

# **TENDER DOCUMENT**

**TENDER NO: 08001/2018-2019/18286**

**NAME OF WORK: GEO-TECHNICAL INVESTIGATION FOR THE  
CONSTRUCTION OF FOOT OVERBRIDGE ACROSS TS CANAL FOR  
M/s. KERALA MINERALS AND METALS LIMITED, CHAVARA, KOLLAM**

ISSUED TO: .....

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**FACT ENGINEERING AND DESIGN ORGANISATION**

**UDYOGAMANDAL – 683 501, KOCHI,**

**KERALA**

Phone: Off: 0484 –25468759, Fax: 0484-2545215

E-mail: [hodconst@fedo.com@vsnl.com](mailto:hodconst@fedo.com@vsnl.com) Website: <http://www.fact.co.in>

Limited item rate, single stage single bid tenders in the prescribed forms and in sealed covers super scribed with the tender number and title of work are invited from experienced Contractors who have executed similar works and of sound financial standing, by the Deputy General Manager (Construction), FACT Engineering and Design Organization, Udyogamandal-683501, Kerala (phone 0484-2568759, email: hodconst@fedo.com) for the following work:

- |    |  |  |
|----|--|--|
| 1. | Tender number                          | : 08001/2018-2019/18286  |
| 2. | Title of work                          | : <b>Geotechnical Investigation for the Construction of Foot Overbridge Across TS Canal for M/S. Kerala Minerals And Metals Limited, Chavara, Kollam</b> |
| 3. | Earnest Money Deposit (EMD)            | : ₹2,000/-   |
| 4. | Period of Completion                   | : THREE WEEKS  |
| 5. | Fee for tender document(1 copy)        | : ₹ 500/   |
| 6. | Validity of tenders                    | : 2 Months   |
| 7. | Last date & time of receipt of tenders | : 02.08-2018 , 2.00 pm   |
| 8. | Date &time of opening of tenders       | : 02-08-2018 , 2.30 pm   |

Tender documents can be obtained from the Office of the undersigned during working hours on all working days between 25.07.2018 to 01.08.2018. The tender can also be downloaded from website: 1) [www.fact.co.in](http://www.fact.co.in) and 2) [www.eprocure.gov.in](http://www.eprocure.gov.in)

***In case tender document is downloaded from the web site, a DD towards tender fee for a value of Rs.500/- drawn from Scheduled Banks in favor of FEDO/FACT Ltd. Payable at Ernakulam shall be submitted along with the tender document.***

Note:

1. The right to accept the lowest or any other tender rests with FACT
2. Copy of GST Registration Certificate should be submitted along with the Tender Documents, if applicable.
3. The bidders shall comply with the prevailing statutory PF / ESI regulations for the employees engaged by him. All bidders shall indicate their PAN number and the "Master Data Required for Online Payments (RTGS/NEFT/Fund Transfer)
4. The bidders are requested to Deposit the Tender document in the Tender box provided inside Administrative Department of FEDO before the due date and time mentioned in NIT, if submitted directly by hand.
5. Interested bidders can visit and assess the site conditions.

Date: 25.07.2018

  
DEPUTY GENERAL MANAGER (CON)  
FEDO

## GENERAL CONDITIONS OF CONTRACT

**TENDER NO. 08001/2018-2019/18286**

**NAME OF WORK : GEO-TECHNICAL INVESTIGATION FOR THE  
CONSTRUCTION OF FOOT OVERBRIDGE ACROSS TS CANAL FOR  
M/s. KERALA MINERALS AND METALS LIMITED, CHAVARA, KOLLAM**

### 1.0 SCOPE OF WORK:

The Scope of Work comprise of conducting necessary geotechnical investigation works including field and laboratory tests at the location of the Foot Over Bridge. The specifications shall be read in conjunction with relevant clauses of the codes and standards. The bore holes are to be made on land on either side of the canal at the location of the proposed bridge piers.

The minimum outline scope of geo-technical investigation works shall be as follows:

- a) Drilling two bore holes through various soil strata up to a depth of 40 m or 3 m in to hard rock or 5m in to hard strata with Standard Penetration Test (SPT) N-value more than 50, whichever occurs earlier below the existing ground level and conducting SPT inside the bore holes as specified
- b) Collection of disturbed, undisturbed and ground water samples from the bore holes as specified for laboratory tests
- c) Conducting laboratory tests on soil and ground water samples to determine the physical, chemical and engineering properties in accordance with the requirements as specified
- d) Prepare a comprehensive interpretative report, including test procedure, analysis of test results, recommendations and conclusions

The investigations shall provide detailed information on the nature and properties of sub-soil strata, superficial deposits, ground water, physical and engineering

properties of sub-soil, chemical properties of sub-soil and ground water, etc. and recommendations for the design and construction of foundations for the bridge.

For details please refer the detailed specific requirement of work Doc No. 50192-12-DA-001 R0

## 2.0 THE CONTRACTOR TO INFORM HIMSELF:

The Contractor is supposed to have a clear idea of the nature of work, probable area of operation, working space, leads, restrictions, labour situation with respect to availability, working hours, wages, benefits, terms of services, Statutory obligations such as remittances towards ESI, PF, Methodology for obtaining permission/clearance etc. No claim on the grounds of ignorance of the above conditions or change in above conditions will be entertained by the Company at any stage. Additional information, if any, required may be collected from the Office of the DGM (Construction), FEDO, Udyogamandal.

## 3.0 RATES:

3.1 The accepted rates shall be for all operations as per specific requirement of work Doc. No. 50192-12-DA-001 R0 and Schedule of Items of Work and are inclusive of all labour charges such as daily wages, holiday wages, overtime wages, leave wages, canteen subsidy, bonus, retrenchment benefits, incidental charges, profits etc. and for fulfilling all statutory obligations such as remittances towards ESI, PF, etc. It shall also include elements of accident and medical expenses of labour, if required.

3.2 The rates shall be firm till the completion of the work including the extended period, if any, and no claims for revision of rates on any account shall be entertained. Also no claims due to any variation of individual quantities will be entertained. The contractor shall execute the work at agreed rates up to +/- 25% of the initial contract value, if required. The bidder shall strictly comply with the specification/conditions given in the specific requirement of work Doc. No. 50192-12-DA-001 R0 for carrying out the site work and submission of reports, drawings, floppy disks etc. in all respects and in full completion.

## 4.0 ISSUE OF DEPARTMENTAL MATERIALS

No materials will be issued by OWNER for this work.

## 5.0 EARNEST MONEY DEPOSIT & SECURITY DEPOSIT

5.1 Quotations shall be accompanied by an Earnest Money Deposit of Rs.2000/-. EMD shall be deposited in cash in the Finance Department of FACT or in the form of Demand Draft payable at FACT at Udyogamandal and the cash receipt to be attached with the tender. No interest shall be paid to the EMD remitted by the tenderer. EMD of unsuccessful bidders will be returned after acceptance of a tender is finally settled. Quotations not accompanied by EMD will be rejected.

- 5.2 The Security Deposit for the work will be 10% of the Contract Value. The Security Deposit shall be remitted immediately on receipt of the Letter of Intent/ Work Order in the form of Cash / DD in the Finance Department of FACT at Udyogamandal.

5.3 MAINTENANCE PERIOD AND REFUND OF SECURITY DEPOSIT

The Security Deposit will be released to the Contractor after One month from the date of approval/acceptance by our Engineer-in-charge of final drawings/reports submitted by the Contractor including completion of all requirements and fulfilling all obligations of the contractor and clearing dues if any.

6.0 TIME OF COMPLETION AND LIQUIDATED DAMAGES

- 6.1 The total period for completion of the work will be THREE WEEKS from the date of LOI.

- 6.2 If the works are delayed due to reasons attributable to FEDO / FACT or due to force majeure conditions, the contractor will be given suitable extension of time but, will not be eligible for any other claims or compensation.

- 6.3 If the work is delayed due to reasons attributable to the contractor, liquidated damage for delay will be recovered from the contractor at the rate of 0.5% (Half percent) of the Contract Value per week of delay, subject to a maximum of 7.5% of the Contract Value.

- 6.4 If in the opinion of the Engineer-in-Charge, the works are unduly delayed, FEDO / FACT will have the right to get such delayed items of work executed through any other agency of their choice at the risk and cost of the contractor.

8.0 PAYMENTS

Payment will be made after completion of work in all respects and taking over by FEDO/FACT, clearance of site, settlement of pending claims on account of labour employed by contractor and after deducting all payments already made, Liquidated Damage if any, Income Tax and any other amount due to FEDO/FACT etc.

9.0 EXTRA ITEMS

If any extra item of work is found necessary during the course of execution, the Contractor shall carry out such works also as per the instructions of the

Engineer-in-Charge. The rates for such items will be worked out in the following manner.

- i) Based on allied items in the Contract.
- ii) Based on FACT Schedule of Rates or latest revision if any, adding there to or deducting there from the tender variation or (iii) based on actuals if the rates cannot be arrived at in any of the above manner. In this case the actual cost of materials, labour, incidental charges plus a margin of 10% to overheads and profit will be paid to the Contractor. For working out rates on the basis of actuals the Contractor shall produce documentary evidence of various expenses incurred by him and details such as labour engaged, materials purchased, etc. shall be reported to Engineer-in-Charge as and when such expenditures occurred.

10. SAFETY AND SECURITY

The contractor shall strictly observe all safety precautions and security regulations of FACT and shall comply with the instructions of the Engineer-in-Charge or his deputies in this regard. (Please refer the Safety Code attached).

11. TERMS OF ENGAGING LABOUR

The contractor shall observe all statutory labour laws / regulations. Payment of daily wages, holiday wages, leave salary, bonus, retrenchment compensation, remittance of ESI, PF, etc. will be the responsibility of the Contractor. If any expense is incurred to FACT on the above accounts, the same shall be recovered from the contractor. The contractor shall maintain wage register, muster roll etc., required as per law.

- 11.1 "CONTRACTOR shall disburse wages to his workers only in the presence of duly authorised nominee of Owner (Principal Employer), who shall also certify the amounts paid as wages in such manner as may be prescribed as per Cl.21(2) of Contract Labour (Regulation & Abolition) Act 1970".

12. TECHNICAL SUPERVISOR

The Contractor shall appoint full time technical supervisors, as required and approved by the Engineer-in-Charge. He will be responsible for the proper conduct of the work. The instructions given to him or to any other authorised persons of the Contractor shall be considered as instructions given to the Contractor. The technical supervisor or an authorised agency shall be available at site during all working hours throughout the contract period to receive instructions from the department.

13. Materials, specifications of work, measurements and any other conditions not mentioned herein shall be as per relevant Indian Standards specifications, codes, regulations, laws etc., or as directed by the Engineer-in-Charge. Tests required

if any, before taking over of the work by FEDO / FACT shall be done by the Contractor at his cost.

14. Contractor shall make his own arrangements for taking electricity and water connections if required for the work.

15. GST

The GST Registration number of the Contractor (if applicable) and copy of GST Registration Certificate should be furnished along with the tender. Taxes and duties shall be paid only on submission of documentary evidence towards payment of taxes and filing of necessary returns for enabling FACT to take Input Tax Credit.

16. DISPUTES

In case of any disputes regarding rates for extra items and other claims, it shall be referred to the General Manager (FEDO) and his decision shall be final and binding on both parties.

17. In case of emergencies, the Contractor shall arrange work beyond the normal working hours as per instructions from the Engineer-in-Charge and no extra payment will be considered for such work.

18. The Contractor shall take care to see that none of the existing facilities, other Contractor's properties etc., is damaged due to carelessness on his part or on the part of his workers. If such damages occur the company will have the right to recover such damages from the Contractor.

19. The Contractor shall produce Income Tax Clearance Certificate, PAN and Sales Tax asked for. Clearance Certificate if

20. FEDO / FACT reserves the right to accept or reject any offer in whole or part without assigning any reasons. Incomplete or late bids are liable to be rejected.

21. The bidder shall furnish, if required, details of status of bidder, experience, current commitments, equipment available, etc.

22. Contractors shall use only calibrated test equipment/instruments for the works and that valid calibration/test certificates shall be available for all such instruments.

23. The Contractor shall enter his rate in both figures and words in his offer without fail.

24. The Contractor shall extend all facilities to FEDO staff for inspection/supervision /checking the works at all stages.

25. The Contractor shall sign on all the pages of documents and the tender shall be submitted to the DEPUTY GENERAL MANAGER (CONSTRUCTION), FEDO, UDYOGAMANDAL.

DEPUTY GENERAL MANAGER(CONSTRUCTION),  
FEDO, UDYOGAMANDAL

Signature of contractor :

Name :

Address :



<b>CIVIL DEPARTMENT</b>	<b>SPECIFIC REQUIREMENTS OF WORK</b>	<b>50192-12-DA-001 R0</b>
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**GEOTECHNICAL INVESTIGATION FOR THE CONSTRUCTION OF FOOT OVER  
BRIDGE ACROSS TS CANAL FOR M/s. KERALA MINERALS AND METALS  
LIMITED, CHAVARA, KOLLAM**

**1. INTRODUCTION**

M/s. Kerala Minerals and Metals Limited (KMML) is proposing to construct a Foot Over Bridge near the Mineral Separation Plant across TS Canal at Chavara, Kollam Dist. FACT Engineering and Design Organisation (FEDO), consultancy Division of the Fertilisers And Chemicals Travancore (FACT) Limited is the consultant for the proposed project.

A comprehensive geotechnical investigation as per the relevant Indian Standards and the technical specifications mentioned herewith is to be conducted at the proposed site for getting the sub soil data for the proper design of foundations for the bridge. Plan showing the tentative locations of soil investigation points are enclosed (50192-12-DG-00001). The actual location of field investigations shall be as per the site conditions at the time of execution and shall be approved by the Engineer in-charge.


This document defines the scope and minimum requirements for carrying out Geotechnical Investigations for the structure at the proposed location.

**2. PROJECT LOCATION**

The site for the proposed foot over bridge is located near the mineral separation plant of KMML, across TS Canal. The foot over bridge proposed is 3m wide and the clear height of the bridge above Highest Flood Level (HFL) would be around 6.5m

**3. SCOPE OF WORK**

The Scope of Work comprise of conducting necessary geotechnical investigation works including field and laboratory tests at the location of the Foot Over Bridge. The specifications shall be read in conjunction with relevant clauses of the codes and standards. The bore holes are to be made on land on either side of the canal at the location of the proposed bridge piers.

0	19/07/2018	First Issue	GSK	SUJITH	NKV
<b>REV</b>	<b>DATE</b>	<b>REVISION DESCRIPTION</b>	<b>PRPD</b>	<b>CHKD</b>	<b>APPRD</b>
<b>FACT ENGINEERING AND DESIGN ORGANISATION</b>					

The minimum outline scope of geo-technical investigation works shall be as follows:

- a) Drilling two bore holes through various soil strata up to a depth of 40 m or 3 m in to hard rock or 5m in to hard strata with Standard Penetration Test (SPT) N-value more than 50, whichever occurs earlier below the existing ground level and conducting SPT inside the bore holes as specified
- b) Collection of disturbed, undisturbed and ground water samples from the bore holes as specified for laboratory tests
- c) Conducting laboratory tests on soil and ground water samples to determine the physical, chemical and engineering properties in accordance with the requirements as specified
- d) Prepare a comprehensive interpretative report, including test procedure, analysis of test results, recommendations and conclusions

The investigations shall provide detailed information on the nature and properties of sub-soil strata, superficial deposits, ground water, physical and engineering properties of sub-soil, chemical properties of sub-soil and ground water, etc. and recommendations for the design and construction of foundations for the bridge.

#### **4. OTHER REQUIREMENTS**

The work shall be carried out by a duly qualified and experienced contractor specialized in Geotechnical Investigation works. The contractor shall provide properly qualified and experienced personnel, supervision, tools, equipment, services and each and every expense required to carry out a detailed Geotechnical Investigation.

The contractor shall verify the proposed test locations for the presence of any underground services and confirm the coordinates of bore holes locations and shall also obtain approval from the Engineer in-charge before proceeding with the field works. The horizontal and vertical reference datum shall be as per the Bench Mark at site for setting out bore holes and all drawings and data shall be referenced to the horizontal and vertical datum defined.

#### **5. SUBMISSION OF INVESTIGATION REPORT**

The contractor shall complete field and laboratory tests and submit the draft report for comments within 3 weeks from the date of LOI. Client / Consultant will review the

report and provide comments on the Draft Report and the final report incorporating the comments shall be submitted.

Reports shall be submitted as follows:

Draft Report for review: Three (3) copies.

Final report: Five (5) copies.

Electronic (Soft) copy: One (1) copy.

Report shall be prepared using MS office package and the drawings in Auto CAD.

## **6. GENERAL CONDITIONS/ INFORMATION TO BIDDERS**

- a. All tools/tackles/materials/ scaffolding/machinery/ manpower, all incidental items not specified but implied necessary for the successful completion of the work etc. shall be arranged by the Contractor.
- b. The schedule of items of work attached indicates the quantities of various items of work and the work shall be executed as per the detailed specification issued by manufacturer for each item of work.
- c. Tenderers are requested to visit the site to understand the nature of work and familiarize with the location. They should gather sufficient idea about the site conditions and constraints in executing the work before submitting their offer. The offers shall be, deemed to have been made with full knowledge of all features of the area as well as the procedures to be followed for executing the work.
- d. The contractor shall provide to the work force engaged by him and ensure the use of the following personnel protective equipment as found necessary and as directed by the engineer in-charge.
  - i. Safety Helmets conforming to IS-2925
  - ii. Safety Belts conforming to IS-3521
  - iii. Safety shoes conforming to IS-1989
  - iv. Eye, Ear & Face Protection devices conforming to IS-8520 and IS-8940, IS-5983
  - v. Hand & body protection devices conforming to IS-2573, IS-6994, IS-8807 & IS-8519
  - vi. Rubber gloves for electrical purposes conforming to IS-4770
  - vii. Industrial safety gloves (leather & cotton gloves) conforming to IS-6994
  - viii. Industrial and safety rubber knee boots conforming to IS- 5557

**TECHNICAL SPECIFICATIONS FOR CONDUCTING GEO-TECHNICAL  
INVESTIGATIONS****1.0 Scope**

These specifications cover certain guidelines for soil investigations for foundations. The work shall be carried out in accordance with these guide lines, the latest revision of Indian Standard Codes and as directed by the Engineer in charge wherever necessary.

**2.0 Codes and Standards**

The following standards in their latest revision shall be read in conjunction with and shall be part of this specification and in case of conflict the most stringent shall apply.

IS: 1892: Code of Practice for Subsurface Investigation for foundation

IS: 2131: Method for Standard Penetration Test for Soils

IS: 2132: Code of practice for thin walled tube sampling of soils

IS: 6935: Method of determination of water level in bore holes

IS: 2720 Method of test for soils

IS: 4078 Code of practice for indexing and storage of drill cores

IS: 4453 Code of practice for exploration by pits, trenches, drifts and shafts

IS: 4464 Code of practice for presentation of drilling information and core description in foundation investigation

IS: 5313 Guide for core drilling observations

IS: 1498 Classification and identification of soils for General Engineering purposes

**3.0 Field Investigations**

The field works shall include, but not limited to the following:

- a) Record the co-ordinates and ground elevations of bore holes
- b) Set-up, dismantle and remove rigs at specified locations
- c) Drilling bore holes to the depth specified at each location
- d) Taking representative disturbed and undisturbed soil samples in each bore holes at 1.5 m intervals and at every change in strata for laboratory testing
- e) Recording Standard Penetration Test (SPT) resistance values as specified
- f) Rotary drilling and coring in rock, wherever necessary
- g) Record and measure ground water elevations
- h) Identify the surface and sub surface strata such as vegetation, soil, rock, marshy land, etc.

- i) Plug the bore holes and clear the site and demobilize the equipment and personnel after completion of works

#### 4.0 Bore Holes

##### 4.1 Boring in Soil / Weathered Rock

Boring shall be carried out in accordance with the provisions of IS: 1892. The diameter of the bore holes shall be minimum of 150 MM. Uncased holes shall be permitted only up to a depth where the sides of the hole can stand unsupported. In case side fall is noticed, steps shall be taken immediately to stabilize the hole by using casing pipes or bentonite slurry as directed by the Engineer in charge. Rotary calyx drilling method shall be adopted for boring through various soil strata. Ground water level shall be properly recorded after the completion of boring operations and water samples shall be collected in suitable containers for tests. While boring below ground water table, water level in the bore holes shall always be maintained at or above the water table. Wherever in situ tests conducted and undisturbed samples are to be collected from the bore hole, care shall be taken to ensure that the bore hole is properly cleaned and free from foreign matters at the time of conducting these operations. If very hard stratum other than rock is met within the bore hole at depths shallower than specified coring may be resorted and the bore hole may be terminated after coring through the hard strata for sufficient depth as directed by the Engineer in charge.

On completion of bore holes, back filling shall be carried out with an approved material as and when directed by the Engineer in charge. Unless otherwise specified, the excavated soil shall be used for backfilling. The boring data shall be recorded in an approved format.

##### 4.2 Boring in Rock:

In hard rock strata, boring shall be done by Rotary Calyx core drilling using Nx size drill bit or as directed by the Engineer in charge. Tungsten carbide bit shall be used when the progress of drilling becomes very slow or when directed by the Engineer in charge. Core recovery shall be carefully recorded in an approved format. For obtaining good core recovery double tube core barrel shall be used. The entire length of core recovered shall be packed, labelled and preserved in standard core boxes.

#### 5.0 Standard Penetration Test

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The Standard Penetration Tests (SPT) shall be conducted at every 1.0 M intervals up to 10 M depth from ground level beyond which the test shall be conducted at every 1.5 M interval. The test shall be conducted as per IS: 2131 and the samples obtained in the split spoon sampler shall be labelled and preserved as disturbed representative samples for laboratory tests. The Standard Penetration Tests shall be discontinued when SPT N value is greater than 50 for 30 cm penetration excluding the seating drive and the number of blows and the corresponding penetration of the sampler shall be recorded.

### **6.0 Observation of Ground Water Level & collection of Water Samples**

The water level in the bore holes shall be determined as per IS: 6935 either during the boring operation or after completion of boring. For bore holes advanced with circulating water, sufficient time shall be allowed for the borehole water to stabilize near the ground water level. Ground water samples shall be collected in clean containers for laboratory tests. Borehole number, depth and date of collection of the sample shall be marked on the containers.

### **7.0 Soil Sampling**

#### **7.1 Undisturbed Samples**

Samplers for recovering undisturbed samples from the cohesive soils shall conform to IS: 2132. However use of samplers less than 75 mm diameter shall not be permitted. Undisturbed samples shall be collected from soft to very stiff cohesive soils and properly sealed. At least one undisturbed sample shall be obtained for every 2 m thickness of cohesive layers. Borehole number, depth of collection and sampling direction shall be marked on the sampler.

#### **7.2 Disturbed Samples**

Disturbed samples of sufficient quantity shall be collected at every 1.5 m intervals or change of stratum from the bore holes for classification and engineering property tests. Identification labels indicating depth, bore hole / trial pit number and visual classification shall be affixed on the containers.

### **8.0 Laboratory Tests**

Contractor shall perform necessary laboratory tests sufficient to classify the materials encountered in the Geotechnical Investigation and for the estimation of parameters

required for design and construction of foundations. All tests on soil, rock and ground water shall be done in an approved laboratory

Each test shall be identified by borehole number, sample number, sample elevation, sample description, test date, contract name and location.

Following minimum laboratory test shall be carried out on the samples depending on the nature of strata encountered at the Worksite.

- a) Atterbergs' limits
- b) Particle size distribution
- c) Bulk and dry density including moisture content
- d) Chemical tests to determine the pH value, carbonate, sulphate and chloride contents on subsoil.
- e) Chemical tests to determine the pH value, carbonate, sulphate and chloride contents on ground water.
- f) Uniaxial compression tests on rock samples.
- g) Consolidation (Oedometer) test on cohesive soils.
- h) Unconfined compression test on cohesive soils
- i) Tri-axial (drained) test on cohesive soils
- j) Shear box test on granular soils

All apparatus used for laboratory tests shall conform to the specifications laid down in the relevant Indian Standards. All testing procedure on soil and ground water samples shall be as per IS with proper records in standard format. The Client / Consultant representative have the right of access to the Contractors laboratory or any other laboratory where tests have been arranged to be carried out during the progress of investigation.

### **9.0 Reporting**

The final soil investigation report shall contain but not limited to the following:

- a) Brief description of the test procedure adopted
- b) Detailed bore logs, trial pit logs, sub-soil sections, laboratory and field test results both in tabular as well as in graphical form and a plot plan showing the locations and reduced levels of bore holes and other tests
- c) Sample calculations with reference to the formula used to evaluate the various parameters
- d) Summary of various soil parameters evaluated in a standard format
- e) Results obtained and their interpretation

- f) Recommendations for the type, depth, ultimate and safe bearing pressures and the probable settlement of foundations for the structure proposed
- g) In case of poor soil conditions at considerable depth from ground level, recommendations are to be made for ground treatment, if considered necessary, including type of treatment, methods recommended, depth of treatment and the expected bearing capacity and settlement after treatment.
- h) Pile foundations recommendations for the including the type of piles recommended and justification for the same, depth of piles, safe load capacity including vertical, uplift and lateral capacity for different diameter piles with negative skin friction, if any, and any other special precautions.
- i) Calculations for all foundation recommendations
- j) Aggressiveness of soil and ground water to reinforced concrete, steel and other building materials and remedial measures for the same.
- k) Suitability of soil as fill material.
- l) Any other information of special significance encountered during investigations and likely to have a bearing on the design and construction of foundations.



<b>CIVIL DEPARTMENT</b>	<b>SCHEDULE OF ITEMS OF WORK</b>	<b>CUSTOMER: M/s FEDO</b>			<b>50192-12-SW-001AR0</b>	
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<b>NAME OF WORK: GEO-TECHNICAL INVESTIGATION FOR FOOT OVER BRIDGE FOR M/s KMML</b>					<b>DATE: 20/07/2018</b>	
<b>Tender No: 08001/2018-2019/18286</b>						
SL. NO. (1)	DESCRIPTION OF ITEM (2)	UNIT (3)	QUANTITY (4)	RATE (Rs) (5)		AMOUNT(Rs) (6)
				FIG.	WORDS	

1	Mobilisation of drilling rigs and all accessories to the work site, setting up drilling rig and removal of the same after completion of work.	LS	1			
2	Drilling of 150 mm minimum diameter bore holes through soil and weathered rock including conducting Standard Penetration Tests and collection of disturbed samples for laboratory tests as specified. From GL up to 10.0 m depth.	M	20			
3	Drilling of 150 mm minimum diameter bore holes through soil and weathered rock including conducting Standard Penetration Tests and collection of disturbed samples for laboratory tests as specified. From 10 m to 20 m depth below GL	M	20			
4	Drilling of 150 mm minimum diameter bore holes through soil and weathered rock including conducting Standard Penetration Tests and collection of disturbed samples for laboratory tests as specified. From 20 m to 30 m depth below GL	M	20			
5	Drilling of 150 mm minimum diameter bore holes through soil and weathered rock including conducting Standard Penetration Tests and collection of disturbed samples for	M	20			

GSK	SUJITH	NKV	<b>FACT ENGINEERING AND DESIGN ORGANISATION</b>	 <b>FEDO</b>
<b>PREPARED</b>	<b>CHECKED</b>	<b>APPROVED</b>		

CIVIL DEPARTMENT	SCHEDULE OF ITEMS OF WORK				50192-12-SW-001AR0	
					PAGE 2 OF 3	
(1)	(2)	(3)	(4)	(5)		(6)
				FIG.	WORDS	

	laboratory tests as specified. From 30 m to 40 m depth below GL					
6	Drilling of 150 mm minimum diameter bore holes through soil and weathered rock including conducting Standard Penetration Tests and collection of disturbed samples for laboratory tests as specified. Above 40 m depth below GL	M	2			
7	Drilling through medium to hard rock / boulders using Rotary drilling with Nx size coring bits including recovery of core samples, preservation of core samples in standard core boxes, photograph and deliver to testing laboratory as specified.	M	10			
8	Determination of ground water level in the bore holes and collection of water samples as specified.	each	2			
9	Collection of undisturbed soil samples including sealing the sample tubes, handling, transportation, etc. complete.	each	4			
10	Laboratory Tests – Atterbergs' Limit	each	10			
11	Laboratory Tests – Particle size distribution Sieve Analysis	each	20			
12	Laboratory Tests – Particle size distribution Hydrometer Analysis	each	10			
13	Laboratory Tests – Specific gravity test	each	10			
14	Laboratory Tests – Bulk and Dry density	each	4			
15	Laboratory Tests – Natural moisture content	each	4			
16	Laboratory Tests – Chemical analysis of soil samples including determination of sulphate, chloride, carbonate, pH	each	6			

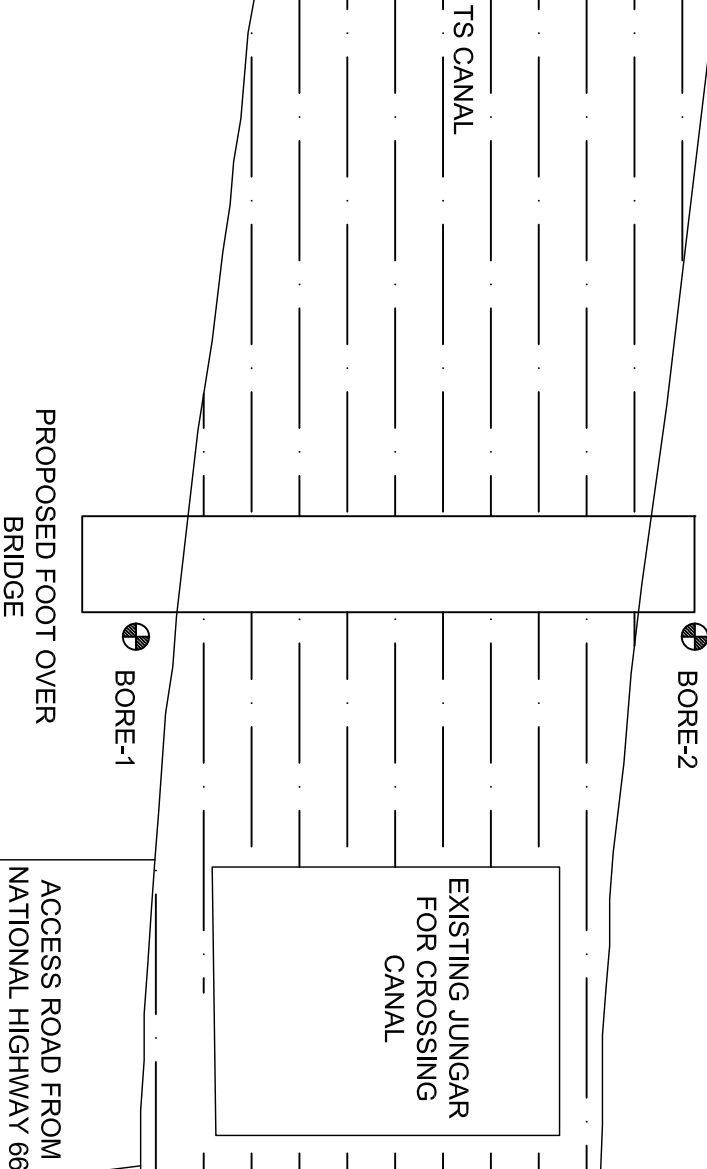
**FACT ENGINEERING AND DESIGN ORGANISATION**



<b>CIVIL DEPARTMENT</b>	<b>SCHEDULE OF ITEMS OF WORK</b>					<b>50192-12-SW-001AR0</b>
						<b>PAGE 3 OF 3</b>
(1)	(2)	(3)	(4)	(5)		(6)
				FIG.	WORDS	

	value, etc.					
17	Laboratory Tests – Chemical analysis of ground water samples including determination of sulphate, chloride, carbonate, pH value, etc.	each	2			
18	Laboratory Tests – Uniaxial Compression Test on rock core samples	each	4			
19	Laboratory Tests – Consolidation (Oedometer) Test	each	4			
20	Laboratory Tests – Unconfined compression Test	each	4			
21	Laboratory Tests – Tri-axial (drained) compression Test	each	4			
22	Laboratory Tests – Shear Box Test	each	4			
23	Submission of interpretive reports containing the testing methods, geology of the area, soil profile, laboratory test results, analysis and recommendations, etc as specified.	LS	1			
	<b>TOTAL AMOUNT</b>					
	% GST Applicable					

KMML MINERAL SEPARATION (MS) UNIT  
ENTRANCE



00FT005/97  
CLIENT M/s FEDO

DRAWING NO.	TITLE	NO	ZONE
	REFERENCE DRAWING		

NO	ZONE	PARTICULARS	REVISION	REV.	CHKD.	APPRD.	DATE

SCALE	NIS	DATE	CHECKED	DESIGNED	APPROVED
		20/07/2018	GSK	GSK	
			GSK	SUJITH	

**CIVIL ENGINEERING DEPARTMENT**

DRAWING FOR COMMENTS APPROVAL

FOR TENDER PURPOSE ONLY

PRELIMINARY ADVANCE COPY

GOOD FOR CONSTRUCTION

20/07/2018

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**FACT ENGINEERING & DESIGN ORGANISATION**  
THE FERTILISERS & CHEMICALS TRAVANCORE LTD  
UDHOOGAMANDAL, KERALA

PROJECT NAME: REPAIRING OF BR FOR FB AT MS UNIT, KMML PROJECT NO: 50192

TITLE: PROPOSED LOCATIONS OF BORE HOLES FOR GEO-TECHNICAL INVESTIGATIONS

SHEET 1 OF 1 DRG. No. 50192-12-DG-00001

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CONSTRUCTION DEPARTMENT	<b>SAFETY PRACTICES</b>	TENDER NO: 08001/2018- 2019/18286
		PAGE 1 OF 2

1. The Contractor shall observe all statutory and legal requirement by Central and State Governments applying to the work as well as local regulations applying to the site issued by Owner or any Authority.
2. Particular attention is drawn to the following
  - a) In case of accident, Owner's Safety Engineer/Engineer-in-charge shall be informed in writing within 24 hours of the accident. The Contractor shall strictly follow regulations laid by Factory Inspector and Government authorities in this regard.
  - b) Fencing all Contractor's plant, platforms, excavations etc.
  - c) Compliance with all Electricity regulations.
  - d) Compliance with statutory requirements for inspection and test of all lifting appliances and auxiliary lifting gear.
3. Staircases, doors or gangways must not be obstructed in any way that will interfere with means of access or escape.
4. The Contractor shall notify Owner of his intention to bring on site any equipment or container holding liquid or gaseous fuel or other substances which might create a hazard. The OWNER will have the right to prohibit the use of such equipments or to prescribe the conditions under which such equipment may be used.
5. Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the Contractor shall be responsible for carrying out such provisions and/or storage in accordance with the rules and regulations laid down in petroleum and Carbide of Calcium Manual published by the Chief Inspector of Explosives of India. All such storage shall have the prior approval of the OWNER. In case approvals are required from Chief Inspector of Explosives or any statutory authorities, the Contractor shall be responsible for obtaining the same.
6. The Contractor shall be responsible for the safe storage and use of any radiographic sources or those of his Sub-contractor.
7. 'Work Permit' in the prescribed proforma shall be obtained from OWNER's Safety Engineer/Engineer-in-charge before carrying out any work within the project premises in the following situations:
  - a) Any work involving open flames and sparks such as welding, gas cutting, soldering, grinding etc.
  - b) Sand blasting
  - c) Entry in to hazardous and potentially hazardous areas
8. Good house keeping must be practiced by Contractor's personnel at all times within the project area.

9. For the safe execution of certain works, personal protective safety devices as stipulated by Safety codes/Safety Engineer shall be provided and maintained by the Contractor.
10. Any unsafe work practice /working conditions during execution of work shall be corrected immediately on bringing the same to the attention of Contractor by OWNER'S Safety Engineer.
11. Contractor shall strictly adhere to safe traffic practices within project area with respect to speed limit, parking of vehicles etc.
12. Electrical Safety Regulations
  - 12.1 In no circumstances the Contractor will interfere with fuses and electrical equipments belonging to the OWNER or other Contractors.
  - 12.2 Before the Contractor connects any electrical appliances to any plug or sockets belonging to the OWNER or other Contractors he will,
    - a) Satisfy OWNER/Engineer-in-charge that the appliance is in good condition.
    - b) Inform the OWNER/Engineer-in-charge of the maximum current rating, voltage and phase of the appliance.
    - c) Obtain permission from OWNER/Engineer-in-charge for taking power connection from the specified point.
  - 12.3 Permission for power connection will not be granted until OWNER/Engineer-in-charge is satisfied that the appliance is in good working condition and proper earthing connection is provided.
  - 12.4 No electric cable in use by the OWNER/other Contractor will be disturbed with out prior permission. No weight of any description will be imposed on any such cable and no ladder or similar equipment will rest against or attached to it.
  - 12.5 No work must be carried out on any live equipment. The equipment must be made safe and a 'WORK PERMIT' issued by engineer-in-charge before any work is carried out.
  - 12.6 Contractor shall employ a full time electrician to maintain the temporary electrical installation of the Contractor.
  - 12.7 Contractor shall follow Safety procedure issued by OWNER at the time of commencement of work and updated from time to time.
13. Contractor shall have arrangements to transport his workmen for medical attention in the event of an accident at work site

**THE FERTILISERS AND CHEMICALS TRAVANCORE LIMITED**

**VENDOR DATA FORM (FOR FACT NEW VENDORS)**

<b>Sl. No.</b>	<b>Description</b>	<b>To be filled in by Vendor</b>
	<b>Company Profile</b>	
1	Name of Vendor	
2	Name and address of Chief Executive	
3	Address:	a: Regd. Office
		b: Factory
4	PIN Code	
5	Telephone Nos	
6	Tele Tax Nos	
7	E mail ID	
8	Contact Person	
9	Details of Local Office/ Representatives/ Liaison Agents	
10	PAN No	
11	GST Registration No.	
12	Bank Details (Payment will be made through RTGS. Please Upload the Format verified by Bank along with a cancelled Cheque)	

(New Vendors please upload this format duly filled along with Cover.1 Technical Bid of the offer)

**Master Data required for Online Payments  
(RTGS / NEFT / Fund Transfer)**

To

The Deputy General Manager (Finance)  
The Fertilizers and Chemicals Travancore LTD  
Udyogamandal  
Kerala  
(Attach a cancelled Cheque leaf)

1	Vendor Code, Name	
2	Income Tax PAN No	
3	Name of the Bank	
4	Address of bank branch	
5	City & State	
6	IFS Code of the bank branch	
7	Name of the bank branch	
8	Bank Account No.	
9	Account Holder's Name	
10	Email address	

For Name

Signature & Seal

**Verification by the Bank**

We hereby certify that all the above particulars relating to Bank Account are verified and found to be correct as per the records of the bank.

Signature and Seal of the Authorized signatory of the bank

(New Vendors please upload this format duly filled along with Cover.1 Technical Bid of the offer)