STANDARD SPECIFICATIONS FOR CLASSIFICATION OF SOILS
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AA: SOIL CLASSIFICATION

1.0 SCOPE

This Specification covers classification of soil for earthwork in excavation and filling for site grading/various civil works like construction of roads, dyke wall, drains and various building structures etc. at Loni terminal as a part of Loni Revamping Project.

2.0 ORDINARY SOIL

2.1 Soft Soil/loose Soil

Generally any soil which yields to the ordinary application of pick and showel, or to phawara, rake or other ordinary digging implements such as:

- Sand, gravel, loam, clay, mud, black cotton soil.
- Vegetation or organic soil, turf, peats, soft shale or loose murrum.
- Mud concrete below ground level.
- Any mixture of soil below ground level.
2.2 Hard / Dense Soil

Generally any soil which requires the close application of picks or Jumpers or scarifier and rippers to loosen the same. Such as:

- Stiff heavy clay, hard shale or compact murrum requiring grafting tool and/or pick and shovel.
- Shingle and river or nallah bed boulders.
- Soling or roads, paths, etc and hard core.
- Macadam surface of any description (water bound, grouted tarmac, etc)
- Lime concrete, stone masonry in lime or cement mortar below ground level.
- Soft conglomerate.

3.0 SOFT ROCK

This is fissured / disintegrated rocky strata, boulders (volume less than 0.4 Cu.M and more than 0.028 Cu.M) and also which cannot be quarried/excavated by using above manual Tools but can be quarried/excavated manually by using crow bars is classified as soft rock. Soft rock shall include all kinds of stiff and stratified rock such as shales, laterite, hard conglomerate, lime stone, sand stone, and unreinforced cement concrete below ground level.
level. Soft rock may be quarried or split with crow bar or picks and can also be excavated by rippers, dozers and other mechanical equipment but without the aid of blasting. If required, light blasting may be resorted to for loosening the materials, but this will not any way entitle the material to be classified as "Hard Rock".

HARD ROCK

4.1 Hard Rock (Not Requiring Blasting)

This shall include all types of hard and compact rock having closely spaced fissures or joints on account of which blasting is not considered necessary.

BB: EXCAVATION

1.0 This specification covers in general the scope of excavation for this tender only which is categorically for various civil works carried out at Loni as a part of Loni revamping Project.

2.0 The excavation mainly has to be carried out in soft soil / top soil i.e. black cotton soil. The over burden top consisting of black cotton soil layer at Loni to a depth as specified at site by HPCL has to be removed to receive various onward material/structures as per specifications given further in this tender due to its
swelling properties.

3.0 The site will be handed over to contractor with tree stems up to 60cm ht approximately having girth 30 to 60 cm approximately, vegetation & bushes. Contractor shall visit the site to ascertain the nature of ground prior to bidding to accept all the responsibilities.

4.0 HPCL shall hand over the Bench Marks at site only. The proceeding activities for setting out of work like plotting grid points with Brick Pedestals on the land, fixing the center point for various works intended to be executed under this tender as per drawing with physical verification with existing structures for distances measurement purpose, setting out the co-ordinates for various works along with RL of main B.M. on brick pedestals etc to the satisfaction of EIC after stripping / clearing the ground for construction activity complete in all respect. All the survey equipments like Total Station Equipment for ascertaining the co-ordinates, reduced levels etc, skilled & qualified surveying manpower, recording & maintaining the measurement book, tools & tackles etc completely at contractor’s cost to the best satisfaction of HPCL.

5.0 The contractor shall provide at his own cost all the assistance that EIC may require for checking the
setting out of works. The contractor shall be solely responsible for the horizontal & vertical alignment, correctness of level, and correctness of every part of work and shall rectify any errors or imperfection therein on instruction of EIC.

6.0 Prior to commencing the excavation, requisite block ground levels of entire plot grid co-ordinate wise shall be taken by contractor at 5m intervals or as directed by EIC. The proper duly signed record for the same shall be maintained.

7.0 HPCL has carried out Soil Investigation Job through M/s Noble Geo Structs. The same shall be provided to successful bidder as guidance in execution of work which may be verified and used suitably at their cost and risk.

8.0 Excavation for various works shall be carried out once setting out of work by Contractor is approved by HPCL. Contractor shall excavate to remove till the specified depth as per Approved for Construction drawing prepared by Contractor and approved by HPCL. The same shall be confirmed by HPCL in writing to proceed further for refilling the excavated pit with murrum. The carting away and leveling of excavated black cotton earth shall be carried out as per specifications. To minimize / avoid side sloughing and
collapse sufficient side slope has to be maintained by Contractor. The excavation for side slope to avoid sloughing and collapse will not be entertained for payment. Any Royalty payment to be made towards excavation shall be made by the Contractor as quoted rates are deemed to include the same in accordance to Bombay Minor Minerals Extraction Rules 1955.

9.0 Soil strata received vide above shall be rolled thoroughly by 10T roller till 95% modified/standard proctor maximum laboratory dry density is attained for road/other works respectively as directed by EIC. There upon at corresponding co-ordinates at 5m interval or as directed by EIC, level shall be taken to ascertain the excavated height as instructed by EIC.

10.0 The Bench Mark pillars made by the Contractor should be made to sufficient size, depth and strength to withstand during the entire construction work for the purpose intended.

CC: MATERIAL FOR REPLACEMENT & FILLING (MURRUM)

1.0 This covers the specification for external borrowed earth material i.e. MURRUM for replacement of black cotton soil as directed by EIC. This specification supercedes the other clauses, terms elsewhere
mentioned for Murrum in this tender document.

2.0 Only Material considered suitable by HPCL shall be employed for the construction and that consider unsuitable shall be disposed of, as directed by Engineer-in-Charge, at contractors cost and no claim for compensation will be entertain.

3.0 The contractor shall submit samples to cover the best material available in around the vicinity to Engineer-in-Charge / HPCL along with the test reports certifying the criteria as per tender specification for following characteristic for all the samples done in a govt approved laboratory / test house like "PROGRESS HOUSE", 54, Mumbai-Pune Road, Shivajinagar, as guided by Engineer-in-Charge like COEP-Pune or any other govt. agencies preferably:

i) Mechanical analysis or grain size distribution as per IS: 2720 part IV.
ii) Liquid limit as per IS: 2720 part V
iii) Plastic limit as per IS: 2720 part V
iv) Moisture density relationship as per IS: 2720 part VII

4.0 The material (murrum) used for filling shall be free from boulders, lumps, tree roots, rubbish or any organic deleterious materials.
5.0 Material (murrum) approved by HPCL shall only be used for filling purpose.

6.0 Murrum having standard proctor laboratory maximum dry density less than 1.8 gm/cc shall not be used. The murrum shall have a Plasticity Index of 5-17 (medium Plastic) and not more than 20% Fines i.e., Clay.

7.0 Care shall be taken to see that waste material from murrum is disposed of in such a manner that there is no likely hood of its getting mixed with the material proposed to be used for filling.

8.0 The contractor has to make own approach and access roads in the borrow areas (Outside Plant Premises) and to the demarcated filling area (Inside Plant Premises).

9.0 All the royalty payments etc. as deemed admissible to statutory / govt. authorities will be paid by contractor for all the murrum brought for HPCL works.

Contractor shall not be permitted to bring murrum inside HPCL till the following documents are submitted to HPCL:

1. Proof of payment of royalty at prevalent rates as charged by maharashtra govt. at the time of execution.
2. Permission from applicable competent government authorities/district collector as per Bombay Minor Minerals Extraction rules 1955.

3. Obtaining NOC (no-objection certificate) from landowners of proposed site(s) where the murrum will be lifted. Extract 7/12 and village map of the proposed dump site shall be furnished to HPCL. The landowners may be state government, central government, public body, private individual/joint owners etc as applicable. Carting murrum from Gairon land is not allowed in Maharashtra.

It shall be the responsibility for the contractor to produce all such payments, documents to Engineer-in-Charge during submission of running bill. At the end of work no objection certificate from relevant authorities will be submitted to ensure that HPCL is kept free from all encumbrances.

10.0 Approved murrum material shall be spread in uniform layers not exceeding 20 cm in loose thickness and watered as per OMC.

11.0 After checking the moisture through moisture tester by calcium carbide method in field for OMC, the layers shall be thoroughly compacted by 10MT roller as approved by Engineer-in-Charge till 95% of
Modified proctor maximum laboratory dry density is achieved. Each layer shall be tested in field for density and accepted by HPCL subject to 95% of respective laboratory dry density being achieved. A minimum of 1 test per 100 sq. mt. of compacted area in field shall be conducted for dry density. Required equipments like Moisture Tester, Oven, Electronic weighing machine, proctor apparatus shall be supplied by Contractor.

12.0 Successive layers of filling and watering will not be permitted until the layer below has been compacted thoroughly to satisfy the requirements of the specifications. If the layer fails to meet the required density, it shall be reworked till the required density is achieved.

13.0 The filling shall be finished in conformity with alignment levels, cross section and dimension as shown in the drawing. Earth embankment shall be filled suitably on both sides to achieve the required compaction and this extra filling shall be dressed after compaction, in conformity with alignment, levels, cross section and dimensions as shown in the drawing. No extra payment shall be made in this regard.

14.0 The excavated black cotton soil and / or unusable debris from excavation shall be loaded, transported
outside HPCL Depot premises which are covered under the item for Disposal of earth.