

BAHAGIAN 3.4 : GEOTECHNICAL WORK

Kawasan Utara - Perlis, Kedah, Pulau Pinang dan Perak
 Kawasan Tengah - Wilayah Persekutuan Kuala Lumpur, Melaka, Negeri Sembilan, Selangor dan Johor
 Kawasan Timur - Pahang, Terengganu dan Kelantan

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	Retaining structures Preparation of slope for Turf Reinforcement Mat (TRM) including trimming, level filling any cavaties and compact to grade and formation to the manufacturer's detail.	m2			1.61	1.00-2.10			1.61	1.00-2.10
2	Supply and install Turf Reinforcement Mat (TRM) or equivalent including top soil with specific microbes, anchor trench, grass (seashore pasypalum for the level 5.6 m LSD to 7.5 m LSD or equivalent) and associated works.	m2			30.00	22.00- 42.00			30.00	22.00- 42.00
3	Supply and install galvanised hook staples of 6 mm diameter x 300 mm length at 1 m centre laterally and longitudinally on the surface of Turf Reinforcement Mat (TRM) to the manufacturer's detail.	no.			4.21	3.00 - 5.50			4.21	3.00 - 5.50
4	Supply and lay Concrete Revetment Mattress (CRM) Type 200HF or equivalent with nominal thickness 120 mm including concrete grout, anchorage and all accessories.	m2			118.30	80.00 - 130.00			118.30	80.00 - 130.00
5	Supply and place 400 mm - 500 mm diameter stone for bed protection downstream of reinforced concrete inlet structure to the level and profile.	m3			105.67	90.00 - 115.00			105.67	90.00 - 115.00

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6	Supply and lay Maccaferri PVC coated heavily galvanised wire gabion mattress 6.0 m long x 2.0 m wide x 0.3 m thick or equivalent inclusive of stone and other accessories to the level and profile.	no.			828.54	739.81 - 960.00			828.54	739.81 - 960.00
7	Supply and lay non-woven geotextile with minimum mass per unit area 250 g/m ² underneath gabion mattress and 300 to 500 mm diameter stone.	m2			5.23	4.00 - 7.00			5.23	4.00 - 7.00
8	Supply and lay of non-woven geotextile wrapping type with property of 230g/m ² of weight and permeability of 115l/m ² /sec at 100 mm head.	m2			5.43	4.36 - 6.50			5.43	4.36 - 6.50
9	Supply and lay non woven geotextile TS-50 or equivalent.	m2			4.52	4.00 - 7.00			4.52	4.00 - 7.00
10	Retaining structures; Rock filled gabion wall (140m length and 3m height); with top of gabion with soil composite planted with 2 species of wetland vegetated.	m3			233.80	150.00 - 400.00			233.80	150.00 - 400.00
11	Supply all materials and labours to site for trimming slope profile and reinstatement.	m2			2.15	1.10 - 3.00			2.15	1.10 - 3.00

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12	Supply and install 1 layer of non-woven needle punched geotextile with a nominal mass of 250 g/m ² .	m ²			5.45	3.00 - 8.60			5.45	3.00 - 8.60
13	Provide labours, materials and machineries for construction and completion of 200mm thick Reinforced Concrete (R.C.) Retaining Wall at various level and varies height ; all as per Engineer's drawing complete with driven 2 nos. of 300mm diameter piles at 1000mm centre to centre, excavation, concrete base, reinforcement, formworks, uPVC weep holes, granular materials, cement plaster, temporary strutting and all any other necessary associated works.	m	1,347.50	400.00 - 2,300.00					1,347.50	400.00 - 2,300.00
14	Supply and install Vigormat V400 HS "Ecomix" (TRM) or equivalent at area as described in engineer's drawing in accordance with plans, specifications and method statement.	m ²			19.57	15.00 - 23.00			19.57	15.00 - 23.00
15	Supply and install 500mm length of 12mm dia. Anchor J-Rebar at 1000mm center, laterally and longitudinally for turf reinforced mattress.	no.			2.50	1.75 - 5.00			2.50	1.75 - 5.00

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16	Supply and install TEI tie-back anchors (set-at minimum 500kg "pull-out" capacity) at 2m longitudinally centre w/4m cables at 1m slant length from embarkment toe at 2m centre longitudinally spacing;	m			135.92	100.00 - 180.00			135.92	100.00 - 180.00
17	Supply and lay granite stone size 300mm to 500mm at river toe for scour protection	m3			73.70	55.00 - 90.00			73.70	55.00 - 90.00
18	Supply and install Soft Rock of 2.0m (L) x 1.4m (W) x 0.4m (thk) Sand Containers Bag including filtration geotextile and sand infill for slope protection at river bank and other related works complete with all temporary works including where applicable coffer dams, dewatering, temporary diversion of river channel and cleaning up site upon handing over works on completion and others related works- Eight (8) layers of softrocks.		1,320.82	700.00 - 1,900.00					1,320.82	700.00 - 1,900.00
19	Supply, deliver and lay 1.2m thick 70kg to 100kg rip-rap.	m3					87.75	70.00 - 120.00		
20	Supply, deliver and lay 150kg - 200kg rip-rap.	m3			84.82	80.00 - 100.00			84.82	80.00 - 100.00

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21	Supply and lay rip-rap granatic rock with size 400mm to 600mm of minimum thickness of 1200mm	m3			80.00	60.00 - 107.00			80.00	60.00 - 107.00
22	Supply and placement of 75-100 mm size 'armour rock' at the toe of the slope protection matterss for a minimum depth of not less than 250 mm.	m3			92.70	65.00 - 110.00			92.70	65.00 - 110.00
23	Supply and placement of 100-200 mm size diameter of stone at the upper half of the rock weir.	m3			96.79	65.00 - 125.00			96.79	65.00 - 125.00
24	Supply and placement of 300-500 mm size diameter of rock boulder at the bottom half of the rock weir.	m3			100.27	68.00 - 155.00			100.27	68.00 - 155.00
25	Supply and lay cement grouting for rip-rap granatic rock of 1200mm thick.	m2			122.41	110.00 - 150.00			122.41	110.00 - 150.00
26	Supply and lay 100mm thickness of 20mm to 50mm stones.	m3			66.71	40.00 - 75.00			66.71	40.00 - 75.00

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27	<u>Geotechnical Works</u> 12mm construction joint.	m			58.94	35.00-65.00			58.94	35.00-65.00
28	Rod settlement gauges	no.			778.78	550.00 - 1,250.00			778.78	550.00 - 1,250.00
29	Surface settlement markers	no.			507.40	10,000.00-28,000.00			507.40	10,000.00-28,000.00
30	Inclinometer	no.			3,492.25	800.00 - 1,500.00			3,492.25	800.00 - 1,500.00
	<u>PRECAST CONCRETE WALL</u>									
31	Supply and deliver WELLGUARD RC Post (PL-4) 4m length or equivalent	no			1,015.00	677.80 - 1,250.00			1,015.00	677.80 - 1,250.00
32	Supply and deliver WELLGUARD RC Panel (W-15) 1.5m length or equivalent	no			560.00	450.00 - 670.00			560.00	450.00 - 670.00
33	Installation of wellguard system or approved equivalent to required level	m			171.00	100.00 - 300.00			171.00	100.00 - 300.00

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34	Supply & Construct 200mm thk Capping Beam & 125mm thk RC Façade Wall with concrete grade 25 and one layer of BRC A6	m2			160.00	85.00 - 200.00			160.00	85.00 - 200.00
	<u>Reinforced Soil Wall</u>									
35	Supply and deliver of RS Wall components consisting of hexagonal shaped precast concrete panels, reinforcing bar, anchor blocks, joint fillers, cushion pads and fasteners.	m2			240.54	218.00 - 300.00			240.54	218.00 - 300.00
36	Erection and installation of hexagonal shaped precast concrete panels in successive horizontal lifts to form RS Wall components consisting of tendons to the panels and anchor blocks and insertion of joint fillers.	m2			43.27	40.00 - 45.00			43.27	40.00 - 45.00
37	Cast-in-situ concrete levelling pad (350 x 150 grade 20 mass concrete).	m			29.04	25.00 - 30.90			29.04	25.00 - 30.90
38	Insitu reinforced concrete Grade 30 for Coping.	m			78.69	50.00 - 88.00			78.69	50.00 - 88.00
39	Mackintosh probes at 20m c/c before commencement of wall erection as directed by the S.O.	no.			119.61	85.00 - 150.00			119.61	85.00 - 150.00