

## Attachment 2

### 2018 ~2019 Site Investigation and Geotechnical Monitoring Annual Quotation

**Table 1. Site Investigation and geotechnical monitoring**

Item	Description	Unit	Rate (MOP)
b1	Mobilization and demobilization of drilling equipment and personnel.		
	to the drilling site of Macau.	set.	
	to the drilling site of Taipa or Coloane.	set.	
b2	Water pressurize for drilling flush at each hole.	hole.	
b3	Move and positioning (set up drilling rig) on <u>land</u> area at each hole.	hole.	
	Move and positioning (set up drilling rig) on <u>water</u> area at each hole.	hole.	
b4	Drill vertical hole in soil by HX / NX size casing on <u>land</u> area.		
	< 30m	ml.	
	30 ~ 60m	ml.	
	> 60m	ml.	
b5	Drill vertical hole in soil by HX / NX size casing on <u>water</u> area.		
	< 30m	ml.	
	30 ~ 60m	ml.	
	> 60m	ml.	
b6	Drill vertical hole in soil by PX size casing on <u>land</u> area.		
	< 30m	ml.	
	30 ~ 60m	ml.	
	> 60m	ml.	
b7	Drill vertical hole in soil by PX size casing on <u>water</u> area.		
	< 30m	ml.	
	30 ~ 60m	ml.	
	> 60m	ml.	
b8	Drill verticil hole in rock or concrete by H size core barrel and take T2-101 cores on <u>land</u> arear, counted by the accumulative coring length		
	< 10m	ml.	
	10 ~ 30m	ml.	
	> 30m	ml.	

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Item	Description	Unit	Rate (MOP)
b9	Drill verticl hole in rock or concrete by H size core barrel and take T2-101 cores on <u>water</u> arear, counted by the accumulative coring length		
	< 10m	ml.	
	10 ~ 30m	ml.	
	> 30m	ml.	
b10	Drill verticl hole in rock or concrete by N/B size core barrel and take TNW cores on <u>land</u> area, counted by the accumulative coring length		
	< 10m	ml.	
	10 ~ 30m	ml.	
	> 30m	ml.	
b11	Drill verticl hole in rock or concrete by N/B size core barrel and take TNW cores on <u>water</u> area, counted by the accumulative coring length		
	< 10m	ml.	
	10 ~ 30m	ml.	
	> 30m	ml.	
b12	Drill verticl hole in R.C by H size core barrel and take T2-101 cores, counted by the accumulative coring length	ml.	
b13	Drill verticl hole in R.C by N/B size core barrel and take TNW cores, counted by the accumulative coring length	ml.	
b14	Drill verticl hole in boulder by H / NB size core barrel and take T2-101 / TNW cores, counted by the accumulative coring length	ml.	
b15	Ream hole with HX size casing for hole protection.	ml.	
	Ream hole with NX size casing for hole protection.	ml.	
b16	Take undisterbed U70/76 soil samples.	nos.	
	Take undisterbed Piston soil samples.	nos.	
	Take undisterbed M-101 soil samples.	nos.	
	Take undisterbed U120 soil samples.	nos.	

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Item	Description	Unit	Rate (MOP)
b17	Carry out SPT test without disturbed liner sample.	nos.	
	Carry out SPT test with disturbed liner sample.	nos.	
b18	Ground water observation for 3 ~ 7 days on <u>land</u> at each hole.	hole.	
b19	Survey for the coordinates and levels of the boreholes		
	on land area.	hole.	
	on water area.	hole.	
b20	Provide wooden core box for soil and rock samples.	nos.	
b21	Provide borehole log in triplicate per hole.	hole.	
b22	Provide a temporary worker for assistance of LECM works.	day.	
b23	Supply a temporary jack-up steel plate platform on <u>sea</u> .		
	in normal water depth and low wave actions	hole.	
	in or close to navigation channel with deep water depth and high wave actions	hole.	
b24	Supply a small wooden boat in a working day (about 8 hours) with a qualified seaman on <u>sea</u> area	day.	
b25	Excavate a trial pit in borehole location for inspection of underground facilities.		
	0.5m x 0.5m x 1.5m	nos.	
	1.5m x 1.5m x 1.5m	nos.	
	1.5m x 1.5m x 2.0m	nos.	
	2.0m x 2.0m x 2.5m	nos.	
	3.0m x 3.0m x 3.0m	nos.	
b26	Carry out field permeability tests in borehole not more than 2 testing depths and only 1 test will be performed at each depth, including the necessary equipment and materials for the test and the test reprot		
	within the soil layer	hole.	
	within the rock layer	hole.	

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Item	Description	Unit	Rate (MOP)
b27	Extra 1 additional field permeability test performed in borehole		
	within the soil layer	hole.	
	within the rock layer	hole.	
b28	CPT test without measuring pore water pressure(bi-bridge) test on <u>land</u> area with test reports and maximum dead load for the test is 10 ~ 20 tons (not including mobilization of equipment) if possible.		
	Mobilization of equipment	item.	
	test depth < 30m	hole.	
	30 < test depth < 60m	hole.	
	test depth > 60m	hole.	
b29	CPT test without measuring pore water pressure(bi-bridge) test on <u>water</u> area with test reports and maximum dead load for the test is 10 tons (not including platform and mobilization of equipment) if possible.		
	Mobilization of equipment	item.	
	test depth < 30m	hole.	
	30 < test depth < 60m	hole.	
	test depth > 60m	hole.	
b30	PCPT / CPTu test with measuring pore water pressure(tri-bridge) test in marine deposit or soft alluvial strata on <u>land</u> area with test reports and maximum dead load for the test is 10 ~ 20 tons (not including mobilization		
	Mobilization of equipment	item.	
	test depth < 30m	hole.	
	30 < test depth < 60m	hole.	
	test depth > 60m	hole.	

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Item	Description	Unit	Rate (MOP)
b31	PCPT / CPTu test with measuring pore water pressure(tri-bridge) test in marine deposit or soft alluvial strata on <u>water</u> area with test reports and maximum dead load for the test is 10 ~ 20 tons (not including platform and		
	Mobilization of equipment	item.	
	test depth < 30m	hole.	
	30 < test depth < 60m	hole.	
	test depth > 60m	hole.	
b32	Perform pore water dissipation test for each testing depth for period in each borhole :		
	testing time ≤ 2 hours	nos.	
	extra over for performing dissipation test in excess of 2 ~ 4hours duration	nos.	
b33	Perform field vane shear tests on <u>land</u> area in marine deposit or soft alluvial strata with 1.5 ~2.0m interval in each borehole and provide the reports and the maximum testing depth is 30m (not including the drilling	hole.	
b34	Perform field vane shear tests on <u>water</u> area in marine deposit or soft alluvial strata with 1.5 ~2.0m interval in each borehole and provide the reports and the maximum testing depth is 30m(not including the drilling	hole.	
b35	In-Situ shear velocity test on <u>land</u> area.		
	Mobilization of equipment	items	
	Single hole (testing depth < 30m)	nos.	
	Single hole (30 < testing depth < 30m)	nos.	
	Cross hole (testing depth < 30m)	nos.	
	Cross hole (30 < testing depth < 30m)	nos.	
b36	Site shear velocity test on <u>water</u> area(single or cross hole).		
	Mobilization of equipment	items	
	Single hole (testing depth < 30m)	nos.	
	Single hole (30 < testing depth < 30m)	nos.	
	Cross hole (testing depth < 30m)	nos.	
	Cross hole (30 < testing depth < 30m)	nos.	

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Item	Description	Unit	Rate (MOP)
b37	Monitoring works (not including the drilling work)		
	Installation of inclinometer (depth < 60m and not including inclinometer casing)	hole.	
	Supply ABS inclinometer casing, dia .OD 70mm, length ~ 3.0m with coupler and caps.	nos.	
	Taking the reading for each inclinometer casing	nos.	
	Supply and installation of standpipe tubes for water level (depth < 25m)	hole.	
	Installation of 1 piezometer in a borehole(not including sensors)	hole.	
	Supply and installation of standpipe tubes and piezometer (not including the piezometer sensor)	hole.	
	Installation of SONDEX corrugated pipe (depth < 60m and not including the pipe)	hole.	
	Supply SONDEX corrugated pipe for 70mm casing, length ~ 3.0m with couplers	nos.	
	Supply and install steel cover plate for the protection for standpipe / piezometer / sondex / inclinometer.	nos.	
b38	Restoration for the pavement or road surface at the borehole location (including all the necessary works in order to comply with the relevant requirement from IACM and DAST)		
	<b>A. Reinforced concrete with grade B40</b> (Restoration area on each location of borehole is based on the area accepted by LECM's staff) :		
	A1. restoration area with 1.0 X 1.0m <sup>2</sup>	nos.	
	A2. restoration area with 1.5 X 1.5m <sup>2</sup>	nos.	
	A3. restoration area with 2.0 X 2.0m <sup>2</sup>	nos.	
	A4. restoration area with 3.0 X 3.0m <sup>2</sup>	nos.	
	A5. restoration area with 4.0 X 4.0m <sup>2</sup>	nos.	
A6. restoration area with 5.0 X 5.0m <sup>2</sup>	nos.		

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Item	Description	Unit	Rate (MOP)
	<b>B. Bitumen concrete</b> (Restoration area on each location of borehole is based on the area accepted by LECM's staff) :		
	B1. restoration area with 1.0 X 1.0m <sup>2</sup>	nos.	
	B2. restoration area with 1.5 X 1.5m <sup>2</sup>	nos.	
	B3. restoration area with 2.0 X 2.0m <sup>2</sup>	nos.	
	B4. restoration area with 3.0 X 3.0m <sup>2</sup>	nos.	
	B5. restoration area with 4.0 X 4.0m <sup>2</sup>	nos.	
	B6. restoration area with 5.0 X 5.0m <sup>2</sup>	nos.	
	Additional quotation will be requested according to the actual state of the above restoration work on site.		

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### Pile Static Loading Test (Year 2018 ~ 2019)

Table 2.

Description	Testing Weight (TONs)	Unit	Unit Rate (MOP)		
			The 1 <sup>st</sup> set	The 2 <sup>nd</sup> set	The 3 <sup>rd</sup> set or more
Supply and install the Static Loading Test system on horizontal ground, including the dail gage, jacking system, steel platform, mass cube and transportation and all the equipments needed.	1-100	Set			
	101-300	Set			
	301-1000	Set			
	1001-1200	Set			
	1201-1500	Set			