



OGDCL PAKISTAN:  
OIL & GAS DEVELOPMENT  
COMPANY LIMITED

## KPD-TAY Compression Project (Phase-II)

**ISSUED FOR TENDER**

REV	DATE	DESCRIPTION	ORIG	CHKD	LE	QA	PM	LOCAL REPR.	PROJ. MAN
0	6-1-2022	ISSUED FOR TENDER	HB	MD	KM	MPM	MAS		
A	29-10-2021	ISSUED FOR REVIEW	HB	MD	KM	MPM	MAS		
REVISIONS			APPROVAL					CLIENT APPROVAL	



ENAR Petrotech Services (Pvt.) Limited ,  
7-B , Sector 7-A , Korangi Industrial Area ,  
Karachi Pakistan

TITLE:

### SPECIFICATION FOR EARTHWORK & EXCAVATION/ DEWATERING

PROJECT NO.  
14-0258

DOCUMENT NO:

**0258 – CA – 7001 – A**



**OGDC PAKISTAN**  
**KPT-TAY COMPRESSION PROJECT**  
**SPECIFICATION FOR EARTHWORK & EXCAVATION/**  
**DEWATERING**

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**1.0 CLEARING AND GRUBBING**

- 1.1 All trees, stumps, brush, roots, and any other vegetation, and debris from within all areas to be removed and disposed off. Remove all grass and roots of shrubs to a depth of at least six inches (15.24cm). Grub out tree roots larger than two inches (5.1cm) in diameter to a depth of at least 18 inches (45.7cm).
- 1.2 All trash and debris, such as stones, bricks, broken concrete, lumber, scrap metal, paper, and other refuse shall be removed.

**2.0 STRIPPING**

After completion of clearing and grubbing and before any construction work has begun, the existing top soil shall be removed from the areas designated.

- 2.1 The vegetation, topsoil and organic material, shall be stripped off. Stripping of topsoil material shall be accomplished with a grader or other shallow cutting excavator to avoid mixing of top soil with undesirable sub-soils, and shall refill the area so as to obtain the required FGL as indicated on drawings.
- 2.2 All ditches, distributaries, or drains passing through the site shall be diverted around the site and connected back into the ditch where it exits from the opposite side of the site. All depressions, including ditches, drains and distributaries shall be filled with soil of the same type as surrounding the depression.
- 2.3 All the area to be compacted and leveled.

**3.0 STAKE-OUT SURVEY**

The accuracy of survey work, reference points, stakes, etc. shall be maintained throughout. Damaged, destroyed or inaccessible reference points, bench marks or stakes shall be replaced.

All computations, survey notes and other records necessary to accomplish the work shall be kept neatly and made available till the completion of the work.



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**4.0 EXCAVATION**

- 4.1 Excavation is defined as the removal of earth, rock, gravel, shale, hard rock and any other materials encountered in securing the proper sub grades or proper elevation to receive Foundations, cut or fill as indicated on the drawings, as required by this specifications, or as directed. Excavation is also defined as the excavation for sewerage and drainage systems, drainage ditches, side slopes of cuts, and for structural of roads.
- 4.2 The sub grade level obtain from excavation for all foundations and structural of roads, shall be perfectly horizontal and firmly compacted with vibratory roller to achieve 95% max. dry density at optimum moisture content and tested as per modified AASHO.
- 4.3 Excavation shall extend to sufficient distance from walls and footings to allow for placing and removal of formwork.
- 4.4 All existing utility lines, and foundations, whether to be retained or to be removed, encountered within the area of operations, shall be protected.
- 4.5 Excavation shall be taken-down to the formation level shown on the drawing. If, the excavation goes down below the foundation level the part so excavated shall be filled with coarse-sand or mass concrete.
- 4.6 The following soil test shall be required. All tests shall be performed by an approved laboratory:
- a) Unconfined Compression Test.
  - b) Procter Test.
  - c) Grain Size Analysis.
  - d) Liquid Limit.
  - e) Plasticity Index (PI) etc.
  - f) Consolidation Test.



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**5.0 TESTING & INSPECTION**

**5.1 Inspection**

All compacted fill and backfill layers will be inspected by the OGDCL / OGDCL's Representative before any subsequent fill, backfill or any other item of work is placed thereon. The Contractor shall give the OGDCL / OGDCL's Representative (24) hours prior notice of such required inspection.

**5.2 Determination of Density**

Field density tests, laboratory compaction tests and other tests necessary for the control of the specified performance and material properties shall be required. The results of all tests shall be made available to the OGDCL / OGDCL's Representative within (48) hours of testing.

All testing shall be done in accordance with ASTM D-1557.

**5.3 Frequency of Testing**

The following is the minimum frequency of testing required.

- a) Site preparation, fills and excavations, one set of tests per 1500m<sup>2</sup> per 300mm layer.
- b) For buildings, tanks and structures one set of tests per 300m<sup>2</sup> or part thereof, i.e. no fewer than one test per layer per building, tank or structure.
- c) For service excavations all fills, one set of tests per 50m of trench.
- d) For road alignments, one set of tests per 50m of road.

The general requirement for testing frequency in a) above, may be offset against the testing carried out for b), c) and d) above.

Additional tests, at the Contractor's expense will be required if test results fail to comply with the specified requirements. .



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**6.0 SHORING/UPHOLDING VERTICAL FACES**

- 6.1 The term shoring means methods adopted shall be for upholding the sides of excavation to prevent caving-in and also for planking, sheet piling and strutting to excavation against the sides of adjoining heavy structures.
- 6.2 No claim for additional excavation, concrete or other supporting materials will be considered in this respect.

**7.0 FILL AND BACKFILL**

- 7.1 The backfilling/filling shall include loading, unloading, transporting, placing, stacking, spreading of earth, watering, rolling, ramming and compacting, etc., complete as specified herein.
- 7.2 Filling shall be approved selected material obtained from outside sources or from excavated material. It shall be predominantly granular material and free from slurry mud, organic or other unsuitable matter and capable of compaction by ordinary means. It is required to carry out various test of fill material. As such test shall be made at an approved laboratory. The material generally consist of non plastic light brow silty sand with clay content of less than 10%.
- 7.3 Filling in trenches and foundations shall be placed in 200mm layers and compacted at optimum moisture content by mechanical means or other approved means.
- 7.4 Filling around pipes and cables shall be carefully placed with fine material to cover the pipe or cable completely before the normal fill is placed.
- 7.5 Material for backfilling/filling shall be placed in layers not exceeding 150mm measured as compacted material and saturated with sufficient water and compacted to produce in-situ density not less than 95% of the maximum dry density at optimum moisture content, achieved in Test No. 15 of BS 1377: 1990.

**8.0 COMPACTION**

- 8.1 In order to ensure satisfactory compaction, it will be necessary to carry out, depending upon the type of material, particle size distribution tests, liquid limit, plastic limit and



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determination of organic contents tests, maximum and minimum density tests and determination of optimum moisture content for the fill material.

- 8.2 The method of compaction, namely type of compactor, type of roller, weight of roller and number of passes proposed by the Contractor of any particular fill material shall be subject to the approval of the OGDCL / OGDCL's Representative after the completion of satisfactory field test, subsequent to the laboratory analysis using the materials and equipment proposed to be used for the earthwork in conditions similar to those likely to be encountered during construction. The final selection of the soil moisture content, the thickness of layers, the type of compaction equipment and the number of passes shall be decided after these test, which shall be conducted at Contractor's expenses.
- 8.3 The adequate control of the fill and compacting operations shall be ensured by in-situ density tests. The density test shall be carried out as per BS 1377 or modified AASHO at a frequency of not less than one test per 100 ft<sup>2</sup>.
- 8.4 The exact thickness of layers and the method of placing and compacting the fill shall be determined by the field tests, but notwithstanding the results of these trials, fill shall not be placed in loose layers exceeding 200mm in thickness.
- 8.5 Before the start of fill & backfill, the sub-grade levels shall be compacted.

8.6 **Tolerances**

The stabilization of compacted backfill/fill surface shall be smooth and even and shall not vary more than 10mm in 3 meters from true profile and shall not be more than 12.5mm from true elevation.

9.0 **DISPOSAL OF SURPLUS MATERIAL**

- 9.1 All surplus excavated material not used in backfilling or leveling and grading work shall be disposed off within 10 kilometers lead measured along with the most direct route from boundary of the project.
- 9.2 All rubbish arising from the works and on completion of the works shall be cleared away and removed from the Site.



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10.0 **PUMPING, BAILING, DEWATERING AND DRAINING**

10.1 **Dewatering**

Arrangements shall be required for controlling the inflow of sub-soil water into the parts of the excavation being worked and during placing of concrete and other works therein and during entire construction work activities and for the collection and disposal of water from any source including dewatering of sub-soil water.

All such arrangements may include (but not limited to) the diversion channels, pipes, open jointed and gravel shrouded drains, open pumping, well point system, sheet piling and all such other recognized means.

The Contractor shall provide without any extra payment temporary pipelines or drain for the satisfactory disposal of this pumped water upto Nallah / Drain or manhole or disposal points as directed by OGDCL / OGDCL's Representative.