

**DHA MEDICAL CITY AT DHA PHASE-VIII, LAHORE  
(Main Hospital Building)**

**GEOTECHNICAL INVESTIGATIONS**

**BILL OF QUANTITIES**

| Sr. No. | Description  | Unit | Qty. | Rate | Amount |
|---------|--|------|------|------|--------|
| A.      | <b>FIELD INVESTIGATIONS</b>  |      |      |      |        |
| A1      | Mobilization and demobilization of atleast two (02) straight rotary drilling rigs 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 one (1) borehole up to a maximum depth of 40 m and four (4) boreholes up to a maximum depth of 35 m in overburben soils by straight rotary method including backfilling of boreholes to their original position using cement-sand-bentonite mix.  | L.M. | 180  |      |        |
| A3      | Performance of Standard Penetration Tests (SPTs) in boreholes generally at 1 m depth interval or as necessary along with collection of SPT samples, including their labelling, packing, storage & transportation to an approved testing laboratory.  | No.  | 165  |      |        |
| A4      | Collection of relatively undisturbed soil samples from boreholes through Denison/ Pitcher/ Shelby sampler, including their waxing, labelling, packing, storage & transportation to an approved testing laboratory.   | No.  | 15   |      |        |
| A5      | Excavation of five (5) testpits up to a maximum depth of 1.5 m in overburden soils including backfilling of pits to original condition.  | No.  | 7.5  |      |        |
| A6      | Performance of field density tests by sand replacement method in testpits generally @ 2 tests/pit at selected horizons, including determination of in-situ bulk and dry density and collection of small disturbed samples in moisture tins for moisture content determination in laboratory by oven drying method as well as labelling, packing, storage & transportation to an approved testing laboratory. | No.  | 10   |      |        |
| A7      | Collection of bulk soil samples (60 kg for sandy/clayey soils & 120 kg for gravelly soils) from testpits including their labeling, packing, storage & transportation to an approved testing laboratory.  | No.  | 5    |      |        |
| A8      | Collection of water samples (if encountered) from boreholes/augerholes including their labelling, packing, storage & transportation to an approved testing laboratory.   | No.  | 4    |      |        |
|         | <b>Sub-Total A =</b>   |      |      |      |        |

Establishment of coordinates and ground elevations of all the boreholes and test pits using total station is included in the scope of work. The coordinates should be provided with reference to a permanent bench mark established at site.

Preferred method of drilling is straight rotary drilling method. Percussion method will be allowed only if gravelly strata is encountered

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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|---|---|------|------|-------|--------|
|   |   |      |      | (Rs.) | (Rs.)  |
| <b>B.</b>                               | <b>LABORATORY TESTING</b>   |      |      |       |        |
| B1                                      | Sieve analysis  | No.  | 25   |       |        |
| B2                                      | Hydrometer Analysis   | No.  | 10   |       |        |
| B3                                      | Liquid and plastic limits   | No.  | 15   |       |        |
| B4                                      | Bulk density & dry density  | No.  | 15   |       |        |
| B5                                      | Consolidation with Swell Pressure Measurement                     | No.  | 6    |       |        |
| B6                                      | Unconfined compression (Soil samples)                             | No.  | 8    |       |        |
| B7                                      | Direct Shear Test   | No.  | 10   |       |        |
| B8                                      | Modified AASHTO Compaction  | No.  | 5    |       |        |
| B9                                      | 3-point soaked CBR  | No.  | 5    |       |        |
| B10                                     | Sulphate content of soil  | No.  | 4    |       |        |
| B11                                     | Chloride content of soil  | No.  | 4    |       |        |
| B12                                     | Organic matter content of soil                                    | No.  | 4    |       |        |
| B13                                     | Complete chemical analysis of water samples i/c TDS, Cl, SO4 & pH | No.  | 4    |       |        |
|   | <b>Sub-Total B =</b>  |      |      |       |        |
|   | <b>Total (A+B)=</b>   |      |      |       |        |
| <p><b>Name of Laboratory:</b> _____</p> |   |      |      |       |        |