

**REVIEW AND UPDATION OF FEASIBILITY STUDY, DETAILED ENGINEERING DESIGN, PREPARATION OF TENDER DOCUMENTS &
PC-1 OF BARA DAM MULTIPURPOSE PROJECT, DISTRICT KHYBER**

GEOTECHNICAL INVESTIGATIONS

BILL OF QUANTITIES

Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
A1	Mobilization and demobilization of at least Four(04) straight rotary drilling rigs alongwith all allied accessories and One (01) heavy percussion drilling rigs at site including setting and shifting of equipment, making access from one investigation point to another . The equipment should be sufficient, as per technical specifications, to meet the time schedule.	L.S.	Job		
A2	Execution of Seven (07) boreholes up to a maximum depth of 100m, One (01) boreholes up to a maximum depth of 85m, Five (05) boreholes up to a maximum depth of 75m, One (01) boreholes up to a maximum depth of 60m, Three (03) boreholes up to a maximum depth of 50m, Two (02) boreholes up to a maximum depth of 30m, Two (02) boreholes up to a maximum depth of 25m, at structures in overburden soils or rock below NSL by straight rotary / percussion drilling method including backfilling of boreholes to their original position with cement-sand and bentonite mix. Continuous core drilling (HQ and PQ size in general) in bedrock up to required depth below rock strike level preferably using triple tube core barrel including extraction, preservation of core samples in core boxes, waxing, packing , photography of rock cores and transportation of core samples to the laboratory.	L.M.	1480		
A3	Performance of Standard Penetration Tests (SPTs) in boreholes along with collection of SPT samples at 1.0 m interval in general, or as necessary in overburden soil, including collection of samples, labelling, packing, storage & transportation to an approved testing laboratory.	No.	150		
A4	Collection of relatively undisturbed soil samples from boreholes through Shelby/Denison/ Pitcher samplers, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	15		
A5	Performance of Packer Test (Water Pressure Test) at 5.0m interval in boreholes.	No.	200		
A6	Performance of Permeability Test in boreholes at various depths using constant/Falling Head method , as appropriate or as directed by the Engineer in Charge.	No.	15		
A7	Excavation of Fifteen (15) testpits (3m x3m) up to a maximum depth of 3.0 m in overburden soil or upto the bedrock which is to met earlier in the vicinity of project area, and performance of Field Density Tests at different horizons (2 at each test pit), as specific by the Engineer in charge, below top of ground including, and collection of composite bulk soil samples, undisturbed block samples (30cm x 30cm x 30cm) from testpits including their labelling, packing, storage & transportation to an approved laboratory and backfilling of pits to its original condition.	No.	15		
A8	Collection of composite bulk/borrow soil samples from borrowpits/quarry sites including their labelling, packing, storage & transportation to an approved laboratory.	No.	20		
A9	Collection of water samples (if encountered) from boreholes including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	15		
	Sub-Total A - Filed Work	Rs.			

Establishment of coordinates and ground elevations of all the boreholes & testpits using **TOTAL STATION** are included in the scope of work. The coordinates should be provided with reference to a permanent local bench mark.

All the undisturbed soil samples shall be stored and transported as per ASTM standards. The area and clearance ratios of the sampling tubes should be as per ASTM Standards.