

**Attachment-7**  
**Muck Disposal Plan**

**Project Name:** - Forest Land Diversion proposal for "Improvement and Up-gradation to 4-lane configuration of Meerut-Nazibabad section of NH-119 between Km 39.165 (Ex. Km. 39+240) to Km 78.635 (Ex. Km. 86+590) in the state of Uttar Pradesh".

**Proposal No.:** FP/UP/ROAD/43253/2019

**Introduction**

The Muck often considered as waste material generated from tunnelling, cutting of hill, deep excavation etc. Based on the geological nature of the rocks and engineering properties of the soil, a part or full of the excavated material will be used as construction material / filling material in road work.

Construction package-II of this project road for which Forest Land Diversion Proposal is uploaded has a total length 39.470 km and it is a brown field alignment with bypasses having PRoW 60 meter and embankment height (in general) 2.00 to 2.5 meter located on plane terrain. Any deep cutting/ Hill cutting/ tunnelling other than construction of cross drainage, bridges are NOT proposed and to raise the height of embankment additional earth material is required. Keeping in view of road work, small quantity of excavated material (ordinary earth) will be generated from foundation work of, bridges/ cross drainages as well as Clearing & Grubbing. Excavated material generated from these construction sites will be utilized in filling/raising of Embankment of project road.

In this entire section of project road, significant quantity of muck will NOT be generated, and any dedicate site for disposal of these excavated material is not required as excavated material which is mainly ordinary earth material and will be re-utilized in filling of embankment.

**Component wise quantification of excavated material and it utilization**

Excavated Material Generation			Utilization of excavated Material	
SL	Project Component	Excavated Material - Generation Quantity (cum)	Project Component	Excavated Material -Utilization Quantity (cum)
1	Major Bridge	10,092.04	Raising of Embankment upto FRL and filling in realignment and bypass portion.	1,703.18
2	Minor Bridge	14212.99	-	5,099.29
3	Box Bridge	37,909.88	-	-
4	ROB		-	-
5	RUB		-	-
6	Pipe Culvert	3,533.62	-	-
7	Box Culvert	52,201.30	-	-
8	VUP	22,715.50	-	12,17,208.49
9	Miscellaneous ROAD work (Earthen Drain, Boundary Stone Fixing, Clearing & Grubbing)	105,839.87	-	1,17,194.90
	<b>Total</b>	<b>2,32,292.21</b>		<b>13,41,205.86</b>
	<b>Balance Quantity for Disposal (without swell)</b>	2,32,292.21 cum - 13,41,205.86 cum = (-) 11,08,913.65 cum		

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factor)

Total quantity of excavated material is 2,32,292.21 Cum.

Soil in project area i.e district Meerut, Muzaffarnagar & Bijnor is of loamy textured soil which has swell factor 15-25%)

Add Swell factor 20% (average) for Earth material

So, Bank material is  $100\%/100 = 1$

Loose Material = Bank Material + Swell

Or

Loose =  $1 + (20/100) = 1.20$

Total Material to be disposed/utilized considering swell factor =  $2,32,292.21 \times 1.20 = 2,78,750.66 \text{ Cum}$

### Disposal/Utilization of Excavated Material

As detailed, above total quantity of excavated material is 2,32,292.21 cum (with Swell factor it will be 2,78,750.66 cum). However, ordinary earth material required for raising / filling of embankment is 13,41,205.86 cum.

**2,32,292.21 (generated quantity) - 13,41,205.86 (required quantity) = (-)11,08,913.65 cum**

From the above figure of cutting and filling quantity it is established that required quantity of filling material (ordinary earth) is more than 5 time of generated quantity (Muck) so all the generated Muck will be utilized in project and no separate disposal of these excavated material is required as all the excavated material will be re-utilized in project road for raising of embankment upto FRL.

SL	Particulars	Remarks
1	Calculation of muck to be generated. Swell factor to be applied.	Total quantity of excavated material 2,32,292.21 Cum. Soil in project area i.e district Meerut, Muzaffarnagar & Bijnor is of loam textured soil which has swell factor 15-25 %) Add swell factor 20% (average) for Earth material So, Bank material is $100\%/100 = 1$ Loose Material = Bank Material + Swell Or Loose = $1 + (20/100) = 1.20$ Total excavated material considering swell factor = Meerut, Muzaffarnagar & Bijnor $\times 1.20 = 2,78,750.66 \text{ Cum}$  Note- Component wise quantification is given in above table.
2.	Quantity of muck to be utilized in the project activities	A total 2,32,292.21 Cum, excavated material will be generated and it will be fully utilized in project.
3.	Balance quantity of muck which requires disposal/ management plan.	No muck is generated so its disposal is not required. However, excavated material / ordinary earth will be generated which is detailed above.  Total quantity of Excavated Material = 2,32,292.21 Cum. Total requirement of filling ordinary earth material - 13,41,205.86 Cum. Balance quantity of muck for disposal= (-)11,08,913.65 cum. That means disposal of excavated material is not required as utilization quantity is much more than generation quantity.
4	Carriage of muck from the muck generation site to the dumping site.	As per contract condition generated/excavated will be disposed by contractor at their own cost which is included in civil cost. Also, as stated above, the generated quantity of muck will be utilized in

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		embankment of project road.
5.	Ownership of land and the consent of land owners in case muck disposal is proposed on non-forest land.	Excavated quantity will be utilized in Embankment of project road which is in jurisdiction & under control of NHAI-PIU Meerut.
6	Photograph & carrying capacity of proposed dumping site (Muck disposal site)	Carrying capacity of proposed site is much more than required disposal quantity (2,32,292.21 Cum). Length of project road for which Forest Land Diversion Proposal is uploaded 39470-meter X width 60-meter X Average height 2.0 meter= Total estimated capacity <b>47,36,400 Cum.</b>
7	Development of dumping site- construction of retaining walls and other structure as per requirement of the site. The objective is to completely stop rolling down of the muck.	No dumping site required to be constructed for disposal of Excavated Material, as it will be re-utilized in embankment of project road.
8	Rehabilitation of dumping site like leveling, planting of grass, shrubs and tree species.	Not applicable, due to above mentioned reason in column no. 7.

*Note: - Cost to be incurred on the above activities has to be given component wise. Details of dumping site including length, width and height of structures to be erected must be mentioned. - included under civil cost. Undertaking by user agency has to be given to the effect that:*

- 1. Muck management plan will be implemented by user agency and in case of non-implementation of plan; they will be liable to penalty / action at their cost- **Agreed***
- 2. The proposed dumping site is located away from river/ stream/ Nala.-**Yes ( within PRow)***

Date: - **10/10/2022**

Place: - Meerut

  
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