

**Construction of Additional Shed for Govt. India on the developed land in  
Cochin Port-Conducting Geotechnical investigation work**

<b>Item No</b>	<b>Description of item</b>	<b>Unit</b>	<b>Rate (Rs. Ps)</b>
1	<i>Field Investigations - Taking bore hole data:</i>		
1.1	Locating / shifting the equipments and accessories from one location to another and fixing and setting up the equipment at the location including cost of materials, consumables, labour etc., complete on land	Each	
1.2	Boring with bailer/rotary drilling equipment using casing for initial depth, and then bentonite slurry to retain sides through sand, silt and clay, excluding rock, pebble, gravel or boulders which cannot be bored through by using the above equipment including supply of all materials, casing pipes, labour etc., all complete.		
	From ground level to (-) 20m depth	M	
	From (-) 20m to (-)40m depth	M	
	From (-) 40m to (-) 60m depth	M	
1.3	Collect and preserve disturbed samples ( 10 nos/bore hole) as per specifications, hand over them to the department / at place as pointed out by the Engineer-in-Charge in well sealed condition or transport to the laboratory	Each	
1.4	Recover and preserve undisturbed samples with appropriate type of piston sampler, preserve and transport the samples with tubes in a well sealed and packed condition as specified and as per instructions of the Engineer-in-charge to the laboratory	Each	

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1.5	Carrying out the Standard Penetration tests in bore holes as specified and as per the instructions of the Engineer-in-Charge including supply of all tools, plants, labour etc. complete and submit the data with a report to the department.	Each	
1.6	Carrying out in-situ vane shear tests as per specifications and directions of the Engineer-in-charge including supply of all tools, plants, labour etc complete and submit the data with a report to the department.	Each	
1.7	Collect water samples from bore holes as per specifications and directions of the Engineer-in-Charge and transport the same to laboratory.	Each	
2	Laboratory Tests: Conducting laboratory tests on soil samples collected as per item no. 1.3and 1.4 above and water samples as per item no. 1.7 above	Each	
2.1	Natural moisture content in the laboratory	Each	
2.2	Wet and dry density at the field laboratory	Each	
2.3	Specific Gravity tests	Each	
2.4	Particle size analysis by sieve/hydrometer analysis	Each	
2.5	Unconfined compression tests on selected UDS in the laboratory	Each	
2.6	Direct shear tests on sandy samples	Each	
2.7	Chemical Analysis for:		
a	Sulphate content in water	Each	
b	Sulphate content in soil	Each	
c	Chloride content in water	Each	
d	Organic content in soil	Each	
e	Calcium Carbonate in soil	Each	
f	Total salinity in water	Each	
g	PH value	Each	

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3	Compilation and analysis of all field data and laboratory test data and submission of report giving re-commendations (10 copies) as per specifications and directions of Engineer-in-Charge.	1	