



OIL INDIA LIMITED

DULIAJAN-786 602, Assam, (India)

TENDER DOCUMENT

For

**Design, Engineering, Procurement, Fabrication, Supply,
Construction and Commissioning on LSTK Basis of One
No. Central Gas Gathering Station & Off Take Point at
Madhuban and One No. Field Gathering Station at
Chabua, Assam, India**

BOOK-II

SOIL INVESTIGATION REPORT

TENDER NO. OIL/CCO/PDNG/GLOBAL/215/2008



Saipem Triune Engineering Pvt. Ltd.

NEW DELHI

INDIA

**REPORT ON
SOIL TESTING WORK**

**: NAME OF PROJECT :
CONSTRUCTION OF FGGS FOR OIL INDIA LIMITED , DULIAJAN
AT CHABUA**

**: FIELD TESTING AGENCY :
M/S RELIANT ENGINEERS , SIXMILE , GUWAHATI**

**:GEOTECHNICAL CONSULTANT :
M/S ECON DESIGN & PROJECT SERVICES PVT. LTD**

**: CHIEF CONSULTANT :
M/S SAIPEM TRIUNE ENGINEERING PVT LTD**

**: OWNER :
OIL INDIA LTD, DULIAJAN**



SOIL TESTING WORK
FOR

CONSTRUCTION OF FGGS FOR OIL INDIA LIMITED , DULIAJAN

AT CHABUA

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SUMMARY SHEET

1. Name of Project : Construction of FGGS for Oil India Limited , Duliajan
2. Location : Chabua
3. Field testing agency : M/S Reliant Engineers , Sixmile , Guwahati
4. Geotechnical consultant : M/S ECON Design & Project Services Pvt. Ltd
5. **Chief Consultant : M/S SAIPEM TRIUNE ENGINEERING PVT LTD**
6. Owner : OIL INDIA LTD, DULIAJAN
7. Number of Borehole: Five
8. Depth of Borehole: 30.0M.
9. Foundation recommended: Footing foundation/Pile foundation
10. Concluding remarks : From the borlog profile it is observed that all the five boreholes show the presence of similar type of soil layers.

At BH1, BH3, BH4, BH5 Soil upto a depth of 2.0m is loose to medium silt/ silty clay with sand. From 2.0M to 30 M it is medium to very dense fine to medium SAND. Safe bearing capacity of soil is calculated for footing foundation at depths 2.0, 2.5 and 3.0 M for different sizes of footing. It is shown in Table1.

Minimum N value observed at 3.0 M depth is 21. Since $N > 15$, according to Cl 6.3.5.2 (page 14) of IS 1893-2002 the sand is not susceptible to liquefaction.

At BH2, upto 3.5 m soil is silty clayey type. Safe bearing capacity of footing foundation at this location is calculated separately and shown in Table2.

Since the soil is predominantly sand uniform dia bored cat in situ RCC Pile may be used for higher loading. Safe load carrying capacity of Pile is shown in table3



A. Footing foundation.**BH1,BH3,BH4,BH5****Table 1. Net safe bearing capacity : FOS=3**

Depth from EGL (m)	Width of Foundation (m)	Safe bearing capacity shear criteria (tonne/metre ²)	Safe bearing pressure (Settlement criteria) (tonne/metre ²)	Allowable bearing capacity (tonne/metre ²)
2.0	2.0	32.9	25.0	25.0
	3.0	33.9	22.0	22.0
	4.0	35.6	22.0	22.0
	5.0	37.5	22.0	22.0
2.5	2.0	41.4	28.0	28.0
	3.0	41.5	28.0	28.0
	4.0	41.9	28.0	28.0
	5.0	44.1	27.0	27.0
3.0	2.0	52.4	28.0	28.0
	3.0	51.0	28.0	28.0
	4.0	50.0	28.0	28.0
	5.0	52.0	28.0	28.0

Table 2.

Location	Depth of Foundation Below EGL (M)	Bearing capacity (ton / sqm)			
		Widh of Foundation in M			
		2	3	4	5
BH2 C=0.1 kg/sqcm Ø= 8deg	2	3.0	3.0	3.0	3.0
BH2 C=0.18 kg/sqcm Ø= 17 deg	2.5	9.6	9.2	9.1	9.1
	3.0	10.4	10.1	9.9	9.8
BH1 BH3 BH4, BH5 C=0.0 kg/sqcm Ø= 32 deg	2	25	22	22	22
	2.5	28	28	28	27
	3.0	28	28	28	28



A3

Pile Foundation:

Table 3. Safe Load carrying capacity of bored cast in situ uniform dia RCC pile

Pile stem Dia (cm)	Length of Pile from E.G.L. (m)	Pile Cutoff Length (m)	Recommended Safe Load Carrying Capacity (tonne)	
			Compression	Uplift
30	8.0	1	10.86	5.5
40		1	18.88	7.3
50		1	31.19	9.2
30	10.0	1	15.29	9.1
40		1	24.91	12.1
50		1	38.4	15.2

Lateral 9.

E.G.L: Existing Ground level.



