

CONSULTANCY SERVICES FOR PREPARATION OF MASTER PLAN OF SEWERAGE SYSTEM OF TMA JHANG

**GEOTECHNICAL INVESTIGATIONS
BILL OF QUANTITIES**

Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
A.	FIELD INVESTIGATIONS				
A1	Mobilization and demobilization of atleast two (2) straight rotary/percussion drilling rigs and two (2) set of hand auger/light percusion drilling equipment alongwith allied accessories at site including setting-up and shifting from one investigation point to another. The equipment shall be adequate in quantity to meet the time schedule.	L.S.	Job		
A2	Execution of two (2) boreholes up to a maximum depth of 20 m and four (4) boreholes up to a maximum depth of 15 m at two locations of Disposal Stations by straight rotary/heavy percusion drilling method in overburden soils including backfilling of boreholes to their original position usisng cement-sand-bentonite slury.	L.M.	100		
A3	Execution of eleven (11) boreholes up to a maximum depth of 8 m and ten (10) boreholes up to a maximum depth of 10 m along the sewer line by hand auger/light percusion drilling method in overburden soils including backfilling of boreholes to their original position usisng cement-sand-bentonite slury.	L.M.	188		
A4	Performance of Standard Penetration Tests (SPTs) in boreholes along with collection of SPT samples at 1 m interval in general, or as necessary, including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	273		
A5	Collection of undistrubed soil samples from boreholes through Shelby/Pitcher/Denison samplers, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.	No.	15		
A6	Performance of field permeability tests in boreholes at various depths using constant head or falling head methods for soil column/flush bottom conditions, as appropariate.	No.	8		
A7	Collection of water samples (if encountered) from boreholes including their labelling, packing, storage & transportation to an approved testing laboratory.	No.	10		
	Sub-Total A	Rs.			

Establishment of coordinates and ground elevations of all the boreholes by **Total Station** are included in the scope of work. The coordinates should be provided with reference to a permanent local bench mark.

Prefered method of drilling will be straight rotary drilling method. Percussion boring will be allowed in case of gravelly/ hard strata.

All soil samples must be labelled, stored and transported as per ASTM. The area ratio and clearance ratio of the thin walled tube, should be in strict compliance with relevant ASTM standard.

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Sr. No.	Description	Unit	Qty.	Rate	Amount
B.	LABORATORY TESTING			(Rs.)	(Rs.)
B1	Sieve analysis	No.	50		
B2	Hydrometer analysis	No.	15		
B3	Liquid and plastic limits	No.	20		
B4	Bulk density & dry density	No.	15		
B5	Consolidation with Swell Potential Measurements	No.	5		
B6	Unconfined Compression	No.	10		
B7	Direct Shear	No.	10		
B8	Sulphate content of soil	No.	8		
B9	Chloride content of soil	No.	8		
B10	Organic matter content of soil	No.	8		
B11	Complete chemical analysis of water samples i/c TDS, Cl, SO4 & pH	No.	10		
Sub- Total B				Rs.	

Name of Laboratory:

Total (A+B)=

Rs.	
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