SCHEDULE OF RATES FOR CIVIL ENGINEERING WORKS IN SARAWAK 2016

JKR Sarawak
December 2016

Notes to tenderers:

1. This is only a cover page for this document. Please obtain the full set from the JKR Sarawak webpage or any JKR Sarawak office.

2. The "Location Factor from base at Kuching City" for this tender is ____ % and is the percentage over all the items and rates as listed in this Schedule of Rates to be used for the purposes as stated in the tender documents.

3. **Any attempt to amend / change / correct etc. this percentage by the tenderer shall cause the tender to be disqualified.**

LOCATION FACTOR FROM BASE AT KUCHING CITY

(To be read together with the Rules of determining the Location Factor)

Kuching	City	0%
	Padawan	2%
	Santubong	3%
	Siburan	3%
	Bau	5%
	Lundu	8%
	Sematan	9%

Samarahan	District	2%
	Simunjan	12%
	Sebuyau	15%
	Asajaya	10%
	Sadong Jaya	12%
	Tebakang	8%
	Balai Ringin	8%

Betong	District	20%
	Spaoh	20%
	Debak	20%
	Pusa	21%
	Beladin	20%
	Maludam	22%
	Saratok	20%
	Roban	20%
	Kabong	20%

Kapit	District	30%
	Song	25%
	Belaga	70%
	Sungai Asap	25%

Sri Aman	District	15%
	Lubok Antu	20%
	Lingga	20%
	Pantu	13%
	Engkilili	18%
	Skrang	15%

Sibu	District	12%
	Kem Bt 10 & 14	13%
	Durin	15%
	Bawang Assan	13%
	Sungai Assan	13%
	Kanowit	16%
	Machan	16%
	Nibong Tada	15%
	Nanga Tada	17%
	Nanga Dap	20%
	Nanga Ngemah	20%
	Nanga Ngungun	20%
	Nanga Poi	22%
	Nanga Jagau	40%
	Selangau	18%
	Ulu Balingian	20%
	Arip	22%
	Stapang	16%
	Rassau	22%

Bintulu	District	15%
	Tatau	20%
	Sebauh	23%

LOCATION FACTOR FROM BASE AT KUCHING CITY

(To be read together with the Rules of determining the Location Factor)

Mukah	District	20%
	Dalat	20%
	Oya	20%
	Igan	18%
	Balingian	23%
	Kuala Balingian	23%
	Semop	30%
	Matu	25%
	Betanak	30%
	Daro	25%
	Bruit	30%
	Tanjung Manis	18%

Sarikei	District	18%
	Bintangor	18%
	Pakan	20%
	Selalang	20%
	Julau	20%
	Meluan	22%
	Ulu Entabai	23%
	Engkamop	30%
	Nanga Wak	15%
	Nanga Entabai	14%

Miri	City	15%
	Subis	15%
	Bekenu	15%
	Marudi	25%
	Long Lama	40%
	Beluru	22%

Limbang	District	30%
	Lawas	28%

Serian	District	5%
	Tebedu	8%

RULES OF DETERMINING THE LOCATION FACTOR

1. The % factors as stated are for those projects accessible by motorized vehicles within 15km radius from the location shown.

2. Where the project site is beyond 15km radius of the above stated locations, these additional % factors shall be added on to those percentages stated above:

			% addition
(i)	**> 15km**	**< 45km**	**5%**
(ii)	**> 45km**	**< 90km**	**10%**
(iii)	**> 90km**	**< 135km**	**15%**
(iv)	**> 135km**	**< 180km**	**20%**
(v)	**> 180km**	**< 220km**	**25%**

3. Where the project sites are accessible only by waterway

(i)	**areas within 15 km radius**	**0%**
(ii)	**areas within 30 km radius**	**5%**
(iii)	**areas within 60 km radius**	**10%**
(iv)	**areas within 90 km radius**	**15%**
(v)	**areas within 120 km radius**	**20%**
(vi)	**areas within 150 km radius**	**25%**

4. Where the project sites can only be accessible by air, the location factor shall be doubled over the value obtained from that by motorized vehicles.

5. Where the project sites can only be accessible by foot, the location factor shall be 50% over the value obtained from that by authorized vehicles

6. Where in determining the locations factor and two or more factors and radial distances are equally applicable, the lower in each case shall be used.

7. Where in determining the location factor and two or more factors and radial distances by the rules above whereby there can be a combination due to accessibility, say partly land and partly waterway or partly waterway and partly by foot, there shall be a combination of the rules according to the radial distance from the nearest locations stated above.

8. Where in determining the location factor and the Site for the project lies within two more radial distances, the addition % for the radial distance within which more than 50% of the Site lies shall be used.

PREAMBLES

1. All rates shall be used and read together with the "Location Factor from base at Kuching City".

2. All descriptions are to be read with reference to the Standard Specification for Road Works (including Bridge Structures) JKR/SPJ/1988, Addendum No. S-1 (Rev.1),all other subsequent Addendums and the drawings in the Standard Drawings for Road Construction (Latest Version) issued by Unit Rekabentuk Jalan, Cawangan Jalan, Ibu Pejabat Kerja Raya, Kuala Lumpur and the following :

(A) Piling

Rates for driving of precast concrete piles and reinforced concrete lengthened piles and bore piling works shall include for the provision of all necessary mechanical plant, rig, temporary works, etc. and for the travelling of pile frame about the site.

(B) Site Clearance And Earthwork

All rates herein shall be held to include for supply and delivery to site, wastage on materials, carriage and cartage, carrying in and return of empties, hoisting, setting, fitting and fixing in position, making good and all other labours and everything else necessary (including any custom duties, etc.) for the proper completion of each item and for establishment charges and profit.

Rates for site clearance shall include:

(a) Clearing all general vegetation, tall grass, lallang, creepers, shrubs, bushes and all undergrowth.
(b) Felling of trees of all sizes including cutting, grubbing up their stumps and roots and dispose off site.
(c) Clearing all rubbish, debris and unwanted materials.
(d) Breaking up and removing disused structures, surface beds and pavings, sewers, drains and drain pipes, manholes, underground wells, sumps, fencing, posts, retaining walls and other such like structures, including disconnecting and sealing off services, plugging any pipes cut off at perimeter of site.
(e) Removing existing tree stumps and grubbing up their roots and disposal off site.
(f) Filling holes and voids caused by removal of trees, tree stumps, roots, existing structures or obstructions with hardcore or suitable approved materials.

(C) Excavation

i. Excavation shall be measured to commence at existing ground level. All excavation and filling shall be measured nett. The quantities of excavation and filling shall be measured on the assumption that the gradient of the existing surfaces between the nearest adjacent spot levels and/ or between contours is constant. Boulders not exceeding one cubic metre shall be deemed to be included in the rates for excavation.

(a) Rates for excavation (including excavation of drainage) are to include:

(b) keeping all excavations free from water, mud, etc. by pumping or bailing if required
(c) planking and strutting, leveling, ramming or preparing bottoms, any double handling required and for additional excavation for planking, strutting and formwork.
(d) excavating by hand or mechanical means in various soil strata and water tables
(e) multiple handling
(f) protection of all services encountered
(g) additional excavation and backfilling due to Contractor's method or process such as excavation for working space.
(h) reinstating to original condition all work disturbed by excavation.
(i) additional concrete infill where excavated below correct levels
(j) giving all required notice
(k) to ensure safety of excavation and adjoining structures.

(D) Concrete Work

i. No allowance shall be made in the weight of steel reinforcement for rolling margin, trying wires, spacers, chairs and weight of weld etc. Concrete shall be measured nett without deduction for the volume of reinforcement.

Rates for concrete shall be held to include:

(a) forming, leaving or cutting grooves, chases, mortices, holes
(b) making good and any sundry items of alike nature.
(c) providing trial mixes, tests on materials and finished product, including non destructive test on and off-site
(d) hoisting or pumping or placing in position
(e) compacting by suitable means
(f) laying in bays and associated works
(g) curing and protection.

Rates for precast concrete work shall include:

(a) all reinforcement and moulds
(b) lifting hooks, cast-in brackets, dowels and their fixing devices
(c) finishing fair on all exposed faces, and other surface treatment to receive other finishes
(d) holes, sleeve, rates, notchings, sinkings, mortices and the like
(e) temporary supports
(f) hoisting and placing in position; setting, bedding, jointing and pointing in cement mortar; cutting off lifting hook.

Rates for bar reinforcement shall include:

(a) allowance for rolling margin and weight of welds
(b) cleaning by wire brushing or sand blasting
(c) cutting to length and fabricating including bending to various bend and radii
(d) providing and tying with galvanized steel wire at all intersections
(e) providing seating or spacer blocks and chairs
(f) providing all necessary laps and anchorages
(g) submitting manufacturers' mill and test certificate.

Rates for fabric reinforcement shall include:

(a) allowance for rolling margin and weight of welds
(b) cleaning by wire brushing or sand blasting
(c) cutting to length and fabricating including bending to various bend and radii
(d) providing and tying with galvanized steel wire at all intersections
(e) providing seating or spacer blocks and chairs
(f) providing all necessary laps and anchorages
(g) submitting manufacturers' mill and test certificate.
(h) straight, circular or raking cutting and notching.

ii. "Sawn formwork" shall mean formwork to produce concrete surfaces suitable for plastering or tiling. "Wrot formwork" shall means formwork to produce fair face concrete surfaces suitable for direct application of decorations. Formwork shall be deducted for openings over one square metres.

Rates for formwork shall be held to include:

(a) for erection, raking and circular cutting, splayed edges, notchings,
(b) allowance for overlaps and passing at angles, battens, strutting, bolting, wedging,
(c) easing, striking and removal.
(d) batten framing
(e) stopping all holes, cracks and crevices
(f) mould oil

(E) Rates for each item of paving shall be held to include for all rounded angles, arrises and making good and any other sundry items of alike nature.

(F) Rates for each item of skirtings, risers, channels and the like shall be held to include for all short lengths formed, cut and purpose made angles, junctions, ends, etc. and making good and any other sundry items of alike nature.

(G) Rates for mild steel tubing are to include for short running lengths, sockets, backnuts, elbows and bends.

(H) Bituminous Road And Hardstandings

Rates for site surface water drainage and culvert shall include:

(a) Sampling and testing of aggregates and bituminous mixtures as specified.
(b) Protecting mixed material in transit and while awaiting tripping.
(c) Laying, rolling and consolidating sub-base, base course, binder and wearing course in layers or sequence as required.
(d) Laying by hand of narrow strips remaining alongside machine work.
(e) Making joints, working around manhole covers and other like projections.
(f) Finishing surfaces to gradient and falls.
(g) Added filler to bituminous mixture.
(h) Maintenance of surface as work progress.

Rates for Type 9 – Pedestrian Crossing Zebra is measured in nett area (m^2). While rates for Yellow Box and Hatching are measured in gross area (m^2).

(I) Gabion Work

Rates for gabion work shall include:

(a) Excavation and disposal of excavated material off site to Contractor's own dump.
(b) Dewatering, upholding the sides of excavation and keeping the excavation free of water.
(c) Trimming and leveling at founding/base level.
(d) Cage and tying wire.
(e) Filling material.
(f) Transport, handling, assembling, tying, fixing, staking, tensioning and placing in dry condition and/or under water.

(J) Turfing And Tree Planting

Rates for seeding and turfing shall include:

(a) Carry out the work in such sequence or section as directed.
(b) Preparatory work in forking and loosening ground surface including riding all weed, roots and debris.
(c) Dressing with fertilizer, tending, watering, covering with wet sacking, moving and protection of newly seeded/turfed area.
(d) Maintenance.

Rates for tree planting shall include:

(a) Carry out the work in such sequence or section as directed.
(b) Selection and tagging of plant material.
(c) Planting operation including excavation for rootball, top soil, refilling, support and ties.
(d) Irrigation, pruning and trimming.
(e) Plant replacement.
(f) Spraying or other disease control operation.
(g) Protection.
(h) Maintenance.

A EARTH WORKS

Item No.	Description	Unit	Rate (RM)
	General Site Clearance		
1	Clearing and grubbing within the Site of all trees, bushes, etc.	Ha	3,206.90
2	Stripping top soil to 150mm thick	M^2	1.50
3	Demolition and removal of existing pavement.	M^2	6.60
4	Scarify and remove existing pavement to the required level.	M^2	3.20
	Roadway Excavation		
5	Roadway excavation in all materials other than rock including stockpiling aside for embankment construction.	M^3	5.50
6	Roadway excavation in all materials other than rock including cart away from site.	M^3	9.70
7	Roadway excavation in rock including removal from site :-		
(a)	Open excavation (including use of explosives, etc).	M^3	25.80
(b)	Control blasting	M^3	35.00
(c)	Trench excavation, for drainage works	M^3	50.00
	Embankment Construction		
8	Supply, lay, grade and compact in layers imported suitable fill material to formation level.	M^3	19.40
9	Take from stockpile on site, lay, grade and compact in layers suitable excavated fill material to formation level.	M^3	4.70
10	Supply and lay Nonwoven Geotextile Type 2 with the following specification: • Physical Characteristic: Continuous filament, nonwoven needle punched. • Polymer: 100% polypropylene, UV stabilized. • Mass : 285 g/m^2, ISO 9864 • Thickness (2 kPa): 2.5 mm, ISO 9863 • Tensile Strength (ave): 21.5 kN/m, ISO 10319 • Tensile Elongation (MD/CD): 80/40%, ISO 10319 • CBR Puncture Strength: 3300 N, ISO 12236 • Effective Opening Size (O_{90}): 0.09 mm, ISO 12956 • Vertical Water Flow 50mm head: 65 l/m^2/s, ISO 11058 • Horizontal Water Flow under 20 kPa: 14 l/m.h, ISO 12958 Note: Characteristic denotes the value within the 95% confidence level.	M^2	8.30
11	Supply and lay Woven Polyester Geotextile Type 1 and Type 2 with the following characteristic requirements: i) Woven Polyester Geotextile Type 1, 200 – 50 <u>Mechanical Properties, ISO 10319</u> • Characteristic short term tensile strength MD / CD: 200/50 • Strain at short term strength MD: 10% • Nominal roll width: 5 m • Nominal roll length: 150/300 m • Estimated roll weight: 325/675 kg	M^2	25.70

A EARTH WORKS…(CONT'D)

Item No.	Description	Unit	Rate (RM)
	ii) Woven Polyester Geotextile Type 2, 400 – 50 Mechanical Properties, ISO 10319 • Characteristic short term tensile strength MD / CD: 400/50 • Strain at short term strength MD: 10% • Nominal roll width: 5 m • Nominal roll length: 100 m • Estimated roll weight: 460 kg Note: Characteristic denotes the value within the 95% confidence level.	M^2	36.60
12	Supply and lay geogrid Type 1 and Type 2 with the following characteristic requirements: i) Geogrid Type 1, 60/30 Properties, ISO 10319, ASTM D4595, AS 3706.2 • Characteristic short term tensile strength MD / CD: 60/30 • Nominal roll width: 2.6/5.2 m • Nominal roll length: 100 m • Estimated roll weight: 62/129 kg	M^2	17.10
	ii) Geogrid Type 2, 80/30 Properties, ISO 10319, ASTM D4595, AS 3706.2 • Characteristic short term tensile strength MD / CD: 80/30 • Nominal roll width: 2.6/5.2 m • Nominal roll length: 100 m • Estimated roll weight: 77/160 kg Note: Characteristic denotes the value within the 95% confidence level.	M^2	19.60
13	Supply, lay, grade and compact in layers imported sand fill material to formation level.	M^3	29.70
14	Construct capping layer using stockpiled materials on slopes of embankment, including excavation of embankment toe drain.	M^2	10.20
	Free Draining Material and Drainage Blanket		
15	Supply, lay, grade and compact free draining material (eg. River gravel) on geotextile (measured separately).	M^2	57.90
16	Supply and lay Nonwoven Geotextile Type 1 and Type 2 with the following characteristic requirements: i) Nonwoven Geotextile Type 1 • Physical Characteristic: Continuous filament, nonwoven needle punched. • Polymer: 100% polypropylene, UV stabilized. • Mass: 200 g/m^2, ISO 9864 • Thickness (2 kPa): 1.9 mm, ISO 9863 • CBR Puncture Strength: 2350 N, ISO 12236 • Tensile Strength (ave): 15 kN/m, ISO 10319 • Tensile Elongation (MD/CD): 75/35%, ISO 10319 • Effective Opening Size (O_{90}): 0.10 mm, ISO 12956 • Vertical Water Flow 50mm head: 85 l/m^2/s, ISO 11058 • Horizontal Water Flow under 20 kPa: 11 l/m.h, ISO 12958	M^2	6.50

A EARTH WORKS…(CONT'D)

Item No.	Description	Unit	Rate (RM)
	ii) Nonwoven Geotextile Type 2 • Physical Characteristic: Continuous filament, nonwoven needle punched. • Polymer: 100% polypropylene, UV stabilized. • Mass: 285 g/m^2, ISO 9864 • Thickness (2 kPa): 2.5 mm, ISO 9863 • CBR Puncture Strength: 3300 N, ISO 12236 • Tensile Strength (ave): 21.5 kN/m, ISO 10319 • Tensile Elongation (MD/CD): 80/40%, ISO 10319 • Effective Opening Size (O_{90}): 0.09 mm, ISO 12956 • Vertical Water Flow 50mm head: 65 l/m^2/s, ISO 11058 • Horizontal Water Flow under 20 kPa: 14 l/m.h, ISO 12958 Note: Characteristic denotes the value within the 95% confidence level.	M^2	8.30
	Preparation of formation:		
17	Prepare, grade to fall and compact subgrade in suitable materials other than sand.	M^2	2.60
18	Prepare and compact subgrade in sand material.	M^2	2.10
	Protective Vegetation for Erosion Control:		
19	100mm square turfs for spot turfing on cut slopes, embankments and benches including top soil.	M^2	6.60
20	Hydroseeding with protective mat (Vigormat V380e or equivalent) on cut slopes, embankments and benches.	M^2	7.80
21	Establishing leguminous plants as specified on cut slopes, embankments and benches.	M^2	7.80
	Miscellaneous Works:		
22	Supply and place 1 .0m x 1 .0m x 1 .0m PVC coated wire gabion complete with rockfill.	No	320.80

B **DRAINAGE WORKS**

Item No.	Description	Unit	Rate (RM)
	Drains		
1	Surface drain - unlined:		
(a)	Embankment toe drain, type TD 1.	M	12.70
(b)	Roadside earth drain, Type 2.	M	10.20
2	Surface drain - lined		
(a)	Reinforced concrete roadside drain complete with concrete struts, all excavation and part backfill.		
	i) Type 2.	M	102.70
	ii) Type 3.	M	166.90
	iii) Type 4.	M	192.10
(b)	Reinforced concrete bench / berm drain complete with concrete struts, all excavation and part backfill.		
	i) Type 1.	M	90.00
	ii) Type 2.	M	115.50
(c)	Reinforced concrete embankment toe drain complete with concrete struts, all excavation and part backfill.		
	i) Type 3.	M	256.60
	ii) Type 4.	M	231.00
(d)	Reinforced concrete shoulder drain Type SD 1 complete with concrete struts, all excavation and part backfill.	M	115.50
(e)	Interceptor drain complete with concrete struts, all excavation and part backfill.		
	i) Type 1.	M	90.00
	ii) Type 2.	M	102.70
3	Cascade drain:		
(a)	Cascade drain : Reinforced concrete slope drain complete with concrete struts, all excavation and part backfill.	M	295.10
(b)	Cascade drain : Reinforced concrete outfall drain complete with concrete struts, all excavation and part backfill.	M	352.90
4	Sub-soil drain complete with all excavation and part backfill.		
	i) Type 1.	M	70.70
	ii) Type 2.	M	90.00
5	500mm Thick gabion mattress laid on ground including rockfill and laying at slope.	M^2	195.10
6	Filling of existing stream/drain using imported suitable fill material including compaction. Borrow pit<15km.	M^2	23.40

B DRAINAGE WORKS...(CONT'D)

Item No.	Description	Unit	Rate (RM)
	Precast concrete Pipe Culverts:		
7	Precast concrete Class "Z" butt joint pipe culvert of the following sizes complete with cast-in -situ concrete joint complete with reinforcement, formwork, well compacted granular material as surround, and reinforced concrete cradle and including excavation and part backfill :		
(a)	Single 600 mm diameter.	M	857.00
(b)	Single 900 mm diameter.	M	1,159.50
(c)	Twin 900 mm diameter.	M	2,117.20
(d)	Single 1200 mm diameter.	M	1,512.40
(e)	Twin 1200 mm diameter.	M	2,722.20
(f)	Triple-cell 1200 mm diameter.	M	3,881.50
(g)	Single 1500 mm diameter.	M	1,915.60
(h)	Twin 1500 mm diameter.	M	3,528.60
(i)	Triple-cell 1500 mm diameter.	M	5,091.30
(j)	Single 1800 mm diameter.	M	2,308.70
(k)	Twin 1800 mm diameter.	M	4,335.20
(l)	Triple-cell 1800 mm diameter.	M	5,953.00
8	Reinforced concrete outlet structures comprises headwall, wingwall, apron, culvert marker post and all necessary excavation and part backfill including jointing to pipe culvert of the following sizes:		
(a)	Single 600 mm diameter.	NO	2,487.00
(b)	Single 900 mm diameter.	NO	2,752.30
(c)	Twin 900 mm diameter.	NO	4,128.60
(d)	Single 1200 mm diameter.	NO	3,440.40
(e)	Twin 1200 mm diameter.	NO	5,229.40
(f)	Triple-cell 1200 mm diameter.	NO	5,928.00
(g)	Single 1500 mm diameter.	NO	4,954.20
(h)	Twin 1500 mm diameter.	NO	7,410.10
(i)	Triple-cell 1500 mm diameter.	NO	9,527.20

B DRAINAGE WORKS...(CONT'D)

Item No.	Description	Unit	Rate (RM)
(j)	Single 1800 mm diameter.	NO	5,822.30
(k)	Twin 1800 mm diameter.	NO	7,568.90
(l)	Triple-cell 1800 mm diameter.	NO	11,115.10
9	Reinforced concrete inlet sump structure complete with hinged grating cover and frame, grating and all necessary excavation and part backfill including jointing to pipe culvert of the following sizes:		
(a)	Single 600 mm diameter.	NO	1,111.60
(b)	Single 900 mm diameter.	NO	1,651.40
(c)	Single 1200 mm diameter.	NO	2,076.70
(d)	Single 1500 mm diameter.	NO	2,487.70
(e)	Single 1800mm diameter.	NO	3,302.80
	Reinforced Concrete Box Culvert		
10	Reinforced concrete box culvert barrel with fill height not exceeding 3.0m high complete with all excavation and part backfill and keeping trenches dry.		
(a)	Single 1.5m x 1.5m	M	2,699.50
(b)	Twin 1.5m x 1.5m	M	3,583.40
(c)	Single 2.0m x 2.0m	M	4,806.00
(d)	Twin 2.0m x 2.0m	M	6,351.50
(e)	Single 2.5m x 2.5m	M	6,298.50
(f)	Twin 2.5m x 2.5m	M	8,362.80
(g)	Triple 2.5m x 2.5m	M	11,644.40
(h)	Single 3.0m x 3.0m	M	6,669.10
(i)	Twin 3.0m x 3.0m	M	8,892.10
(j)	Triple 3.0m x 3.0m	M	16,725.50
(k)	Single 3.5m x 3.5m	M	9,125.00
(l)	Twin 3.5m x 3.5m	M	12,099.50
(m)	Triple 3.5m x 3.5m	M	22,759.30
11	Reinforced concrete box culvert barrel with fill height exceeding 3.0m high and not exceeding 6.0m high complete with all excavation and part backfill and keeping trench dry.		
(a)	Single 1.5m x 1.5m	M	3,048.80
(b)	Twin 1.5m x 1.5m	M	4,075.50
(c)	Single 2.0m x 2.0m	M	5,430.50
(d)	Twin 2.0m x 2.0m	M	7,240.70
(e)	Single 2.5m x 2.5m	M	7,166.60
(f)	Twin 2.5m x 2.5m	M	9,400.10
(g)	Triple 2.5m x 2.5m	M	13,126.30
(h)	Single 3.0m x 3.0m	M	7,357.10
(i)	Twin 3.0m x 3.0m	M	9,791.80

B DRAINAGE WORKS...(CONT'D)

Item No.	Description	Unit	Rate (RM)
11	Reinforced concrete box culvert barrel with fill height exceeding 3.0m high and not exceeding 6.0m high complete with all excavation and part backfill and keeping trench dry. (Cont'd)		
(j)	Triple 3.0m x 3.0m	M	18,858.60
(k)	Single 3.5m x 3.5m	M	10,003.50
(l)	Twin 3.5m x 3.5m	M	13,338.10
(m)	Triple 3.5m x 3.5m	M	25,723.20
12	Reinforced concrete box culvert barrel with fill height exceeding 6.0m high and not exceeding 9.0m high complete with all excavation and part backfill and keeping trench dry.		
(a)	Single 1.5m x 1.5m	M	3,387.50
(b)	Twin 1 .5m x 1 .5m	M	4,562.50
(c)	Single 2.0m x 2.0m	M	6,086.90
(d)	Twin 2.0m x 2.0m	M	8,098.10
(e)	Single 2.5m x 2.5m	M	7,833.50
(f)	Twin 2.5m x 2.5m	M	10,479.90
(g)	Triple 2.5m x 2.5m	M	14,608.30
(h)	Single 3.0m x 3.0m	M	7,939.40
(i)	Twin 3.0m x 3.0m	M	10,585.80
(j)	Triple 3.0m x 3.0m	M	21,171.40
(k)	Single 3.5m x 3.5m	M	10,797.50
(l)	Twin 3.5m x 3.5m	M	14,396.60
(m)	Triple 3.5m x 3.5m	M	28,581.40
13	Reinforced concrete inlet and outlet structures comprises headwall, wingwall, apron, culvert marker post complete with all necessary excavation and part backfill including jointing to reinforced concrete box culvert of the following sizes:		
(a)	Single 1 .5m x 1.5m reinforced concrete box culvert barrel :	NO	7,018.40
(b)	Twin 1 .5m x 1.5m reinforced concrete box culvert barrel :	NO	9,844.80
(c)	Single 2.0m x 2.0m reinforced concrete box culvert barrel :	NO	12,491.20
(d)	Twin 2.0m x 2.0m reinforced concrete box culvert barrel :	NO	17,466.50
(e)	Single 2.5m x 2.5m reinforced concrete box culvert barrel :	NO	16,513.80
(f)	Twin 2.5m x 2.5m reinforced concrete box culvert barrel :	NO	23,923.60
(g)	Triple 2.5m x 2.5m reinforced concrete box culvert barrel :	NO	31,333.70
(h)	Single 3.0m x 3.0m reinforced concrete box culvert barrel :	NO	17,995.70
(i)	Twin 3.0m x 3.0m reinforced concrete box culvert barrel :	NO	25,829.20
(j)	Triple 3.0m x 3.0m reinforced concrete box culvert barrel :	NO	40,754.90
(k)	Single 3.5m x 3.5m reinforced concrete box culvert barrel :	NO	24,558.80

B DRAINAGE WORKS...(CONT'D)

Item No.	Description	Unit	Rate (RM)
(l)	Twin 3.5m x 3.5m reinforced concrete box culvert barrel :	NO	35,091.60
(m)	Triple 3.5m x 3.5m reinforced concrete box culvert barrel :	NO	55,577.50
	Concrete Works for Drainage		
14	50mm thick lean concrete Grade 15P/20 as blinding for drainage works.	M^2	16.20
15	Reinforced Concrete of the following grades for Drainage Works:		
(a)	Grade 20/20.	M^3	283.70
(b)	Grade 25/20.	M^3	322.30
(c)	Grade 30/20.	M^3	360.90
16	Formwork as described to Class F1 & U1 Finish type		
(a)	To sides of drain, culverts, wingwall, headwall, and the like.	M^2	48.00
(b)	To soffit of culvert cover slab and the like.	M^2	48.00
17	High Yield Deformed Steel Reinforcement Bars as described:		
(a)	10mm Diameter.	Tonne	3,690.00
(b)	12mm Diameter.	Tonne	3,690.00
(c)	16mm Diameter.	Tonne	3,600.00
(d)	20mm Diameter.	Tonne	3,600.00
(e)	25mm Diameter.	Tonne	3,600.00
18	Mild Steel Reinforcement Bars as described:		
(a)	6mm Diameter.	Tonne	3,690.00
(b)	8mm Diameter.	Tonne	3,690.00
(c)	10mm Diameter.	Tonne	3,690.00
19	Steel Mesh Reinforcement:		
(a)	Type B785 (minimum 8.14kg/m^2).	M^2	42.50
(b)	Type A142 (minimum 2.22kg/m^2).	M^2	12.20
(c)	Type A8 (minimum 3.55kg/m^2).	M^2	19.40
(d)	Type A7 (minimum 3.02kg/m^2).	M^2	15.80
(e)	Type A6 (minimum 2.22 kg/m^2).	M^2	12.20

B **DRAINAGE WORKS...(CONT'D)**

Item No.	Description	Unit	Rate (RM)
	Miscellaneous Works		
20	Grouted stone pitching of various thickness.	M^3	201.70
21	12mm Thick joint filler.	M^2	32.60

C **FLEXIBLE PAVEMENT AND ROAD FURNITURES**

Item No.	Description	Unit	Rate (RM)
	Flexible Pavement		
1	Subbase course including drainage layer under compacted earth shoulder.	M^3	98.00
2	Roadbase course.	M^3	100.00
3	Wet-mix macadam.	M^3	119.50
4	Bituminous tack coat.	M^2	2.80
5	Asphaltic concrete binder course.	M^3	600.00
6	Bituminous prime coat.	M^2	3.50
7	Asphaltic concrete wearing course.	M^3	610.00
8	Compacted earth shoulder.	M^3	25.00
9	Bituminous waterproof layer.	M^2	3.30
	Traffic signs complete with concrete footing, post, supporting frame including all necessary excavation		
10	Regulatory (Type RP & RM) road signs of various shapes and not exceeding 1.0m^2 in area.	NO	520.10
11	Warning (Type WD) road signs of various shapes and not exceeding 1.0m^2 in area.	NO	520.10
12	Guide/Information (Type GI) road signs of various shapes and not exceeding 1.0m^2 in area.	NO	520.10
13	Guide/Destination (Type GD) road signs of various shapes with the following areas (All Provisional):		
(a)	Not exceeding 1.0m^2 in area.	NO	520.10
(b)	Exceeding 1.0m^2 and not exceeding 2.0m^2 in area.	NO	910.10
14	Post Delineator.	NO	59.50
	3mm thick Road Markings (measured nett) and Direction Arrows in Thermoplastic paint		
15	Type 1(a) : Continuity Line.	M	1.70
16	Type 1(b) : Continuity Line.	M	2.30
17	Type 2 : Give Way Line.	M	2.30

C FLEXIBLE PAVEMENT AND ROAD FURNITURES...(CONT'D)

Item No.	Description	Unit	Rate (RM)
	3mm thick Road Markings (measured nett) and Direction Arrows in Thermoplastic paint (Cont'd)		
18	Type 3 – Centre Line / Lane Line (Urban Area).	M	0.90
19	Type 4 - Centre Line / Lane Line (Urban Area).	M	1.10
20	Type 5 - Centre Line / Lane Line (Rural Area).	M	1.00
21	Type 6 – Edge Line / Channelising Line.	M	3.50
22	Type 7 - Stop Line with Pedestrian.	M	6.90
23	Type 8 – Stop Line with Pedestrian Crossing.	M	13.70
24	Type 9 - Pedestrian Crossing Zebra.	M^2	22.80
25	Type 10 – Double Line.	M	5.20
26	Type 11 – Climbing Lane Line.	M	5.70
27	Type 12 – Bus Stop / Bus Lay-by Line.	M	11.70
28	Type 13 – Turn Line.	M	2.00
29	Type 14 – Yellow Box Marking.	M^2	40.00
30	Type 15 – Stop Line with Pedestrian Crossing (Motorcycle Lane)	M	2.40
31	Type 16 – Chevron Separator Marking for Non-Exclusive Motorcycle Lane (excluding road stud)	M	11.80
32	Single Arrow (Straight)	No	28.00
33	Single Arrow (Left / Right)	No	28.00
34	Double Arrows	No	45.00
35	U-Turn	No	45.00
36	Chevron Hatching Merging Traffic	M^2	45.00
37	Cross Hatching	M^2	45.00
38	Chevron Hatching Diverging Traffic	M^2	45.00
	Miscellaneous Works		
30	Reflective roadstud.	NO	39.20
31	Precast concrete road kerb, overall size 600mm long x 150mm wide x 305mm high, complete with laying on concrete bedding.	M	65.10
32	Extra over for Precast concrete road kerb with opening, overall size 600mm long x 150mm wide x 305mm high, complete with laying on concrete bedding.	NO	19.70

D BRIDGE WORKS

Item No.	Description	Unit	Rate (RM)
	Earthworks		
1	Fill spread, grade and compact in layers to formation level using imported suitable fill material.	M^3	28.40
2	300mm Thick rubble pitching as slope protection works complete with mortar pointing.	M^2	77.10
3	Coarse aggregate as capping layer including laying between piles.	M^3	102.70
	Concrete Works		
4	50mm thick lean concrete Grade 15P/20 as blinding.	M^2	20.00
5	Reinforced concrete of the following grades:		
(a)	Grade 25/20.	M^3	382.90
(b)	Grade 30/20.	M^3	409.30
(c)	Grade 35/20.	M^3	435.70
(d)	Grade 40/20.	M^3	462.20
(e)	Grade 50/20.	M^3	501.80
6	Formwork as described to Class F1 & U1 finish type including falsework		
(a)	To sides of approach slab, platform slab, transition slab, and the like.	M^2	54.90
(b)	To sides of abutment and the like.	M^2	61.90
(c)	To sides and soffit of pile cap.	M^2	61.90
(d)	To soffit of deck slab.	M^2	61.90
(e)	To sides and soffit of diaphragm.	M^2	61.90
7	Formwork as described to Class F2 & U2 Finish Type including falsework		
(a)	To sides of abutment wingwall and the like.	M^2	68.60
(b)	To sides and soffit of pier, column, headstock and the like.	M^2	68.60
(c)	To sides of kerb and the like.	M^2	68.60
(d)	To sides of parapet and the like.	M^2	68.60
8	Supply, fabricate and placing into position 125mm thick precast concrete footway slab complete with BMC A5 fabric reinforcement.	M^2	79.30
9	10mm Diameter mild steel reinforcement bars as described.	Tonne	4,300.00

D BRIDGE WORKS... (CONT'D)

Item No.	Description	Unit	Rate (RM)
10	Hot Rolled Type 2 Deformed steel reinforcement bars as described.		
(a)	10mm Diameter.	Tonne	4,300.00
(b)	12mm Diameter.	Tonne	4,300.00
(c)	16mm Diameter.	Tonne	4,300.00
(d)	20mm Diameter.	Tonne	4,300.00
(e)	25mm Diameter.	Tonne	4,300.00
11	Steel Mesh Reinforcement		
(a)	Type A5 (minimum 1.54 kg/m^2).	M^2	11.50
(b)	Type A6 (minimum 2.22 kg/m^2).	M^2	16.00
(c)	Type A7 (minimum 3.02 kg/m^2).	M^2	23.00
(d)	Type A8 (minimum 3.95 kg/m^2).	M^2	29.00
	Miscellaneous Bridge Works		
12	Sub-soil drainage behind Abutment		
(a)	Granular backfill materials to back of abutment.	M^3	99.00
(b)	90mm Diameter P.V.C. pipe as sub-soil drain, bedded in sand.	M	32.60
13	Dowel bar:		
(a)	25mm Diameter Hot Rolled Type 2 Deformed steel reinforcement bar as dowel bar of various lengths, embedded into concrete.	M	44.70
(b)	20mm Ditto.	M	31.00
(c)	25mm Diameter Hot Rolled Type 2 Deformed steel reinforcement bar as dowel bar of various lengths, with one embedded 200mm into concrete, and the other end fixed to 50mm outer diameter tight fitting rubber dowel cap between prestressed girder, complete with compressive materials.	M	61.90
(d)	20mm Ditto.	M	43.50
14	Elastometric laminated bearing pad of the following sizes on and including 20mm thick epoxy resin mortar bedding.		
(a)	400 x 350 x 39mm.	NO	1,016.30
(b)	350 x 500 x 69mm.	NO	1,270.30
(c)	300 x 200 x 29mm.	NO	762.30

D **BRIDGE WORKS... (CONT'D)**

Item No.	Description	Unit	Rate (RM)
15	24mm thick "Expandite natural bonded cork filler" or equivalent joint filler.	M^2	78.10
16	6mm Thick plywood lining as separator.	M^2	54.90
17	Prepare and apply one coat of heavy bitumen paint on concrete surface.	M^2	19.70
18	Type A scupper drain complete with forming inlet in asphaltic concrete wearing course, and rectangular hollow section as outlet.	NO	97.50
19	Therma Joint or approved deck expansion joints complete with joint filler.	M	1,755.00
20	Hot-dip galvanised mild steel parapet railing, complete with bolts, U-shaped cast-in bolts, post, sliding joint, and end railing.	M	325.10

E PILING

Item No.	Description	Unit	Rate (RM)
	Precast Concrete Piles		
1	Supply, handle & pitch 150mm x 150mm initial/head pile 6.00m long.	M	38.30
2	Supply, handle & pitch 150mm x 150mm extension pile 6.00m long.	M	35.10
3	Supply, handle & pitch 200mm x 200mm initial/head pile 6.00m long.	M	70.50
4	Supply, handle & pitch 200mm x 200mm extension pile 6.00m long.	M	66.00
5	Supply, handle & pitch 250mm x 250mm initial/head pile 6.00m long.	M	110.40
6	Supply, handle & pitch 250mm x 250mm initial/ head pile 9.00m long.	M	98.60
7	Supply, handle & pitch 250mm x 250mm initial/ head pile 12.00m long.	M	93.80
8	Supply, handle & pitch 250mm x 250mm extension pile 6.00m long.	M	104.60
9	Supply, handle & pitch 250mm x 250mm extension pile 9.00m long.	M	99.30
10	Supply, handle & pitch 250mm x 250mm extension pile 12.00m long.	M	90.90
11	Supply, handle and pitch 300mm x 300mm initial/head pile 6.00m long.	M	174.00
12	Ditto 9.00m long.	M	153.10
13	Ditto 12.00m long.	M	143.20
14	Supply, handle and pitch 300mm x 300mm extension pile 6.00m long.	M	166.10
15	Ditto 9.00m long.	M	148.60
16	Ditto 12.00m long.	M	139.90
17	Supply, handle and pitch 350mm x 350mm initial/head pile 6.00m long.	M	228.40
18	Ditto 9.00m long.	M	200.90
19	Ditto 12.00m long.	M	187.10
20	Supply, handle and pitch 350mm x 350mm extension pile 6.00m long.	M	218.30
21	Ditto 9.00m long.	M	194.10
22	Ditto 12.00m long.	M	182.10
23	Supply, handle and pitch 400mm x 400mm initial/head pile 6.00m long.	M	298.90
24	Ditto 9.00m long.	M	263.00
25	Ditto 12.00m long.	M	244.90
26	Supply, handle and pitch 400mm x 400mm extension pile 6.00m long.	M	286.50

E **PILING (Cont'd)**

Item No.	Description	Unit	Rate (RM)
	Precast Concrete Piles (Cont'd)		
27	Ditto 9.00m long.	M	254.70
28	Ditto 12.00m long.	M	238.90
29	Drive to set 150mm x 150mm pile.	M	7.00
30	Ditto 200mm x 200mm pile	M	8.40
31	Ditto 250mm x 250mm pile.	M	10.80
32	Ditto 300mm x 300mm pile.	M	13.20
33	Ditto 350mm x 350mm pile.	M	17.90
34	Ditto 400mm x 400mm pile.	M	23.80
35	Drive to set 150mm x 150mm pile as raker piles.	M	14.50
36	Ditto 200mm x 200mm pile.	M	17.90
37	Ditto 250mm x 250mm pile.	M	21.70
38	Ditto 300mm x 300mm pile.	M	25.50
39	Ditto 350mm x 350mm pile.	M	30.00
40	Ditto 400mm x 400mm pile.	M	33.90
41	Butt weld connection 0.60m girth between edges of and including mild steel extension head, base cap plates, bars etc and including coated heavily with bituminous compound for jointing 150mm x 150mm R.C piles.	NO	80.00
42	Ditto for jointing 200mm x 200mm R.C piles.	NO	106.80
43	Ditto for jointing 250mm x 250mm R.C piles.	NO	160.20
44	Ditto for jointing 300mm x 300mm R.C piles.	NO	231.40
45	Ditto for jointing 350mm x 350mm R.C piles.	NO	314.40
46	Ditto for jointing 400mm x 400mm R.C piles.	NO	415.20
47	Cut off and dump away surplus length of 150mm x 150mm precast concrete pile and strip off pile head, bend back reinforcement for connection as specified.	NO	16.60
48	Ditto 200mm x 200mm ditto.	NO	23.80
49	Ditto 250mm x 250mm ditto.	NO	29.70
50	Ditto 300mm x 300mm ditto.	NO	35.60
51	Ditto 350mm x 350mm ditto.	NO	41.60
52	Ditto 400mm x 400mm ditto.	NO	47.50

E PILING (Cont'd)

Item No.	Description	Unit	Rate (RM)
	Precast Concrete Piles (Cont'd)		
53	Provide all equipment, hydraulic jack, deflection gauges, kentledge, temporary staging, etc. and test a test pile of any size to a vertical load test including all extra cost before commencement of the main piling works complete with report.	Tonne	142.40
	Precast Concrete Spun Piles		
54	Supply, handle & pitch 250mm diameter initial/ head pile 6.00m long (Class B).	M	89.90
55	Ditto 9.00m long.	M	77.70
56	Ditto 12.00m long.	M	72.20
57	Supply, handle & pitch 250mm diameter extension pile 6.00m long (Class B).	M	81.90
58	Ditto 9.00m long.	M	72.40
59	Ditto 12.00m long.	M	68.20
60	Supply, handle & pitch 300mm diameter initial/head pile 6.00m long (Class B).	M	115.30
61	Ditto 9.00m long.	M	101.20
62	Ditto 12.00m long.	M	93.80
63	Supply, handle & pitch 300mm diameter extension pile 6.00m long (Class B).	M	105.50
64	Ditto 9.00m long.	M	94.30
65	Ditto 12.00m long.	M	88.80
66	Supply, handle & pitch 350mm diameter initial/head pile 6.00m long (Class B).	M	150.30
67	Ditto 9.00m long.	M	131.10
68	Ditto 12.00m long.	M	121.00
69	Supply, handle & pitch 350mm diameter extension pile 6.00m long (Class B).	M	137.80
70	Ditto 9.00m long.	M	122.80
71	Ditto 12.00m long.	M	114.60
72	Supply, handle & pitch 400mm diameter initial/head pile 6.00m long (Class B).	M	189.80
73	Ditto 9.00m long.	M	168.10
74	Ditto 12.00m long.	M	156.10
75	Supply, handle & pitch 400mm diameter extension pile 6.00m long (Class B).	M	177.40
76	Ditto 9.00m long.	M	158.30
77	Ditto 12.00m long.	M	148.80

E PILING (Cont'd)

Item No.	Description	Unit	Rate (RM)
	Precast Concrete Spun Piles (Cont'd)		
78	Supply, handle & pitch 450mm diameter initial/head pile 6.00m long (Class B).	M	212.20
79	Ditto 9.00m long.	M	185.90
80	Ditto 12.00m long.	M	172.30
81	Supply, handle & pitch 450mm diameter extension pile 6.00m long (Class B).	M	195.10
82	Ditto 9.00m long.	M	174.60
83	Ditto 12.00m long.	M	163.80
84	Supply, handle & pitch 600mm diameter initial/head pile 6.00m long (Class B).	M	359.50
85	Ditto 9.00m long.	M	316.10
86	Ditto 12.00m long.	M	296.50
87	Supply, handle & pitch 600mm diameter extension pile 6.00m long (Class B).	M	335.60
88	Ditto 9.00m long.	M	300.20
89	Ditto 12.00m long.	M	283.80
90	Drive 250mm diameter pile.	M	19.00
91	Ditto 300mm ditto.	M	21.50
92	Ditto 350mm ditto.	M	35.70
93	Ditto 400mm ditto.	M	41.60
94	Ditto 450mm ditto.	M	53.50
95	Ditto 600mm ditto.	M	59.40
96	Drive 250mm diameter pile as raker pile.	M	24.70
97	Ditto 300mm ditto.	M	27.80
98	Ditto 350mm ditto.	M	46.40
99	Ditto 400mm ditto.	M	54.10
100	Ditto 450mm ditto.	M	69.40
101	Ditto 600mm ditto.	M	77.20
102	Butt weld connection 0.8m girth between edges of mild steel extension head and base cap plates including coated heavily with bituminuos compound (for 250mm diameter Spun piles).	NO	118.70
103	Ditto 300mm diameter Spun piles.	NO	142.40

E PILING (Cont'd)

Item No.	Description	Unit	Rate (RM)
	Precast Concrete Spun Piles (Cont'd)		
104	Ditto 350mm diameter Spun piles.	NO	178.00
105	Ditto 400mm diameter Spun piles.	NO	213.60
106	Ditto 450mm diameter Spun piles.	NO	261.00
107	Ditto 600mm diameter Spun piles.	NO	332.10
108	Cut off 250mm diameter precast concrete spun pile to the required level and roughen the inner surface to detail.	NO	35.70
109	Ditto 300mm diameter ditto.	NO	41.60
110	Ditto 350mm diameter ditto.	NO	47.50
111	Ditto 400mm diameter ditto.	NO	53.50
112	Ditto 450mm diameter ditto.	NO	59.30
113	Ditto 600mm diameter ditto.	NO	89.00
114	Supply and install 12mm diameter high yield steel reinforcement in pile head to detail.	KG	4.80
115	Ditto 16mm diameter ditto.	KG	4.70
116	Provide and weld 6mm thick mild steel plates to detail for 250mm diameter piles.	NO	45.10
117	Ditto 300mm diameter piles.	NO	53.50
118	Ditto 350mm diameter piles.	NO	68.90
119	Ditto 400mm diameter piles.	NO	80.70
120	Ditto 450mm diameter piles.	NO	101.20
121	Ditto 600mm diameter piles.	NO	148.40
122	Supply, place and compact grade 30/20 concrete in pile hollow section as specified.	M^3	355.90
123	Provide all equipment, hydraulic jack, deflection gauges, kentledge, temporary staging, etc. and test a test pile of any size to a vertical load test including all extra cost before commencement of the main piling works.	Tonne	142.40
	Micro Pile		
124	Augering/boring/coring vertical piles shaft through whatever soil strata and underground obstruction other then rock: including provision for SPT tests to determine rock material, temporary casing and approved stabilising slurry; remove all spoils and debris from site	M	95.00

E PILING (Cont'd)

Item No.	Description	Unit	Rate (RM)
	Micro Piles (Cont'd)		
125	Augering/boring/coring raked piles shaft through whatever soil strata and underground obstruction other then rock: including provision for SPT tests to determine rock material, temporary casing and approved stabilising slurry; remove all spoils and debris from site	M	115.00
126	Boring/coring vertical piles shaft through rock strata having SPT-N value>200; minimum depth/rock socket length 3,000mm; including provision for SPT tests to determine rock material, temporary steel casing and approved stabilising slurry; remove all spoils and debris from site	M	160.00
127	Boring/coring raked piles shaft through rock strata having SPT-N value>200; minimum depth/rock socket length 3,000mm; including provision for SPT tests to determine rock material, temporary steel casing and approved stabilising slurry; remove all spoils and debris from site	M	195.00
128	Forming pile in bored shaft; comprising Grade 25 grout and reinforcement cage; for vertical pile	M	250.00
129	Ditto, with 141.3mm diameter x 12.7mm thick API pipe of 550N/mm2 yield strength including splicing where required, Grade 35 cementitious grout at dosage rate of 200g/50kg cement content; for vertical pile	M	360.00
130	Forming pile in bored shaft; comprising Grade 25 grout and reinforcement cage; for raked pile	M	270.00
131	Ditto, with 141.3mm diameter x 12.7mm thick API pipe of 550N/mm2 yield strength including splicing where required, Grade 35 cementitious grout at dosage rate of 200g/50kg cement content; for vertical pile	M	380.00
132	Cut off pile head at final cut-off level; exposing and preparing reinforcement bars for anchoring into structures; remove cut-off materials from site	M	130.00
133	Cut off pile head at final cut-off level; works comprising cutting off and prepare pile head, weld 400mm x 400mm x 12mm thick m.s. Capping plate and 4 nos of 12mm thick mild steel stiffener to API pipe, weld 2 nos of T25 'U' bar on capping plate; remove cut-off materials from site	M	150.00
134	Pile test; pile dynamic analyser (PDA) test; on working pile, including reporting	No	1,400.00
135	Pile test; static load test up to 1800kN; on working pile, including reporting	No	17,000.00
136	Ditto, up to 2000kN	No	18,000.00
137	Ditto, up to 2400kN	No	21,000.00
138	Pile test; pile integrity test (PIT); on working pile, including reporting	No	1,500.00
	Bored Pile		
139	Drill / bore only vertical pile hole for 600mm diameter bored piles, including temporary steel casing if necessary, to required depth through soil (soil is defined as any material with SPT-N value less than 300) including the provision of bentonite, drilling mud or approved stabilising slurry as necessary and remove all excavated material from site.	M	380.00

E PILING (Cont'd)

Item No.	Description	Unit	Rate (RM)
	Bored Piles (Cont'd)		
140	Ditto, 900mm diameter	M	470.00
141	Ditto, 1200mm diameter	M	610.00
142	Ditto, 1500mm diameter	M	970.00
143	Drill / bore only raked pile hole for 600mm diameter bored piles, including temporary steel casing if necessary, to required depth through soil (soil is defined as any material with SPT-N value less than 300) including the provision of bentonite, drilling mud or approved stabilising slurry as necessary and remove all excavated material from site.	M	460.00
144	Ditto, 900mm diameter	M	550.00
145	Ditto, 1200mm diameter	M	690.00
146	Ditto, 1500mm diameter	M	1,100.00
147	Drill / bore only vertical pile hole for 600mm diameter bored piles, including temporary steel casing if necessary, to required depth through material of SPT-N value greater than or equal to 300 or rock, including the provision of bentonite, drilling mud or approved stabilising slurry as necessary and remove all excavated material from site.	M	650.00
148	Ditto, 900mm diameter	M	720.00
149	Ditto, 1200mm diameter	M	900.00
150	Ditto, 1500mm diameter	M	1,600.00
151	Drill / bore only raked pile hole for 600mm diameter bored piles, including temporary steel casing if necessary, to required depth through material of SPT-N value greater than or equal to 300 or rock, including the provision of bentonite, drilling mud or approved stabilising slurry as necessary and remove all excavated material from site.	M	880.00
152	Ditto, 900mm diameter	M	960.00
153	Ditto, 1200mm diameter	M	1,130.00
154	Ditto, 1500mm diameter	M	1,840.00
155	Supply and vibrate reinforced concrete Grade 35 as described including plasticizer, additives, etc and wet pouring by tremie where necessary in bored pile, including supply and installation of high tensile deformed rod reinforcement to concrete works, for 600mm diameter bored pile	M	500.00
156	Ditto, 900mm diameter	M	670.00
157	Ditto, 1200mm diameter	M	1,190.00
158	Ditto, 1500mm diameter	M	1,800.00

E PILING (Cont'd)

Item No.	Description	Unit	Rate (RM)
	Bored Piles (Cont'd)		
159	Supply and vibrate reinforced concrete Grade 40 as described including plasticizer, additives, etc and wet pouring by tremie where necessary in bored pile, including supply and installation of high tensile deformed road reinforcement to concrete works, for 600mm diameter bored pile	M	570.00
160	Ditto, 900mm diameter	M	990.00
161	Ditto, 1200mm diameter	M	1,490.00
162	Ditto, 1500mm diameter	M	2,150.00
163	Supply and install 600mm diameter permanent steel casing according to drawing, including the jointing, application of corrosion protection paint and surface preparation by sandblasting	M	920.00
164	Ditto, 900mm diameter	M	1,390.00
165	Ditto, 1200mm diameter	M	1,860.00
166	Ditto, 1500mm diameter	M	2,310.00
167	Cut off pile head of 600mm diameter bored pile to required level, cleaning of surface, stripping, cleaning and vending steel reinforcement bars ready for pile cap construction	No	245.00
168	Ditto. 900mm diameter	No	380.00
169	Ditto, 1200mm diameter	No	540.00
170	Ditto, 1500mm diameter	No	800.00
171	Supply and install 50mm dia. MS sonic logging tube and tie to reinforcement cage of the whole length of each bored pile and infill the tubes with Grade 40 cement grout upon completion of testing, for 600mm diameter bored pile	M	26.00
172	Ditto, 900mm diameter	M	30.00
173	Ditto, 1200mm diameter	M	34.00
174	Ditto. 1500mm diameter	M	38.00
175	Carry out sonic logging test in the installed tubes for 600mm diameter bored pile inclusive of equipments, fieldworks, reports, etc.	No	1,200.00
176	Ditto, 900mm diameter	No	1,600.00
177	Ditto, 1200mm diameter	No	1,900.00
178	Ditto, 1500mm diameter	No	2,500.00

E PILING (Cont'd)

Item No.	Description	Unit	Rate (RM)
	Bored Piles (Cont'd)		
179	Carry out low strain pile integrity test (PIT) at selected bored pile inclusive of all equipments, fieldworks, reports, etc, for 600mm diameter bored pile	No	650.00
180	Ditto, 900mm diameter	No	780.00
181	Ditto. 1200mm diameter	No	910.00
182	Ditto, 1500mm diameter	No	1,050.00
183	Static load test on working vertical pile on LAND to 2 times the working load including preparation of pile head, provision of all necessary equipment, kentledge, personnel, record, report, etc for 600mm diameter bored pile	No	40,000.00
184	Ditto, 900mm diameter	No	55,000.00
185	Ditto, 1200mm diameter	No	73,000.00
186	Ditto, 1500mm diameter	No	110,000.00
187	Static load test on working vertical pile on RIVER to 2 times the working load including preparation of pile head, provision of all necessary equipment, kentledge, personnel, record, report, etc for 600mm diameter bored pile	No	90,000.00
188	Ditto, 900mm diameter	No	140,000.00
189	Ditto, 1200mm diameter	No	180,000.00
190	Ditto, 1500mm diameter	No	250,000.00
191	High strain dynamic pile testing (PDA) to 2 times working load on working vertical pile including provision of all necessary equipment, personnel, and record, report, etc, for 600mm diameter bored pile	No	650.00
192	Ditto. 900mm diameter	No	900.00
193	Ditto, 1200mm diameter	No	1,200.00
194	Ditto, 1500mm diameter	No	1,700.00
195	Provide all equipment for carrying out low strain integrity test (shock test) on bored pile including mobilisaton, moving equipment about site, dismantling and removal upon completion	No	1,000.00