Muck Disposal Plan

M/S GAIL – LMC from GAIL (SV-11) to HPCL CGD CGS Station

1. General

An excavation is defined as any man-made cut, cavity, trench or depression in an earth surface formed by earth removal. Specifically, trench excavations are a narrow excavation, in relation to its length, made below the ground surface. Generally, depth is greater than width. Trench excavations to install utility pipelines require Unearthing the earth which is not a natural process. Earth-moving equipment such as graders, loaders, excavators and backhoes are used to move and remove earth in order to install precious pipeline infrastructure.

2. Quantity of Muck Generated

A soil that contains at least 50% organic matter that is well decomposed. The soil is proposed to be excavated along the following routes. Figure 1 shows the DGPS map of the proposed line along forest area.

Figure 1 Proposed Pipelines along Forest Area

26/05/22
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Table 1 Proposed pipeline section falling in Forest area

No.	Name of the Forest Land	Forest Length Mtr.	Width Mtr.	Forest Land in Sqmt.	Forest Land in Ha.	Name of District
R1	Lal Fatak Road Mathura to Bareilly Uttar Pradesh	16	1	16	0.0016	Bareilly
R2		300	1	300	0.03	Bareilly
	(A) Total [DFO - Raebareli]	**316**		**316**	**0.0316**	

Soil Strata along the route in Bareilly is found to be Sandy, Clayey & Sandy Clay in nature.

The dimensions for calculating the quantity of excavation are:

- Trench Width = 1 m
- Pipeline Diameter = 4" (0.1016 m)
- OFC Diameter = 40mm (0.04 m)
- Trench Depth = 1.2 m
- Length of Proposed Pipeline falling in Forest Area = 316 m

The trench width for laying the proposed pipeline is 1 m. Trench Depth shall be 1.2 m and the total length of the proposed pipeline is 316 m Pipeline dia. is 4" & OFC Cable dia. is 40mm. Figure 2 shows the details of trench to be excavated.

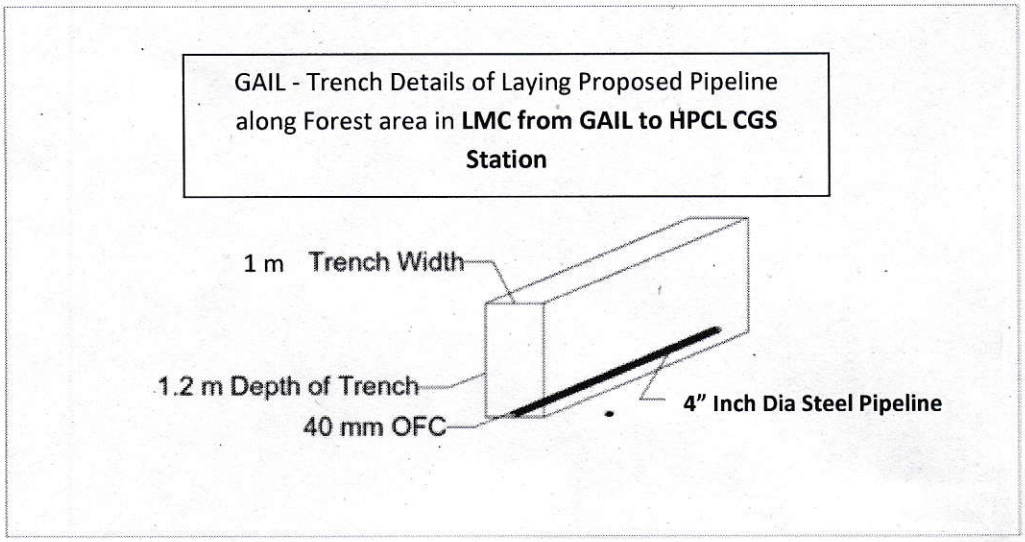

Figure 2 Trench Details

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Total volume of the excavated soil is: length x width x height

Therefore, Total Volume of excavated soil (V) = L X B X H

V= 316 X 1 X 1.2

V= 379.2 m^3.

Total Volume of pipeline is $\pi \times r^2 \times L$ i.e. $3.14 \times 0.1016^2 \times 316$. The total volume of pipeline is **10.24 m^3.**

Volume of Pipeline: $\pi r^2 L$

$V1 = 3.14 \times 0.1016^2 \times 316$

$V1 =$ **10.24 m^3.**

Total Volume of OFC Line is $\pi \times r^2 \times L$ i.e. $3.14 \times 0.02^2 \times 316$.

Volume of OFC Line: $\pi r^2 L$

$V2 = 3.14 \times 0.02^2 \times 316$

$V2 =$ **0.396 m^3.**

As can be seen in the soil strata table, the soil is suitable for backfilling. The amount of soil displaced due to the pipeline and OFC comes out as:

Volume of Soil directly utilized in backfilling,

V = Total Volume of Soil Excavated – Volume of Pipeline – Volume of OFC

Therefore, V = 379.2 – 10.24 – 0.396 = 368.564 m^3

V = **368.564 m^3**

This amount is equal to 97% of the total excavated soil and the remaining 3% soil shall also be incorporated into the same trench by compacting the top layer.

3. Selection of Muck Disposal Site

The soil strata shows that the excavated material is suitable for backfilling. Based on the volume of soil excavated, 97% is directly utilized in filling the trench. The remaining 3% of soil shall be compacted while filling the trench over a stretch of 316 m along with the already filled soil. Hence, no separate disposal site is required for the excavated material.

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