

DETAILED ROUTE SURVEY & SUB-SOIL INVESTIGATIONS OF 500kV TRANSMISSION LINE FROM SECL POWER PLANT (THAR COAL) TO MATIARI (APPROX. 210 km) UNDER NTDC's OWN RESOURCES IN SINDH, PAKISTAN					
GEOTECHNICAL INVESTIGATIONS					
BILL OF QUANTITIES					
Sr. No.	Description	Unit	Qty.	Rate	Amount
				PKR	PKR
A.	FIELD INVESTIGATIONS				
A1	Execution of Fifty (50) boreholes up to maximum depth of 15 m and Ten (10) boreholes up to maximum depth of 20 m below NSL in overburden soil by straight rotary drilling method including backfilling of boreholes to their original position using cement-sand-bentonite mix. Minimum permissible diameter of borehole is 115 mm for straight rotary method for soil strata.	L.M.	950		
A2	Performance of Standard Penetration Tests (SPTs) in boreholes in soils generally at 1 m interval along with collection of SPT samples, including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	890		
A3	Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labeling, packing, storage & transportation to an approved testing laboratory.	No.	60		
A4	Collection of water samples from borehole (if encountered) including their labeling, packing, storage & transportation to an approved testing laboratory.	No.	30		
A5	Factual Geotechnical Investigation Report	LUMPSUM			
	Sub-Total A =				
1. Mobilization and demobilization of at least four (04) straight rotary drilling rigs along with allied accessories at site including access to the site, setting-up and shifting from one investigation point to another is included in the scope of work. The equipment shall be adequate in quantity and performance to meet the time schedule.					
2. Establishment of coordinates and ground elevations of all the investigation points using total station / GPS is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.					
3. Preferred method of drilling will be straight rotary method. Percussion drilling will only be allowed in case of gravelly strata.					
4. All the disturbed/undisturbed soil/rock samples shall be stored and transported as per ASTM/BS or other relevant international standards. The area ratio and clearance ratio of the thin walled tube, should be in strict compliance with relevant ASTM standard.					
5. The Contractor shall arrange transport for Engineer's supervisory staff for site duties.					

**DETAILED ROUTE SURVEY & SUB-SOIL INVESTIGATIONS OF 500kV TRANSMISSION
LINE FROM SECL POWER PLANT (THAR COAL) TO MATIARI (APPROX. 210 km)
UNDER NTDC's OWN RESOURCES IN SINDH, PAKISTAN**

GEOTECHNICAL INVESTIGATIONS

BILL OF QUANTITIES

Sr. No.	Description	Unit	Qty.	Rate	Amount
				PKR	PKR
B.	LABORATORY TESTING				
B1	Sieve analysis	No.	230		
B2	Hydrometer analysis (with pretreatment)	No.	30		
B3	Liquid and plastic limits	No.	80		
B4	Bulk and dry density	No.	40		
B5	Consolidation with swell potential measurement	No.	20		
B6	Direct Shear (undisturbed samples)	No.	30		
B7	Unconfined Compression (on soil samples)	No.	30		
B8	Sulphate content (soil)	No.	30		
B9	Chloride content (soil)	No.	30		
B10	Organic matter content (soil)	No.	30		
B11	Complete chemical analysis of water samples i.e. TDS, SO ₄ , CL & pH	No.	30		
	Sub-Total B =				
	Total (A+B)=				
Name of Laboratory: _____					