

**Muck Disposal Plan for Additional ROW requirement for Development of
Two Bridges located at Km- 2+250 to Km- 3+450 and Km- 10+100 to Km-
10+560 of Chenani - Sudhmahadev Road (NH- 244)**

1. Brief History

National Highways & Infrastructure Development Corporation Ltd. (NHIDCL) a PSU under Ministry of Road Transport and Highways, Govt. of India has been entrusted with the working of widening and up-gradation to 2 lane with paved shoulder configuration and geometric improvement on Chenani - Sudhmahadev Section of NH- 244 in the UT of Jammu & Kashmir.

There is requirement of realignment in the geometry as per the required geometry of NH specifications at two sections of alignment portion of this project road i.e. from Km- 2+250 to Km- 3+450 and from Km- 10+100 to Km- 10+560 where additional land is required to pass through forest area.

2. Muck Disposal Plan

Muck disposal for construction of road, tunnels and other components like catch dams, avalanches protection work etc. would be generated. The excavation shall result in large quantity of excavated material i.e. muck which have to be evacuated, disposed of and roller compacted or laid on mild slopes with the excavation work to such designed areas where the muck piles do not substantially interfere with either environment / ecology or the river flow regime and do not cause turbidity impairing the quality of water. The disposal of muck has to be scientifically planned keeping in view the economic aspects necessitating nearness to the muck generating component of work, which understandably reduce the travel time of dumpers, less interference to surface flow and ground water aquifer and disposition of habitation.

Based on the quantities of surface and underground excavation a muck management plan, therefore, has been formulated to manage the disposal of muck and restore such areas from further degradation of the environment. During construction of the project, huge quantities of excavation will be carried out from the tunneling and surface components and shall be dumped in designated areas to provide stable slopes. The quantity of muck to be disposed has been worked out on the basis of 25% swell factor.

3. Quantity of Muck disposal and its reuse


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Muck Disposal Plan for Muck Dumping Site- 1

Approximately **60,000 cum** of muck has to be disposed off for the proposed additional ROW requirement for realignment the project road i.e. from Km- 2+250 to Km- 3+450. In this quantity of muck approx **28,000 cum** of muck will be used for embankment filling and aising the level of the abutment and wings wall of the bridge and rest approx **32,000 cum** of muck will be disposed off at **Muck Point- 1** for which an area of **1.33 Ha.** has been proposed. Gabion wall structure will be constructed at the border of proposed muck dumping site so that it cannot be spread in other areas.



Muck Disposal Plan for Muck Dumping Site- 2

Approximately **50,000 cum** of muck has to be disposed off for the proposed additional ROW requirement for realignment the project road i.e. from Km- 10+100 to 10+560. In this quantity of muck approx **20,000 cum** of muck will be used for embankment filling and raising the level of the abutment and wings wall of the bridge and rest approx **30,000 cum** of muck will be disposed off at **Muck Point- 2** for which an area of **1.10 Ha.** has been proposed. Gabion wall structure will be constructed at the border of proposed muck dumping site so that it cannot be spread in other areas.

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4. Implementation of Engineering Measures At Muck Disposal Site

It has been observed that after disposal of muck, it creates problem as it is susceptible to scattering unless the muck disposal yards are supported with engineering measures such as gabions. All the dumping sites need proper handling to avoid spilling of muck into the river water while dumping and in the post dumping stages. All the muck disposal sites have to be developed from the ground level either by providing stone masonry or by gabion structure. The costing of engineering measures has been worked out based on gabion structure. In all the muck dump sites, the muck brought in dumpers shall be dumped and manually spread behind the crates and roller compacted in such a manner that rock mass is properly stacked behind the crates with minimum of voids.

5. Implementation of Biological Measures at Muck Disposal Site

Biological measures, however require special efforts as the muck disposal yards will in general be devoid of nutrients and soil contents to support vegetation. The selection of soil for spreading over such an area would require nutrient profiling of soil for different base elements. Suitable admixture of nutrients would be done before placing the soil on the top surface of muck disposal areas to have administrated growth of forest canopy.

6. Plantation Technique

In view of the peculiar site conditions particularly the soil conditions, the planting technique for all the categories of plants must be very site specific and suited to the stress conditions as

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anticipated and discussed above. The planting substrates would need to be considerably improved to support the plants in their initial stages of establishment. The moisture retention capability, availability of nutrients and soil aeration, permeability and porosity would require intervention and assistance.

Multistore and multipurpose plantations are proposed to be raised on the muck dumping sites as also in roadside strips using grasses, shrubs and bushes in the under story and trees in the upper story. Nursery raised grass slips, seedlings of the shrubs and bushes and tree species would be planted in the combined with grass sowing in patches. In addition, cutting of bushes and shrubs can also be planted to supplement the nursery raised stock, but this would substitute requirement of raising the nursery of these species. Intimate mixture of species would be avoided right at the planning stage and would be strictly followed during planting. Each patch should contain maximum of two species. Grasses would be mixed by groups in rows, shrubs and bushes by group again in rows.

Grass slip planting and grass seed sowing would be done in strips at 0.10 m x 0.10 m spacing in the prepared staggered patches of 1 m x 0.5 m with a depth of 0.30 m. Soil mixture would be used while filling the patches. Balance dug up soil/muck will be stacked along the patch on the downhill side for rainwater tapping and enhanced percolation in the patch. Number of such patches in each hectare is proposed at 350.

Shrubs and bushes would be planted in elongated strips of 1.5 m x 0.5 m with a depth of 0.45 m. Soil mixture would be used while filling the patches. Balance dug up soil/muck will be stacked along the patch on the downhill side for water tapping and better percolation in the patch. These would be staggered throughout the area number 500 per hectare. Each patch would have two rows of planting with staggered spacing between plants in a row as 15 cm distance between rows as 15 cm.

Plantation of trees would be done in contour staggered pits of 45 x 45 x 45 cm size numbering 800 plants per hectare.



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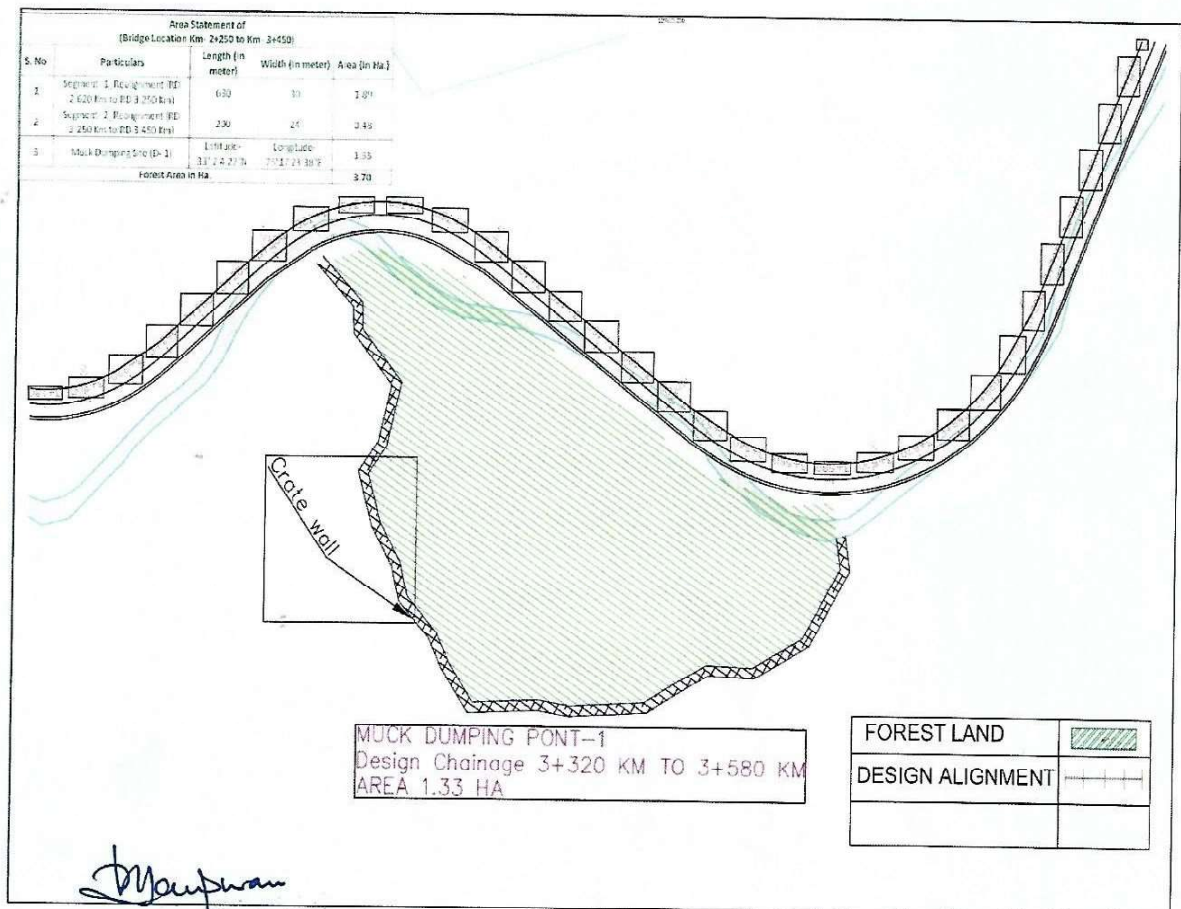
7. Species of Plantation

Afforestation with suitable plant species of high ecological and economical value and adaptable to local conditions will be undertaken in accordance with canopy cover requirement.

8. Estimated Cost For Muck Management


The estimated cost of these measures would be **Rs. 76,55,484.20 Lacs** approx. The break up is for Engineering measures **Rs. 65,52,152.20 Lacs** (details are attached as Annexure- I) and for Biological measures **Rs. 11,03,332 Lacs** (details are attached as Annexure- II) is required. This cost includes the cost of turfing of slopes, preparation of ground, spreading of manure etc., providing 5 cm soil cover and transportation and carriage. It also includes the suitable engineer structure like Breast wall and Gabion Wall, Cost of fencing, irrigation, watch and ward etc.

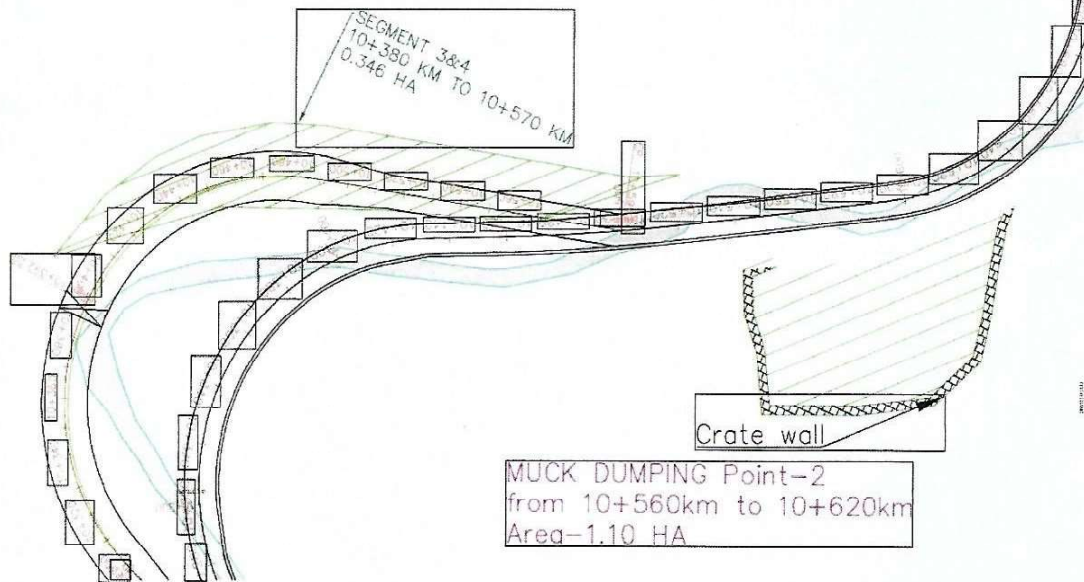
Typical Plan for Muck Dumping site



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Area Statement of (Bridge Location Km- 10+100 to Km- 10+560)				
4	Segment- 3, Realignment (RD 10.380 Km to RD 10.430 Km)	50	30	0.15
5	Segment- 4, Realignment (RD 10.430 Km to RD 10.570 Km)	140	14	0.196
6	Muck Dumping Site (D- 2)	Latitude- 33° 2'44 30"N	Longitude- 75°19'20.30"E	1.10
Forest Area in Ha.				1.446
Total Area Required for Forest Diversion (In Ha.)				5.146

FOREST LAND	
DESIGN ALIGNMENT	



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