcement is not billed here. CESMM4 measures it by bar size (G52-, and Q21- in piles), and the drawings give no bar schedules (clarification pack query 10). The estimate carries provisional allowances of 184 t in foundations and 49 t in substructure; 49 t is light for the pier caps and will be revisited with the schedules.
03	Concrete grades are as drawn: C28/35 for piles, pile caps, piers and pier caps, and C25/30 for the abutments. For a UK river crossing, C32/40 is more usual where de-icing salts or freeze-thaw apply; to be confirmed with the designer.
04	Bearing plinths and the sand filling to the abutment cells are measured on the full bill.
05	Depth bored is from the Commencing Surface to the pile toe; concreted length from cut-off level to toe; permanent casing from the Commencing Surface to the bottom of the casing, so it totals 777.9 m here against 707.1 m measured from cut-off level. Preliminary piles are assumed at representative supports (2 end-bearing, 2 friction) pending their locations.

Measured from the overseas river bridge in our case studies, with project details removed. AI first pass; every item checked and signed off by an engineer.