

**BAHAGIAN 3.14 : DRAINAGE WORK (CLASS P)**

Kawasan Utara - Perlis, Kedah, Pulau Pinang dan Perak  
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BIL	KETERANGAN KERJA	UNIT	KAWASAN UTARA		KAWASAN TENGAH		KAWASAN TIMUR		KESELURUHAN	
			PURATA (RM)	JULAT (RM)	PURATA (RM)	JULAT (RM)	PURATA (RM)	JULAT (RM)	PURATA (RM)	JULAT (RM)
1	<p><b><u>DRAIN EXCAVATION</u></b>                      Excavate in bulk for earth drain not exceeding 2.0 m deep, get out, part return, fill in and ram and deposit in making up levels where directed and remainder load and remove from site to within Employer's site as directed by S.O.</p> <p><u>Drain excavation shall be deemed to include preparation of surfaces, double handling, disposal of surplus excavated material, upholding sides of excavation, disposal of surplus excavated material, upholding sides of excavation, allowance for allowance for</u></p>	m3	11.47	3.30 - 22.00	4.44	3.00 - 7.00			7.96	3.00 - 22.00
2	<p>In earth for 900mm precast pipe culvert depth 1.5 - 2.0m.</p> <p><u>Excavation of earth collector drain to the required sections and depth. The rate shall includes 100mm top soil, close turfing</u></p>	m	14.42	3.30 - 29.40					14.42	3.30 - 29.40
3	i) width 300mm, invert depth 600mm	m			10.75	4.50 - 18.30			10.75	4.50 - 18.30
4	ii) width 600mm, invert depth 1050mm	m			21.02	5.00 - 40.60			21.02	5.00 - 40.60
5	iii) width 900mm, invert depth 750mm	m			17.08	7.00 - 28.40			17.08	7.00 - 28.40

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	<b><u>SURFACE DRAINS</u></b>									
	<u>Item for surface drains shall be deemed to include cement jointing, sand and concrete beddings, shuttering, struts, and weepholes.</u>									
6	V shaped berm drain .	m	45.76	30.00 - 65.00					45.76	30.00 - 65.00
7	Interceptor drains; reinforced concrete grade 20; 4500 mm wide (average) x 1000 mm deep x 150 mm thick trapezoidal shape.	m	286.48	120.00 - 560.00					286.48	120.00 - 560.00
8	Construct 450mm dia. Block Drain with plastered brickwall width 500mm and depth not exceeding 1500mm.	m			222.65	116.00 - 370.00			222.65	116.00 - 370.00
9	Insitu reinforced concrete Grade 25 in 175mm Invert width, 175mm deep embankment shoulder drains at any inclination including joints, excavation, reinforcement, formwork where necessary, backfilling and disposal of surplus material.	m			38.99	14.20 - 66.00			38.99	14.20 - 66.00

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10	<p><b><u>SUBSURFACE DRAINS</u></b></p> <p>To provide 150mm wide scupper drain discharge to nearest drain.</p> <p><u>Item for subsurface drains shall be deemed to include geotextiles fabric, lining, and filter material</u></p>	m			42.70	15.00 - 70.00			42.70	15.00 - 70.00
11	<p>Subsoil drains; 300 mm deep x 1000 mm wide; including aggregate 30 mm – 75 mm.</p>	m	61.99	37.00 - 85.00					61.99	37.00 - 85.00
12	<p><b><u>DRAINAGE TO STRUCTURES ABOVE GROUND</u></b></p> <p>150mm Diameter x 350mm long UPVC Class D downpipe at 3000mm centres as scupper drain complete with all necessary works and filters.</p>	no.			44.11	30.00 - 60.00			44.11	30.00 - 60.00
13	<p><u>Perimeter Drain</u></p> <p>380mm wide drain comprise of 230mm half round precast concrete channel drain with minimum 75mm thick sides and bottom, cast in suitable lengths, jointed and pointed in cement mortar ( 1:3 ) on and including 100mm thick plain concrete ( 1:2:4 ) with 1 layer BRC A6 as specified bed, including all necessary excavation, formwork, junction and ends all as per Engineer's detail Drawing.</p>	m			43.50	25.00 - 105.00			43.50	25.00 - 105.00

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	<b><u>DRAIN COVERS</u></b>									
	<u>Supply and install heavy duty galvanised M.S. Grating for services manhole cover complete for size of:</u>									
14	750mm x 750mm	no.			305.53	150.00 - 400.00			305.53	150.00 - 400.00
15	1800mm x 1500mm	no.			1,135.70	400.00 - 2,000.00			1,135.70	400.00 - 2,000.00
16	2200mm x 2000mm	no.			2,091.23	1,100.00 - 3,800.00			2,091.23	1,100.00 - 3,800.00
17	2500mm x 2000mm	no.			2,648.50	1,300.00 - 4,500.00			2,648.50	1,300.00 - 4,500.00
18	Precast concrete cover slab 380mm x 450mm x 65mm thick reinforced with and including 12mm diameter high tensile rod reinforcement space at 100mm centres and 10mm diameter mild steel rod reinforcement space at 200mm centres including 20 nos notched lifting holes at ends.	m			50.90	10.00 - 100.00			50.90	10.00 - 100.00

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	<u>Supply and install heavy duty galvanised M.S. Grating for services manhole cover complete for size of:</u>									
19	600mm x 600mm	no.			366.38	100.00 - 500.00			366.38	100.00 - 500.00
20	750mm x 750mm	no.			415.00	220.00 - 800.00			415.00	220.00 - 800.00
21	1000mm x 1000mm	no.			2,295.00	800.00 - 5,000.00			2,295.00	800.00 - 5,000.00
22	1200mm x 1800mm	no.			1,310.00	450.00 - 3,432.00			1,310.00	450.00 - 3,432.00
23	1800mm x 1500mm	no.			1,494.00	450.00 - 4,752.00			1,494.00	450.00 - 4,752.00
24	2500mm x 2000mm	no.			2,892.00	550.00 - 11,000.00			2,892.00	550.00 - 11,000.00
25	<b>FRP Grating</b> Supply 15mm Thickness With 20 mm spacing FRP Grating.	m2			330.00	100.00 - 600.00			330.00	100.00 - 600.00

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	<b><u>CULVERTS</u></b>									
26	900mm precast pipe culvert.  <u>Supply and lay precast r.c. box culverts to details as shown in drawings and as specified inclusive of all handling, laying to grade and levels, pointing, breaking up of reinforced concrete or rubble lining of drains for fitting in culverts and sealing.</u>	m	545.71	300.00-1,500.00					545.71	300.00-1,500.00
27	R.C. Box Culvert 0.9m width x 0.9m depth.	m			430.00	250.00 - 810.00			430.00	250.00 - 810.00
28	R.C. Box Culvert 1.2m width x 1.2m depth.	m			620.00	340.00 - 1,020.00			620.00	340.00 - 1,020.00
29	R.C. Box Culvert 1.5m width x 1.5m depth.	m			800.00	400.00 - 1,620.00			800.00	400.00 - 1,620.00
30	R.C. Box Culvert 1.8m width x 1.8m depth.	m			1,203.00	1,050.00 - 1,280.00			1,203.00	1,050.00 - 1,280.00
31	Supply and lay triple 3.6m x 3.0m Precast Box Culvert including all necessary jointing, Installation of weepholes, backfilling etc all as per drawing.	m			3,924.00	2,100.00 - 7,500.00			3,924.00	2,100.00 - 7,500.00

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32	<b>SUMPS</b> Brickwork sump overall size 600mm x 600mm with depth of 900mm constructed of 225mm thick brickwall for sump wall in common clay bricks jointed and flush pointed on both sides with cement and sand (1:3) including 150mm thick grade 25 mass concrete base, 225mm x 150mm thick concrete grade top capping reinforced with mild steel reinforcement, 20mm thick cement and sand (1:3) rendering trowelled smooth to all exposed surface and internal surfaces of sump, all necessary excavation, backfill and compaction as specified.	no.			761.73	400.00 - 900.00			761.73	400.00 - 900.00
33	Construct 900mm dia. outlet structure including 2m x 2m x 1.5m depth Overflow Brick Sump, wing wall and others necessary works.  <u>Supply and construct R.C. Sump complete with R.C. Slab, M.S. Grating and Step Ladder for</u>	m			1,336.00	900.00 - 1,500.00			1,336.00	900.00 - 1,500.00
34	R.C. Sump 1.2m x 1.2m with average depth 1.2m.	no.			1,609.45	900.00 - 2,700.00			1,609.45	900.00 - 2,700.00
35	R.C. Sump 1.5m x 1.5m with average depth 1.5m.	no.			2,034.09	1,000.00 - 3,520.00			2,034.09	1,000.00 - 3,520.00