



Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report and providing pre-construction service in respect of 2 Laning with paved shoulder of Yaingangpokpi-Shakvao Section on NH 202 on Engineering Procurement and Construction mode in the state of Manipur

MUCK DISPOSAL PLAN (PACKAGE-I)



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MUCK DISPOSAL PLAN

1.1 GENERAL

NHIDCL has evinced interest for taking up improvement to road from Yaingangpokpi (0.000 km) to Hungpung (43.129 km) in the State of Manipur. The road stretch totally lies in hilly terrain expect for start chainage of 1.300 km plain terrain is encountered. The condition of the road is bad and the improvement scheme will require major correction in geometries besides widening of the formation width. This will require some earthwork. The proposed project would involve a number of activities leading to production of large quantities of muck. Even though some of the muck will be utilized for back filling, yet some quantity of the excavated material will need to be relocated and dumped in such a manner that it does not impose any negative impact on the environment.

1.2 QUANTITY OF MUCK GENERATED AND ITS CONSUMPTIVE USE

During construction of the various components of the project, muck is generated both from soil or slide material and from rock excavation. Total quantity of muck / debris, generated due to the project, shall be 9,68,374.89 cum which shall amount to 13,08,181.69 cum with swell factor. Out of the total muck generated, 4,51,023.66 cum shall be utilized on project work leaving 857,158.03 cum to be dumped with 20% compaction at designated sites. The muck shall be properly rolled, compacted and dumped on slopes and treated to mix and match with the surrounding environment with least change in landscape.

Table 1: GENERATED MUCK

Sl	Item	Muck Quantity as per Estimate	Quantity with swelling factor	Swelling factor considered
1	Earth work in excavation			
	A Rock	210,590.83	350,984.72	40%
	b Soil	717,897.73	957,196.97	25%
2	Scarification of existing road	-	-	25%
3	Dismantling of Culverts/Bridges/Structures			
	a Concrete	1321.448	1651.81	25%

b	Stone masonry	780.464	975.58	25%
c	Brick	4370.88	5463.6	25%

Considering swelling/ bulkage factor, the total quantity to be disposed of would be as described below. Considerable quantities of muck can be reused for the project.

Table 2: USEABLE MUCK

Sl	Item		Muck Quantity with swelling factor	Reusable Quantity	Balance Quantity for disposal
1	Earth work in excavation				
	a	Rock	350,984.72	346,579.72	4,405.00
	b	Soil	957,196.97	104,443.94	852,753.03
2	Scarification of existing road				
3	Dismantling of Culverts/Bridges/Structures				
	a	Concrete	1651.81		1651.81
	b	Stone masonry	975.58		975.58
	c	Brick	5463.6		5463.6

1.3 SELECTION OF MUCK DISPOSAL SITE

The selection of muck disposal sites was carried out considering the quantity of the muck, landscape, cost effectiveness, nearness to source of generation, absence of ground and surface water, relief and scope for afforestation works. All the dumping locations shall be well supported at base and at higher elevation by suitable retaining structures. Subsequently all the spoil tips (muck disposal sites) will be developed by taking up plantation through biotechnological methods to generate a thick forest canopy over them. Twenty (20) muck dumping sites have been identified matching the criteria. The details of dumping sites along with their total capacity and amount of muck to be disposed are enumerated in **Table 3**.

Table 3: AREA OF DISPOSAL

Muck Site	Total Muck Quantity (m ³)	Chainage (km)		Muck Disposal (m ³)	Avg Height	SIDE	Muck Disposal Hectare (m ²)	Perimeter (m)	Centroid/Mid-Point (Degrees Minutes Seconds)	Bounding Box Maximum (Degrees Minutes Seconds)	Bounding Box Minimum (Degrees Minutes Seconds)	Length of Gabion Wall	Site Assessment	Distance from Water Bodies
		From	To											
MUCK 1	857,158.03	2.830	3.400	268,507.33	10	Left	2.60	1,325	24°55'47.3072", 094°08'55.0953"	24°55'51.9564", 094°09'04.0019"	24°55'39.7242", 094°08'48.2487"	883.78	Existing Road	0
MUCK 2A		3.500	4.000	113,599.26	10	Left	1.10	460	24°55'51.6659", 094°09'23.1179"	24°55'53.2485", 094°09'26.0223"	24°55'50.1982", 094°09'19.4848"	306.82	Existing Road	0
MUCK 2B		3.500	4.000	299,488.95	10	Left	2.90	727	24°55'46.8333", 094°09'15.2221"	24°55'49.7705", 094°09'20.0643"	24°55'44.0758", 094°09'10.6602"	484.91	Existing Road	0
MUCK 3		4.650	5.150	175,562.49	10	Left	1.70	1,543	24°56'14.8676", 094°09'22.1578"	24°56'25.1444", 094°09'31.2676"	24°56'08.8733", 094°09'13.8752"	1029.18	Existing Road	0
MUCK 4	2,094,220.80	17.950	18.280	316,434.46	10	Left	3.30	1,187.00	24°58'52.2495", 094°13'36.5582"	24°58'55.3271", 094°13'45.5891"	24°58'47.3475", 094°13'27.5601"	791.73	Existing Road	224
MUCK 5		18.45	18.850	345,201.23	10	Left	3.60	995	24°59'08.9866", 094°13'41.1520"	24°59'15.3148", 094°13'44.0016"	24°59'00.7930", 094°13'38.7815"	663.67	Existing Road	220
MUCK 6		19.900	19.180	345,201.23	10	Left	3.60	826	24°59'19.0504", 094°13'48.9999"	24°59'22.0739", 094°13'54.5908"	24°59'15.0316", 094°13'44.5414"	550.94	Existing Road	0
MUCK 7		19.58	19.93	1,054,781.54	10	Left	11.00	1,487	24°59'30.7702", 094°13'59.5484"	24°59'39.3022", 094°14'06.4731"	24°59'22.6617", 094°13'52.3042"	991.83	Existing Road	240
MUCK 8		19.93	20.02	32,602.34	10	Left	0.34	321	24°59'32.6055", 094°14'08.0318"	24°59'33.3728", 094°14'09.9128"	24°59'30.9454", 094°14'05.8887"	214.11	Existing Road	0
MUCK 9	501871.755	20.130	20.680	120,820.98	9	Left	1.30	1,143	24°59'34.0607", 094°14'21.9755"	24°59'38.9296", 094°14'29.4985"	24°59'31.0447", 094°14'13.0905"	762.38	Existing Road	0
MUCK 10		21.370	21.505	148,702.74	9	Left	1.60	539	24°59'47.6269", 094°14'37.4703"	24°59'50.3014", 094°14'41.6258"	24°59'44.9442", 094°14'35.0000"	359.51	Existing Road	0
MUCK 11		22.81	23.60	232,348.03	9	Left	2.50	1,592	24°59'36.0793", 094°15'14.8403"	24°59'39.8310", 094°15'23.4466"	24°59'31.9233", 094°15'04.9889"	1,061.86	Existing Road	0
MUCK 12	286700.905	24.950	25.550	33,309.65	2	Left	1.40	1,249	24°59'59.4451", 094°15'53.1048"	25°00'05.3427", 094°16'01.5236"	24°59'54.6571", 094°15'44.1854"	833.08	Existing Road	0
MUCK 13		25.800	25.950	17,844.45	2	Left	0.75	344	25°00'11.3034", 094°16'08.9518"	25°00'12.8399", 094°16'10.7338"	25°00'09.7952", 094°16'06.7576"	229.45	Existing Road	0
MUCK 14		28.340	28.390	23,792.61	2	Left	1.00	393	25°00'51.5775", 094°17'16.3354"	25°00'53.7898", 094°17'18.4094"	25°00'49.4179", 094°17'14.1002"	262.13	Cart Track	0
MUCK 15		31.540	32.550	211,754.20	2	Left	8.90	2,464.00	25°01'07.0664", 094°18'58.8958"	25°01'21.3888", 094°19'07.7946"	25°00'47.4122", 094°18'51.9739"	1,643.49	Existing Road	76
MUCK 16	793,203.95	35.400	36.200	486,628.19	5	Left	10.00	1,667	25°02'08.8717", 094°19'04.0045"	25°02'17.2453", 094°19'16.8020"	25°02'01.9481", 094°18'54.3924"	1,111.89	Existing Road & Cart Track	240
MUCK 17		39.000	39.500	102,191.92	5	Left	2.10	1,106	25°02'49.2619", 094°19'51.4337"	25°02'54.4840", 094°19'56.9760"	25°02'41.0258", 094°19'47.7452"	737.70	Existing Road	0
MUCK 18		39.700	39.910	77,860.51	5	Left	1.60	625	25°03'03.2622", 094°19'57.7930"	25°03'06.7403", 094°19'59.8749"	25°02'59.4683", 094°19'55.7201"	416.88	Existing Road	57
MUCK 19		41.830	42.010	126,523.33	5	Left	2.60	857	25°03'53.5524", 094°20'14.3876"	25°03'58.3746", 094°20'17.4777"	25°03'48.6449", 094°20'09.1094"	571.62	Existing Road	130

1.4 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.

1.5 IMPLEMENTATION OF BIOLOGICAL MEASURES AT MUCK DISPOSAL SITE

Biological measures, however, require special efforts as the disposed muck will 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 mixture of nutrients would be done before placing the soil on the top surface of muck disposal areas to have administered growth of forest canopy.

1.5.1 PLANTATION TECHNIQUE

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

Multi-level and multipurpose plantations are proposed to be raised on the muck dumping sites as also in road side strips using grasses, shrubs and bushes in the under story and trees in the upper story. Nursery raised grass slips, seedlings of shrubs & bushes and tree species would be planted in the area combined with grass sowing in patches. In addition, cuttings 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. 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.

Shrubs and bushes would be planted in elongated strips of 1.5 m x 0.5 m with a depth of 0.45m. Soil mixture would be used while filling the patches. Each patch would have two rows of planting. Planting of trees would be done in pits of 0.60 m x 0.60 m x 0.60 m size. Soil mixture would be used while filling the pits. Balance dug up soil/ muck will be stacked on downhill side of the pit for trapping the rain water and allowing it to percolate in the pit.

It is proposed to use soil mixture in the pits & patches consisting of soil imported from nearby areas mixed with compost or vermin-compost manually. The ratio for the mix would be 5 parts: Compost/manure 2 parts: Sand 2 part: and humus or vermin compost 1 part. This will make nutrients available for the plants in the preliminary stages and also help increase soil aeration, porosity & permeability and improved moisture available for the plants.

The stabilization sites from the time of execution of biological measures would be protected with barbed wire fencing on 2m high RCC posts and provided with inspection paths. Since the muck dumping sites are being provided with the wire crate (gabion) wall on the valley side (towards river) which is not negotiable by animals and human beings, fencing would not be required along the entire perimeter. Hence, it would be done on the vulnerable sections i.e. towards the hillside only.

The plantations under biological measures would be maintained for a period of 3 years by watering the plantation during dry seasons, mortality replacement and repair of fencing & inspection paths within the area. The task of irrigation would be performed by the watchmen provided in the cost estimate.

The proposed costs include raising plants, grass seedlings and also for mortality replacement. Although the sites would be either levelled or finished in a grade, yet due to rain and sliding etc., they tend to develop rills and gully. As such, while carrying out plantation; suitable soil conservation measures would also be taken.

1.5.2 SPECIES FOR PLANTATION

Afforestation with suitable plant species of high ecological and economic value and adaptable to local conditions will be undertaken in accordance with canopy cover requirement. Some plant species have been suggested in the Table 4. The selection of plant species, propagation and cultivation technique would be done in coordination with the institutes like State Forest Research Institute, Itanagar; Rajiv Gandhi University, Itanagar and North-Eastern Regional Institute of Science and Technology, Nirjuli.

Table 4: Suggested Species for Plantation

Sl. No.	Name of species	Family
1.	Abies densa	Pinaceae
2.	Achyranthes aspera	Amaranthaceae
3.	Alangium alpinum	Alangianaceae
4.	Alnus nepalensis	Betulaceae
5.	Aristolochia griffithii	Aristolochiaceae
6.	Berberis aristrata	Berberidaceae
7.	Betula alnoides	Betulaceae
8.	Daphnae papyracea	Thymelaeaceae
9.	Lyonia ovalifolia	Ericaceae
10.	Pinus roxburghi	Pinaceae
11.	Pinus wallichiana	Pinaceae
12.	Populus sp.	Salicaceae
13.	Rhododendron campanulatum	Ericaceae
14.	Rhododendron cinnabarium	Ericaceae
15.	Salix sp.	Salicaceae
16.	Tsuga dumosa	Pinaceae
17.	Zanthoxylum armatum	Rutaceae

1.6 FINANCIAL OUTLAY

The Muck Disposal Plan will be part of the Environmental Management Plan. The best possible effort will be made to utilize the excavated material in the construction of embankment and the other auxiliaries. However the remaining portion of Excavated material has to be dumped in selected dumping site.

The costs for the proposed scheme comprise of capital investments, annual recurring and maintenance costs. Annual recurring costs include purchase of seed, manure, salary and wages, and miscellaneous expenditure. The unit costs are used to determine total cost. Recurring costs are determined based on annual basis. The details of estimated cost are given in Table below.

Table 5: Financial Outlay

Muck Site	Item Description	Length of Gabion Wall	Unit	Amount
Height 2m	Gabion Wall Construction	2968.15	cum	30724804.87
Height 5 m	Gabion Wall Construction	2838.09	cum	95482145.68

Muck Site	Item Description	Length of Gabion Wall	Unit	Amount
Height 9 m	Gabion Wall Construction	2183.76	cum	156743959.84
Height 10 m	Gabion Wall Construction	5916.96	cum	527986612.32
Total				810937522.71
Contingencies				24328125.68
Grand Total Amount				835265648.39

Table 6: Total financial outlay for the biological measures at dumping sites

Sl. No.	Description of Work	Rate (per tree as SoR for Plantation and its maintenance for 5 years)	Quantity	Total Cost (in Rupees)
1	Site Clearance	6.7	0	0
2	Distance of Site	2.5	0	0
3	Pit Digging (0.60x0.60x0.60 m)=0.216 cum	20.9	258760	5408084
4	Mauare or Vermi Compost	10	258760	2587600
5	Transportation of Fertile soil	6.1	258760	1578436
6	Single Super Phosphate	3.3	258760	853908
7	Mutriate of Potash	4.5	258760	1164420
8	Neem Cake	4	258760	1035040
9	Thimet, Foret or Chloropyrifos	1.5	258760	388140
10	Cost of Plant	36	258760	9315360
11	Soil mixing, pit filling, plantation, irrigation and gap filling	10.7	258760	2768732
12	Bamboo tree Guard (sieve size-70.5 cmx70.5 cm height 2.0 m and width 0.45 m)	260	258760	67277600
13	Live Fencing	10.7	258760	2768732
14	GI Wire for tying plant	2	258760	517520
15	Plant Protection chemicals	10	258760	2587600
16	DAP as top dressing	3	258760	776280
17	MoP as top dressing	1.1	258760	284636
18	Urea as top dressing	0.8	258760	207008
19	Complete supervision (Irrigation, weeding, hoeing, chemical spraying)	170.5	258760	44118580
20	Irrigation facility (Rickshaw with 200 L tank, 50 ft pipe 0.75 inch)	16	258760	4140160
21	Miscellaneous (Temporary shed at site(2), pots for 6-8 L water (1100), etc.)	61.7	258760	15965492
22	Total Expenditure in Second Year		258760	

Sl. No.	Description of Work	Rate (per tree as SoR for Plantation and its maintenance for 5 years)	Quantity	Total Cost (in Rupees)
23	20% gap filling	10	258760	2587600
24	Expenditure on Fertilizer	10	258760	2587600
25	Expenditure on Plant protection	10	258760	2587600
26	Irrigation facility (Arrangement of rickshaw)	2.5	258760	646900
27	Complete supervision (Irrigation, weeding, hoeing, chemical spraying)	185.5	258760	47999980
28	Total Expenditure in Third Year		258760	
29	10% gap filling	5	258760	1293800
30	Expenditure on Fertilizer	10	258760	2587600
31	Expenditure on Plant protection	10	258760	2587600
32	Irrigation facility (Arrangement of rickshaw)	2.5	258760	646900
33	Complete supervision (Irrigation, weeding, hoeing, chemical spraying)	185.5	258760	47999980
34	Total Expenditure in Fourth Year		258760	
35	Expenditure on Fertilizer and plant protection	10	258760	2587600
36	Complete supervision (Irrigation, weeding, hoeing, chemical spraying)	185.5	258760	47999980
37	Total Expenditure in Fifth Year		258760	
38	Expenditure on Fertilizer and plant protection	10	258760	2587600
39	Complete supervision (Irrigation, weeding, hoeing, chemical spraying)	185.5	258760	47999980
40	Total		258760	376444048
41	Contingency @ 3%			11293321
42	Grand Total			38,77,37,369

1.7 MONITORING & COMPLIANCES

Muck shall be dumped from bottom in layers of 50-70 cm depending on size of boulders.

- i) Each layer shall be rolled compacted.
- ii) A layer of soil shall be spread on top of it to make it suitable for plantation.
- iii) Water testing facilities shall be set up for checking quality parameter of water.
- iv) Soil samples shall be regularly collected and tested for checking the level of contamination.

- v) v) Prescribed norms and approvals will be sought from MSPCB wherever necessary.
- vi) All norms of Forest department, MSPCB and MoEF and their acts related to muck disposal shall be complied with.
- vii) Design consultant shall be engaged for designing of retaining structures.
- viii) Plantation shall be done on the reclaimed land and native variety of plants and trees shall be planted.

1.8 FINANCIAL REQUIREMENT

The estimated cost of the relocation and rehabilitation of excavated material is given in Table 7. The total cost of these measures will be as follows.

Table 7: Financial requirements for implementation of Muck Disposal Plan

Sl. No.	Item	Amount (Rs. In lakhs)
1	Engineering Measures	8352.65
2	Biological Measures	3877.37
Total		12230.02

1.9 RECOMMENDATIONS

Following recommendations for smooth implementation of the Muck Disposal Plan are delineated below:

- Selection of species having faster growth, and helpful in stabilizing the dump sites
- The Dump sites may be marked at site with display boards.
- No water body will be blocked in dumping site.
- No tress shall be cut in the dumping area unless essential for movement of earth dumping and rolling equipment
- Project authorities should ensure frequent meetings with the project team to enable smooth implementation of the Plan

APPENDIX



ESTIMATE



ANALYSIS OF RATE

Sl. No.	Description	Unit	Quantity	Rate Rs	Cost Rs
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Compacting original ground supporting embankment

Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.

Unit = cum

Taking output = 600 cum

a) Labour

Mate	day	0.080	500.00	40.00
Mazdoor	day	2.000	350.00	700.00

b) Machinery

Tractor with ripper attachment	hour	6.000	412.00	2472.00
Vibratory road roller 8-10 tonne capacity	hour	7.500	1085.00	8137.50
Water tanker 6 KL capacity	hour	4.000	744.25	2977.00

c) Material

Cost of water	KL	24.000	10.00	240.00
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d) Overhead charges @8% on (a+b+c)

1092.49

e) Contractor's profit @ 10 % on (a+b+c+d)

1565.90

Cost for 600 cum = (a+b+c+d+e) 17224.89

Rate per sqm = (a+b+c+d+e)/600 28.71

28.71

cess (1%) **0.29**

say **29.00**

Gabian Structure for Retaining Earth

Providing and constructing gabian structures for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire.

SL. NO. 15.12

Unit = cum

Taking output = 7 x 3 x 0.6 = 12.60 cum

a) Labour

Mate	day	0.28	500.00	140.00
Mazdoor	day	5.00	350.00	1750.00
Mazdoor (Skilled)	day	2.00	450.00	900.00

b) Material

Galvanised steel wire crates of mesh size 100 mm x 100 mm woven with 4mm dia. GI wire in rolls of required size .	sqm	61.00	280.00	17080.00
Stone boulders with least dimension of 200 mm	cum	12.60	1489.72	18770.47
Stone spalls of minimum size 25 mm	cum	2.52	2184.48	5504.89

70% deducting due to available material at site (16992.75)

c) Overhead charges @ 8% on (a+b)

2172.21

d) Contractor's profit @10% on (a+b+c)

2932.48

32257.30

e) Add for lead and royalty

Stone boulders with least dimension of 200 mm with in 5 km	cum	12.60	0.00	0.00
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Stone spalls of minimum size 25 mm with in 5 km	cum	2.52	0.00	0.00
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Carriage deducting for 70% 0.00

Cost for 12.6 cum (a+b+c+d+e) 2560.10

Rate per cum (a+b+c+d+e)/12.6

Labour Cess 1% 25.60

say **2585.70**

DETAILED ESTIMATE OF MUCK DISPOSAL

SI No	Description	No	Length	Width	Depth	Volume	Unit	Rate	Amount
Length of Gabion wall required									
	Avg. Height of Gabion Wall	=				10.00			
	Total Length	=	5916.96						
1	Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.								
		1	5916.96	6.00	0.150	5325.26			
						5325.26 cum		29.00	154432.54
2	Providing and constructing gabian structures for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire.								
	Step 1	1	5916.96	6.00	2.00	71003.52			
	Step 2	1	5916.96	5.00	1.50	44377.20			
	Step 3	1	5916.96	4.00	1.50	35501.76			
	Step 4	1	5916.96	3.00	1.50	26626.32			
	Step 5	1	5916.96	2.00	1.50	17750.88			
	Step 6	1	5916.96	1.00	1.50	8875.44			
						204135.12 cum		2585.7	527832179.78
								Total Amount	527986612.32

DETAILED ESTIMATE OF MUCK DISPOSAL

Sl No	Description	No	Length	Width	Depth	Volume	Unit	Rate	Amount
Length of Gabion wall required									
	Avg. Height of Gabion Wall	=				9.00			
	Total Length	=	2183.76						
1	Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.								
		1	2183.76	5.50	0.150	1801.60			
						1801.60 cum		29.00	52246.40
2	Providing and constructing gabian structures for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire.								
	Step 1	1	2183.76	5.50	1.50	18016.02			
	Step 2	1	2183.76	4.50	1.50	14740.38			
	Step 3	1	2183.76	3.50	1.50	11464.74			
	Step 4	1	2183.76	2.50	1.50	8189.10			
	Step 5	1	2183.76	1.50	1.50	4913.46			
	Step 6	1	2183.76	1.00	1.50	3275.64			
						60599.34 cum		2585.7	156691713.44
								Total Amount	156743959.84

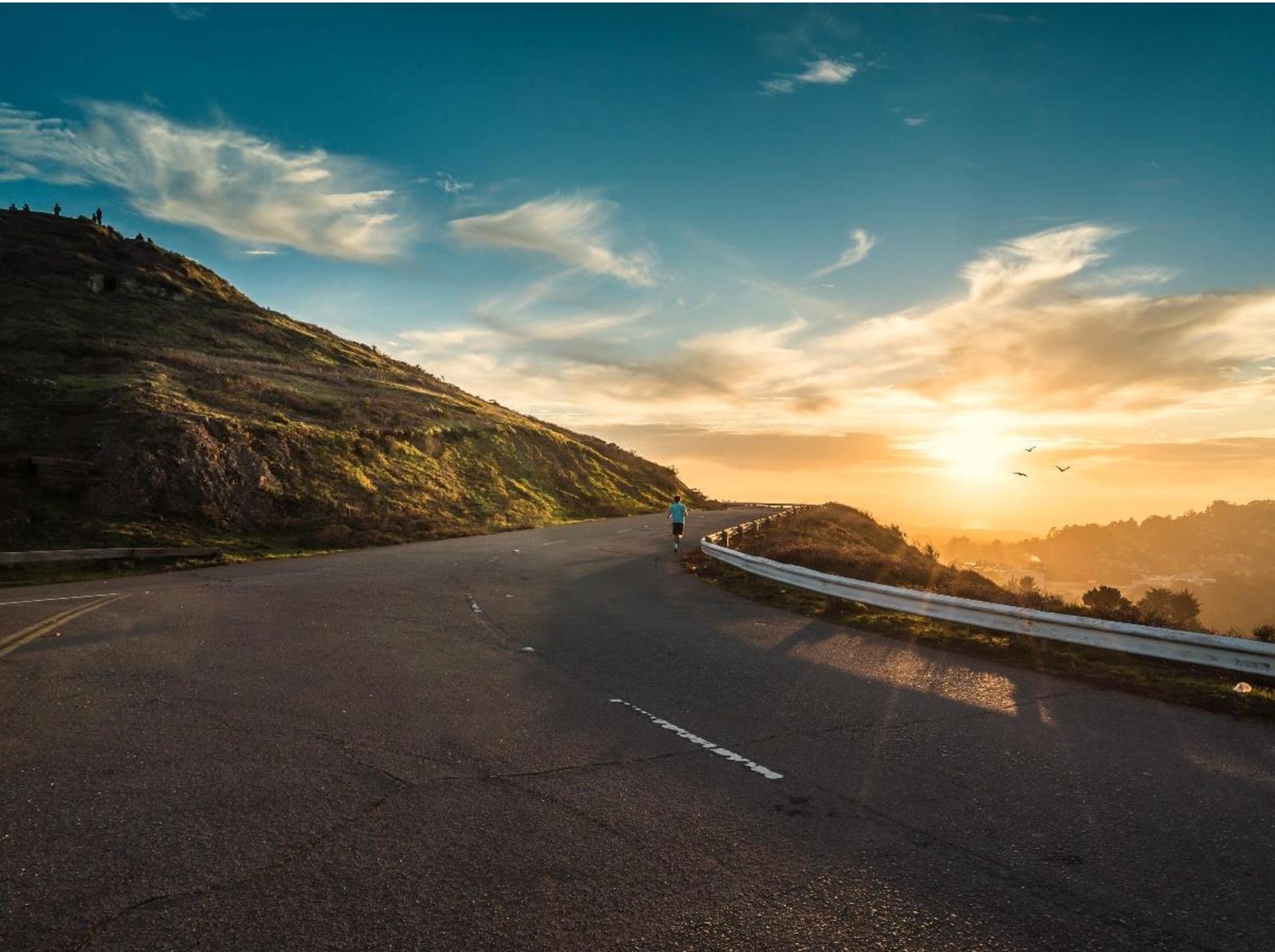
DETAILED ESTIMATE OF MUCK DISPOSAL

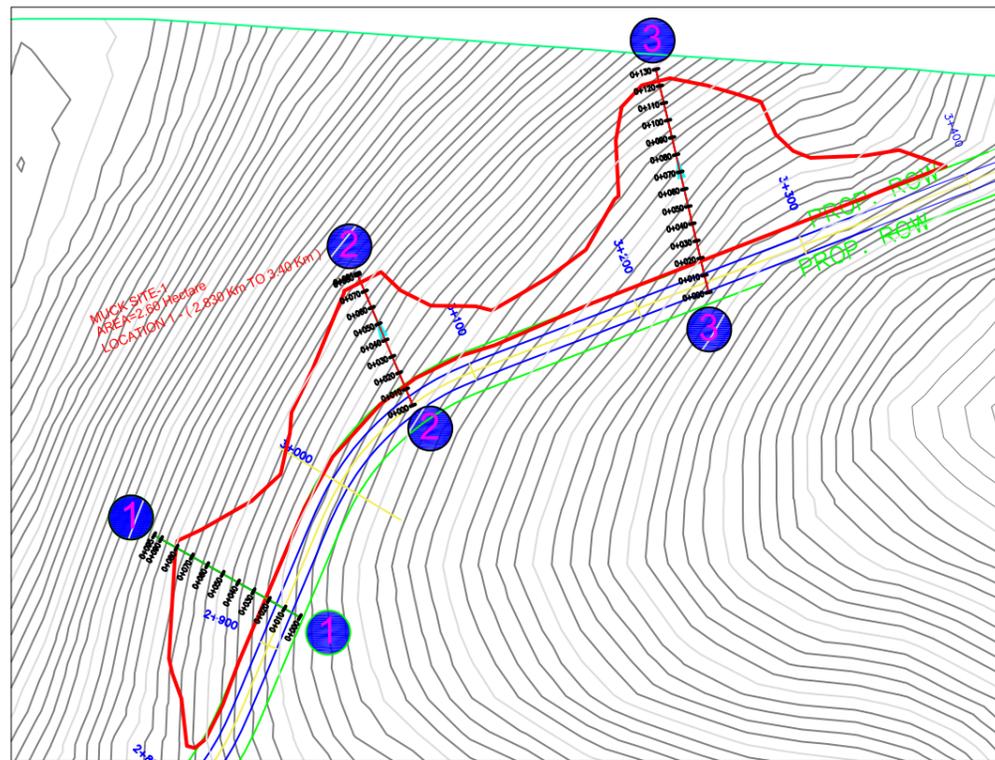
SI No	Description	No	Length	Width	Depth	Volume	Unit	Rate	Amount
Length of Gabion wall required									
	Avg. Height of Gabion Wall	=				5.00			
	Total Length	=	2838.09						
1	Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.								
		1	2838.09	5.00	0.200	2838.09			
						2838.09 cum		29.00	82304.61
2	Providing and constructing gabian structures for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire.								
	Step 1	1	2838.09	3.50	2.00	19866.63			
	Step 2	1	2838.09	2.50	2.00	14190.45			
	Step 3	1	2838.09	1.00	1.00	2838.09			
						36895.17 cum		2585.7	95399841.07
								Total Amount	95482145.68

DETAILED ESTIMATE OF MUCK DISPOSAL

SI No	Description	No	Length	Width	Depth	Volume	Unit	Rate	Amount
Length of Gabion wall required									
	Avg. Height of Gabion Wall	=				2.00			
	Total Length	=	2968.15						
1	Loosening, leveling and Compacting original ground supporting embankment to facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction.								
		1	2968.15	2.00	0.150	890.45			
						890.45 cum		29.00	25823.05
2	Providing and constructing gabian structures for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5m compartments by cross netting, made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 mm x 100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire.								
	Step 1	1	2968.15	2.00	2.00	11872.60			
						11872.60 cum		2585.7	30698981.82
								Total Amount	30724804.87

DRAWINGS





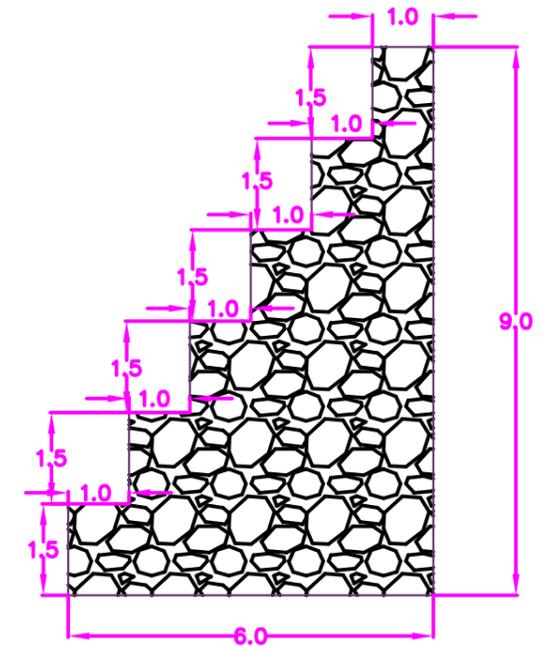
Layout Plan Of Muck Disposal -1

Scale 1:250

DATUM: 940.000

Proposed Levels	972.546	970.390	968.149	965.888	963.119	960.088	956.923	953.598	950.254	944.982
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	94.920

Section at 1-1
Scale 1:750



Typical Details Of Gabion Wall

DATUM: 950.000

Proposed Levels	978.401	976.103	973.650	971.192	968.718	966.120	963.470	960.500	956.821	957.186
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	81.060	80.000

Section at 2-2
Scale 1:750

DATUM: 970.000

Proposed Levels	1005.164	1002.569	999.840	997.050	994.576	992.486	990.493	988.509	986.058	983.290	980.158	976.879	973.603	970.454
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	129.611

Section at 3-3
Scale 1:750

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

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SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 1

DRAWING NO. : - YN/MDP/R0

Prep. By

Chk. By

Date

S.K.M

B.B.M

OCT 2018

SHEET
SIZE

A3

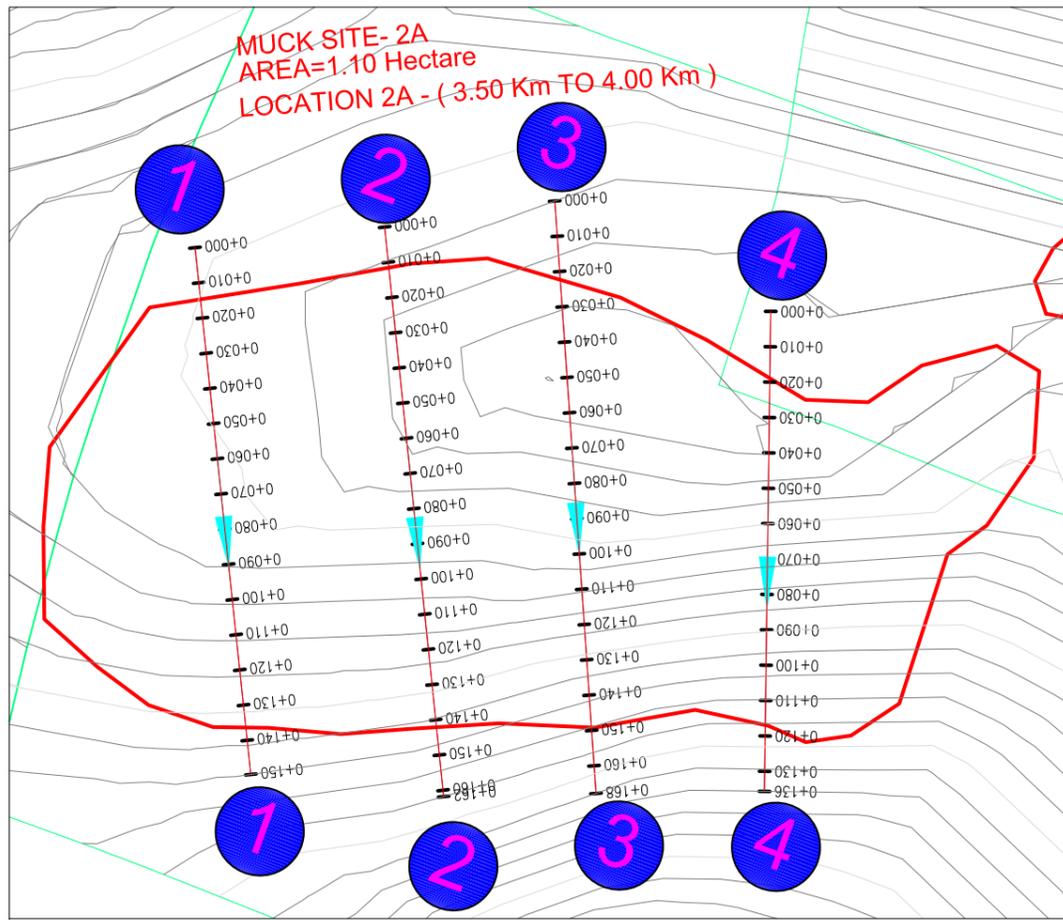
Rev. No.

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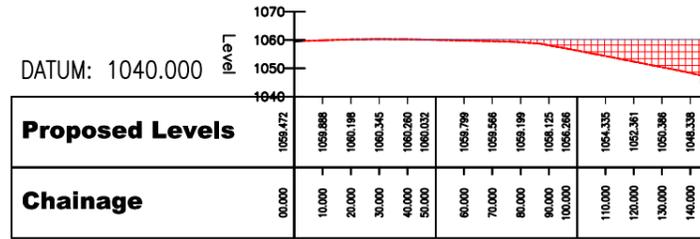
CONSULTANTS :

S.M. CONSULTANTS

Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
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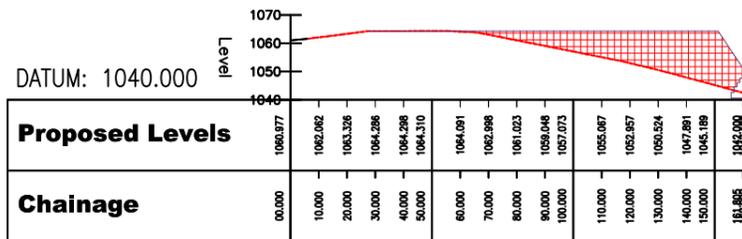


Layout Plan Of Muck Disposal-2A
Scale 1:500

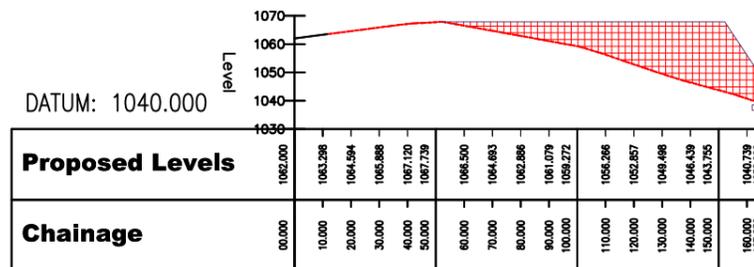


Section at 1-1
Scale 1:400

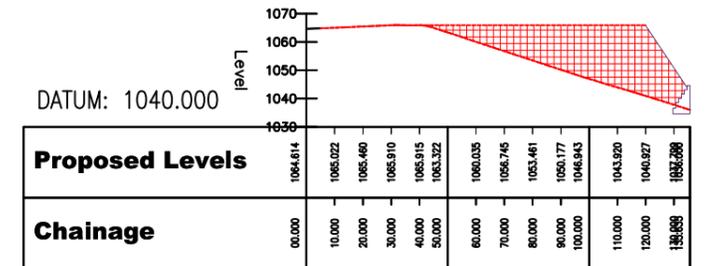
Typical Details Of Gabion Wall



Section at 2-2
Scale 1:400



Section at 2-2
Scale 1:400



Section at 2-2
Scale 1:400

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

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SCALE : AS SHOWN IN THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 2A

DRAWING NO : - YN/MDP/R0

Prep. By	Chk. By	Date
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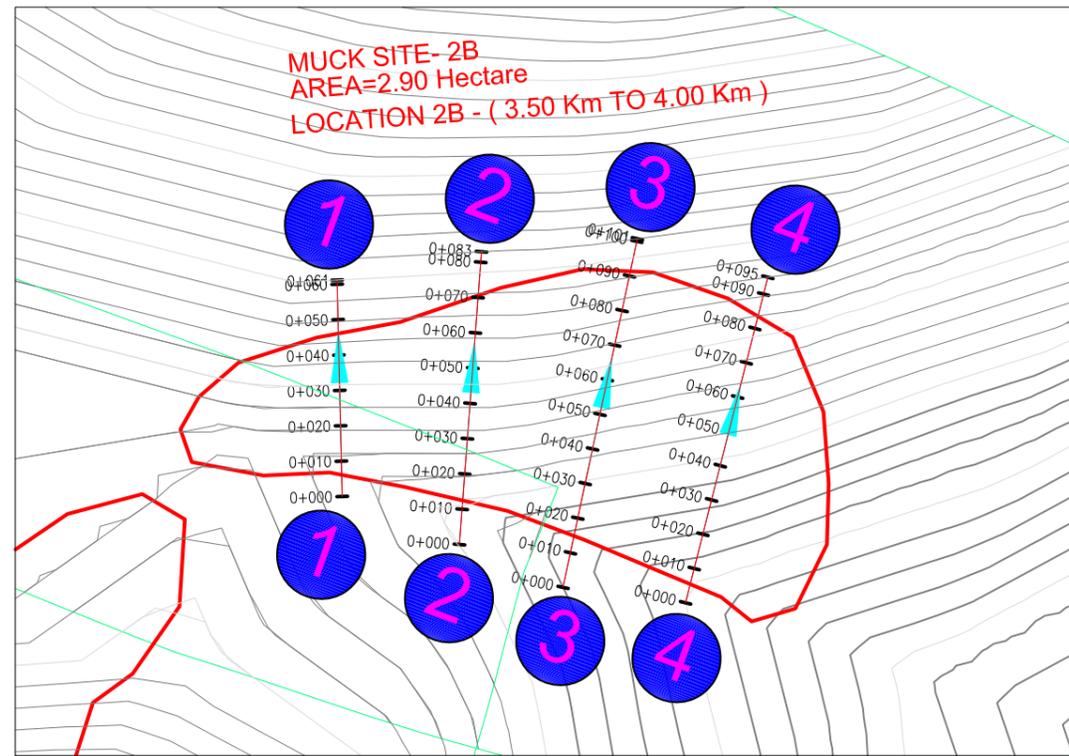
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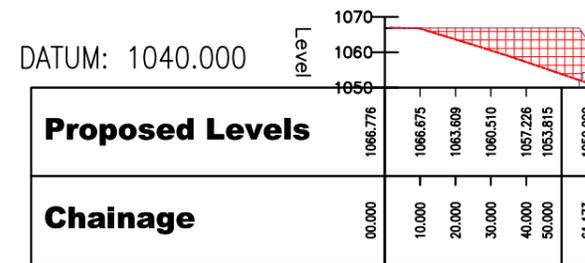
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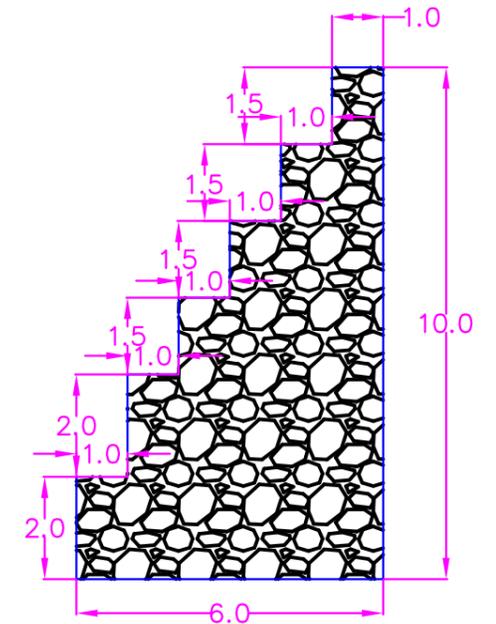
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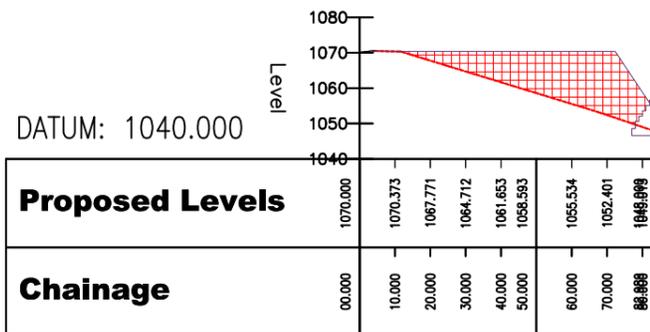
Layout Plan Of Muck Disposal-2B
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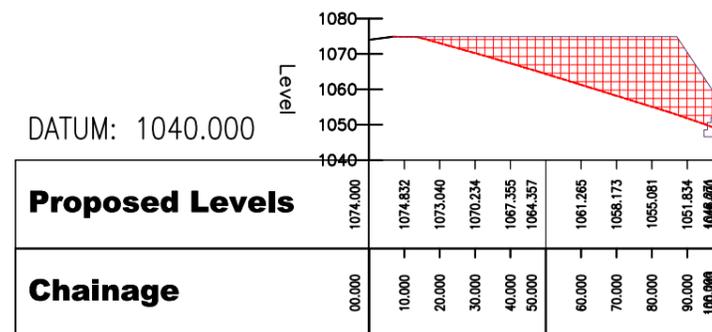
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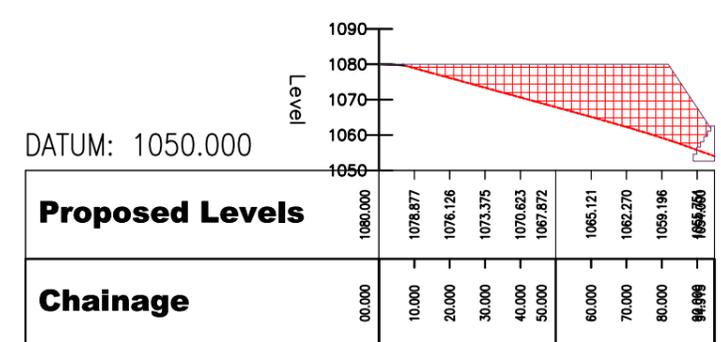
Typical Details Of Gabion Wall



Section at 2-2
Scale 1:500



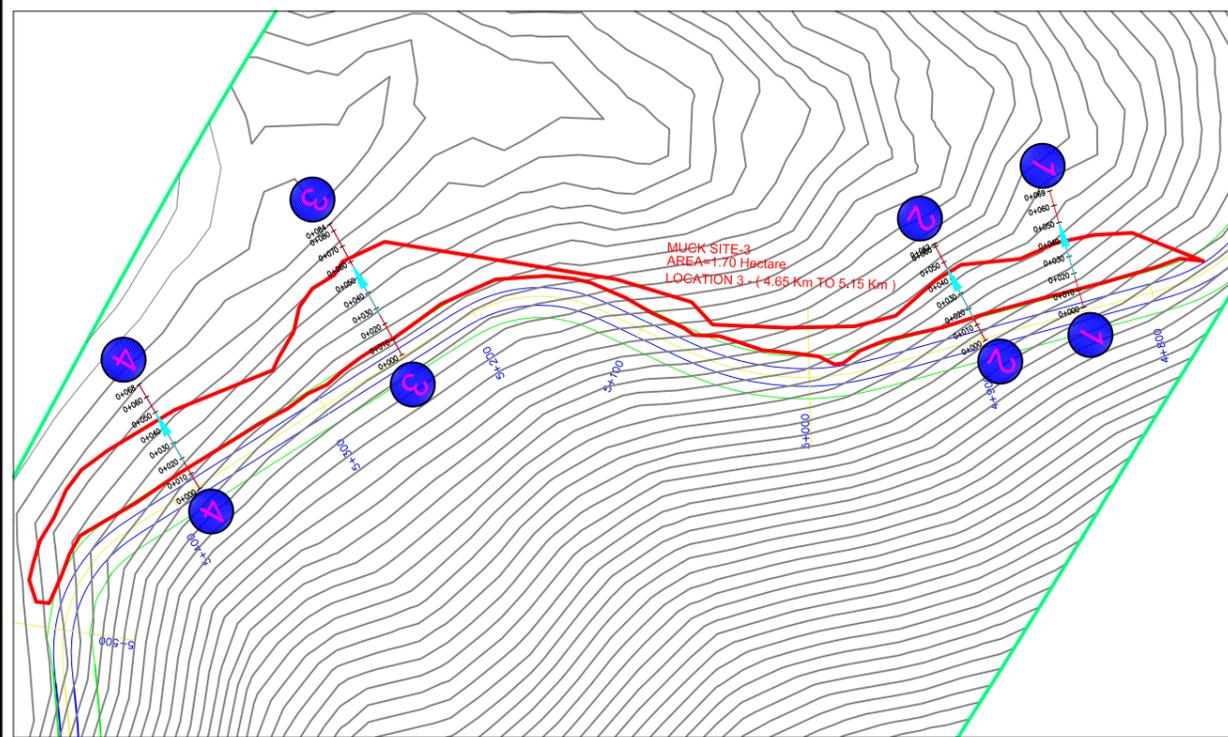
Section at 2-2
Scale 1:500



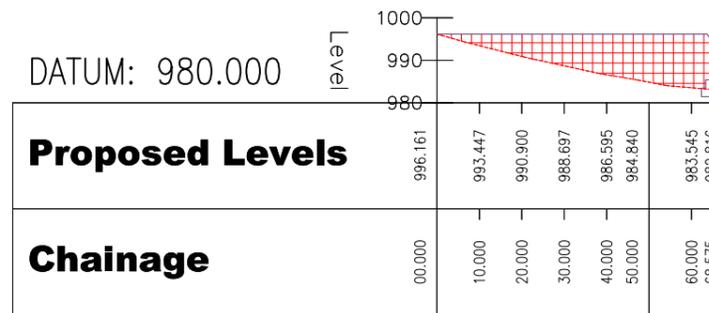
Section at 2-2
Scale 1:500

CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	SCALE : AS SHOWN IN THE DRAWING	TITLE : MUCK DISPOSAL PLAN MUCK SITE 2B			SHEET SIZE A3	CONSULTANTS :  S.M. CONSULTANTS
		DRAWING NO. : - YN/MDP/R0				
PROJECT : Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.		Prep. By	Chk. By	Date	Rev. No.	Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com
		S.K.M	B.B.M	OCT 2018	02	

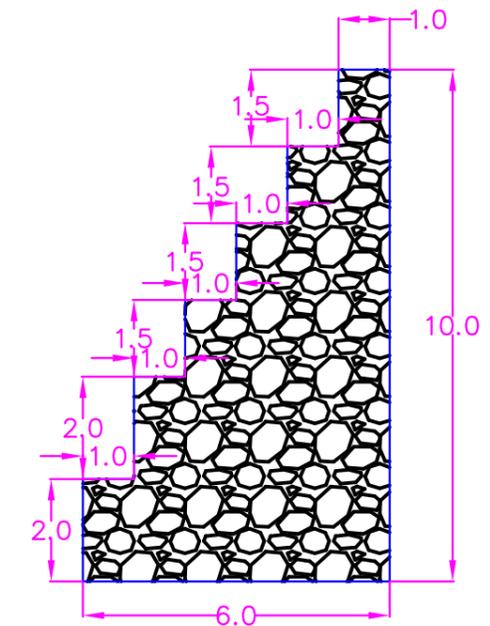
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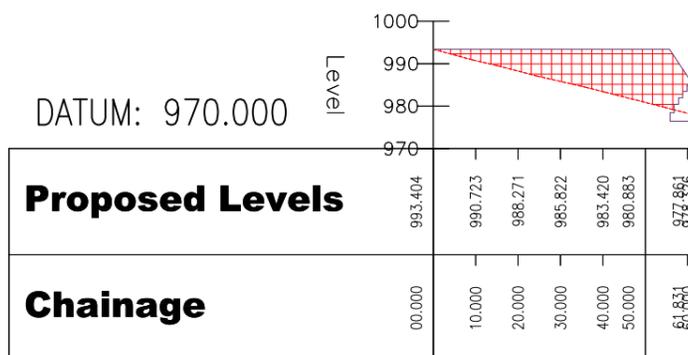
Layout Plan Of Muck Disposal-3
Scale 1:250



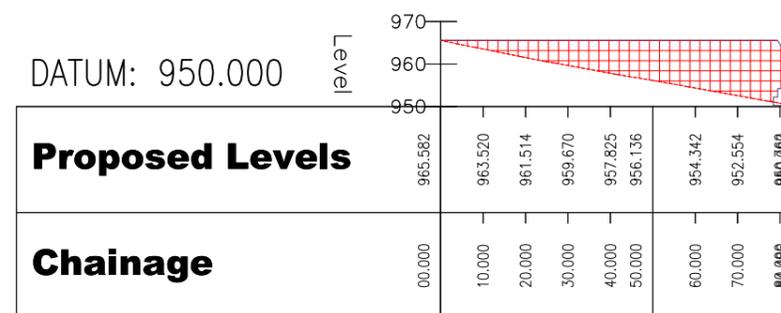
Section at 1-1
Scale 1:600



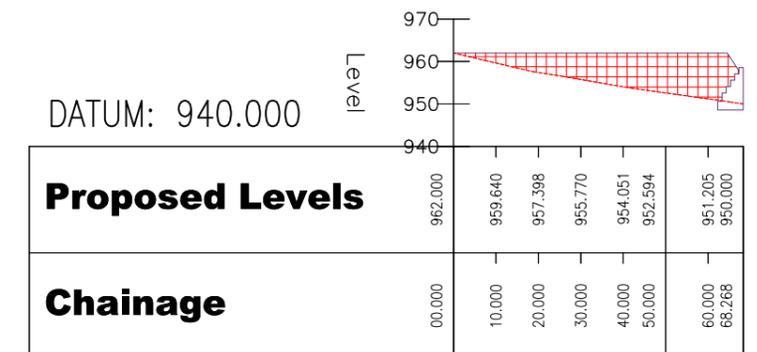
Typical Details Of Gabion Wall



Section at 2-2
Scale 1:600



Section at 3-3
Scale 1:600



Section at 4-4
Scale 1:600

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SCALE : AS SHOWN IN THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 3

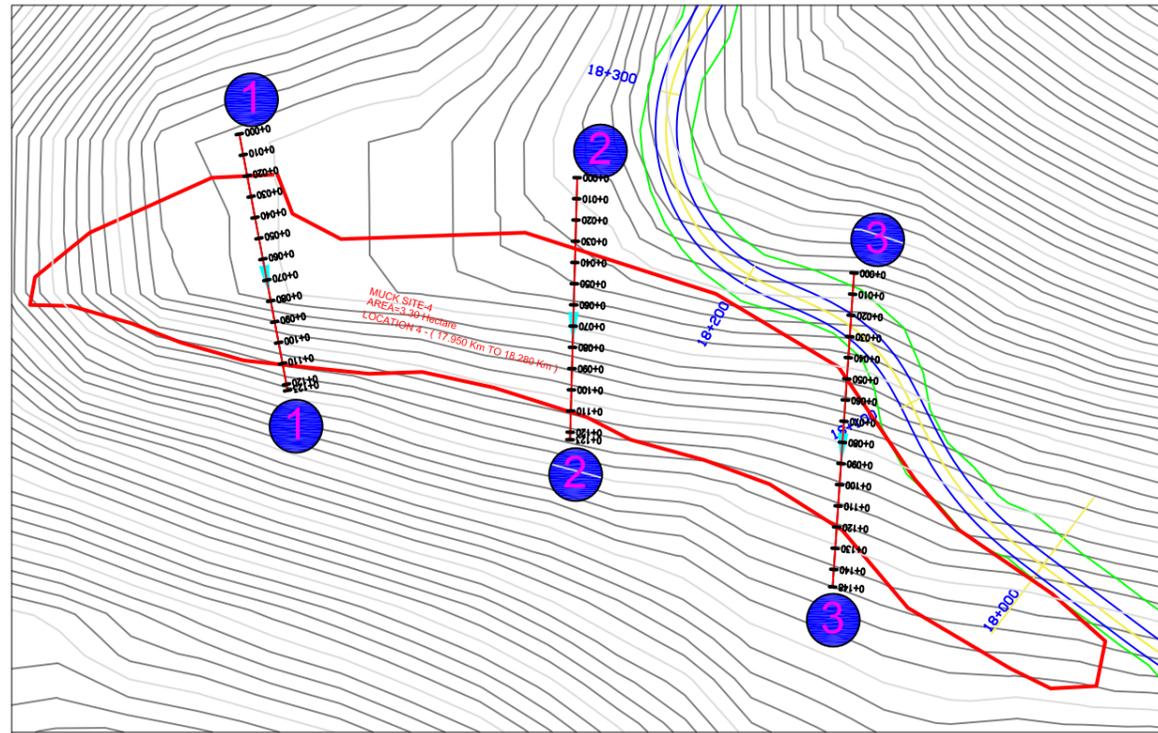
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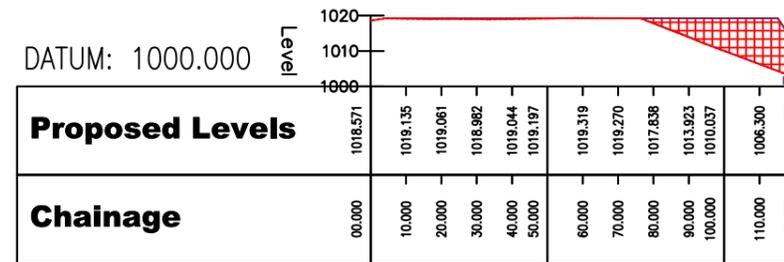
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Rev. No. : 02

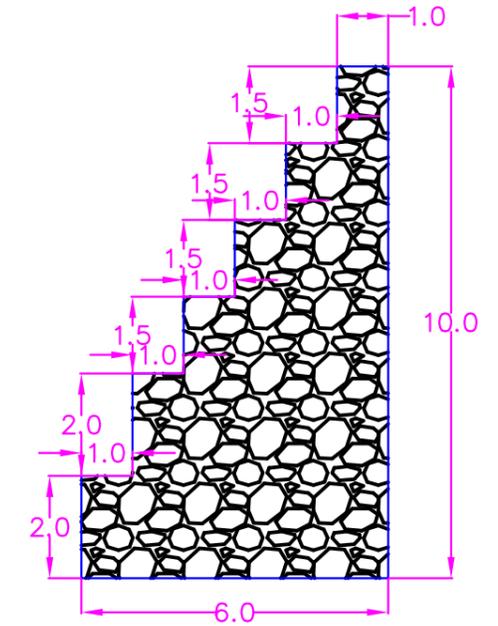
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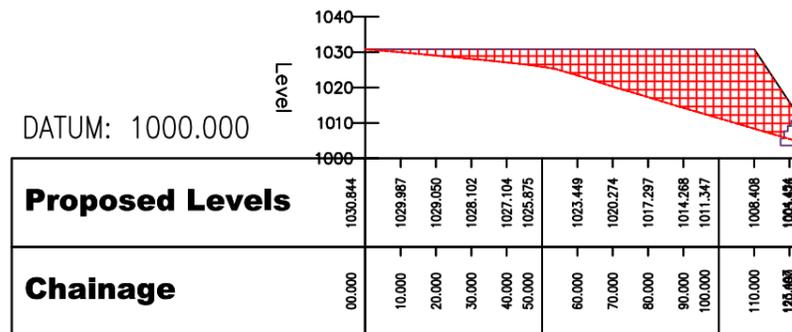
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Scale 1:300



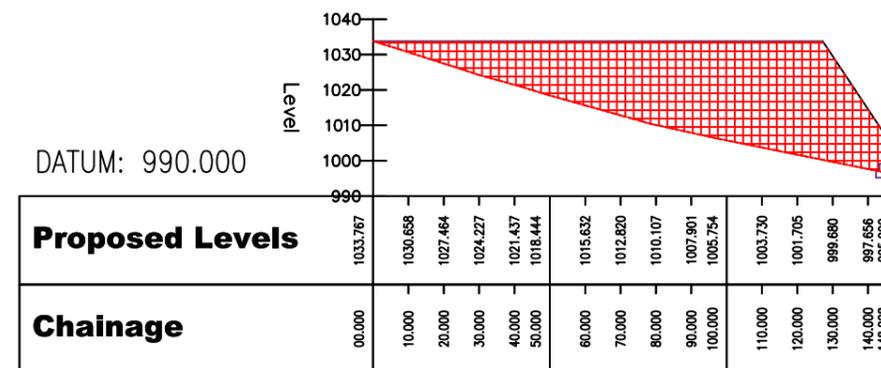
Section at 1-1
Scale 1:500



Typical Details Of Gabion Wall



Section at 2-2
Scale 1:500



Section at 3-3
Scale 1:500

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SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 4

DRAWING NO : - YN/MDP/R0

Prep. By

Chk. By

Date

S.K.M

B.B.M

OCT 2018

SHEET
SIZE

A3

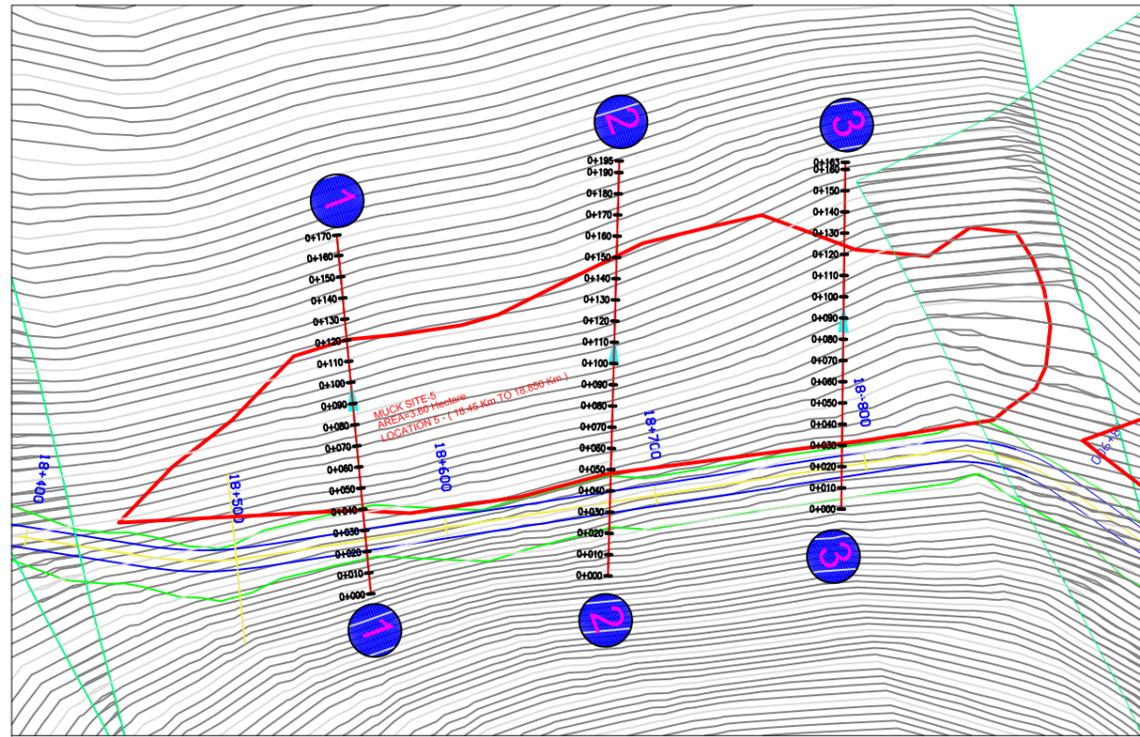
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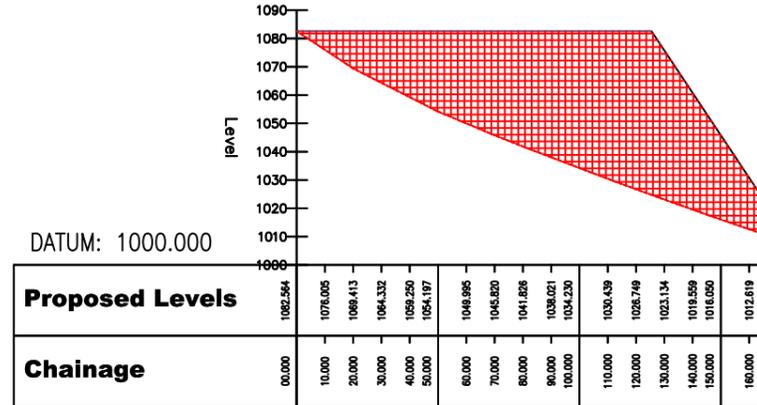
CONSULTANTS :

S.M. CONSULTANTS

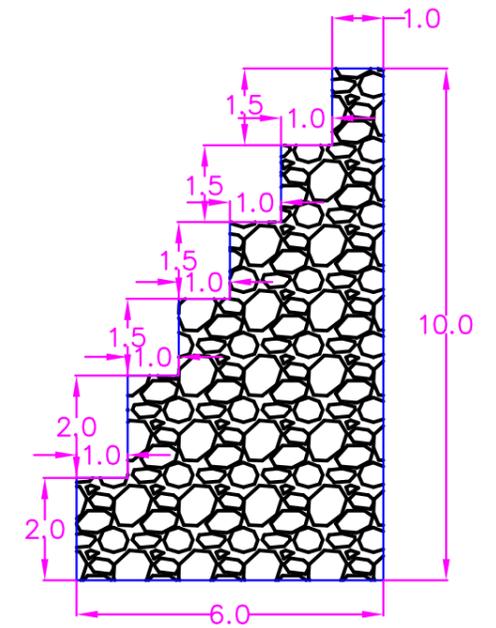
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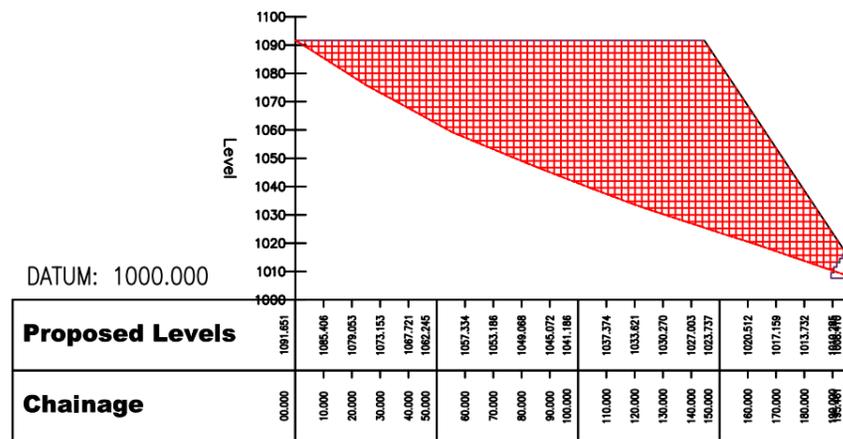
Layout Plan Of Muck Disposal-5
Scale 1:300



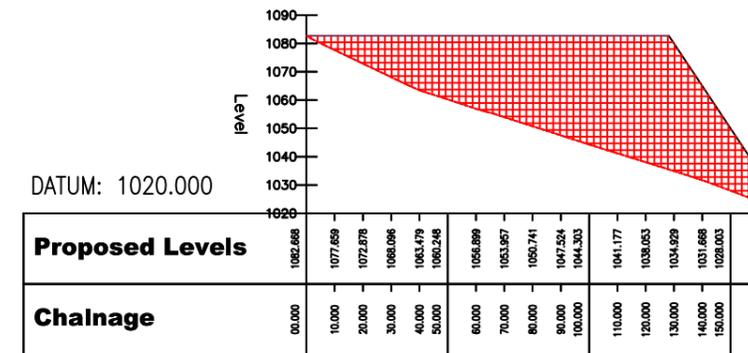
Section at 1-1
Scale 1:400



Typical Details Of Gabion Wall



Section at 2-2
Scale 1:400



Section at 3-3
Scale 1:400

CLIENT :



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Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 5

DRAWING NO : - YN/MDP/R0

Prep. By

S.K.M

Chk. By

B.B.M

Date

OCT 2018

SHEET
SIZE

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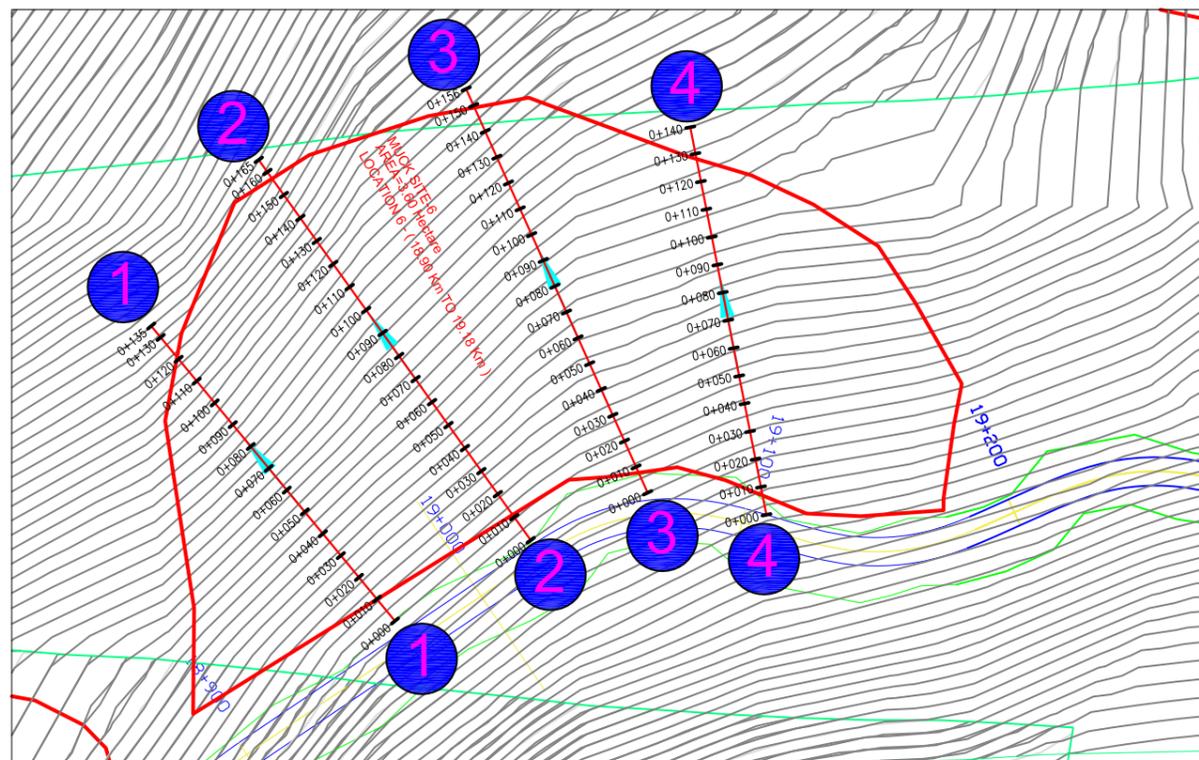
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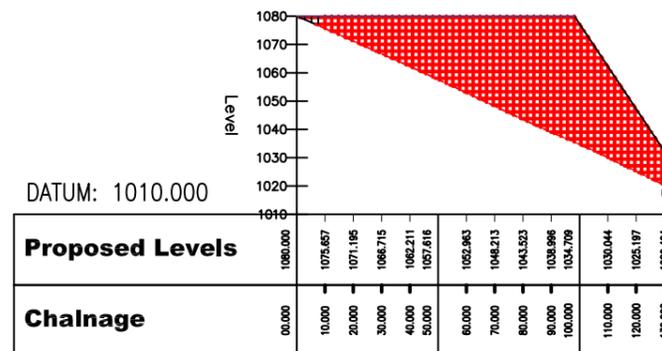
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S.M. CONSULTANTS

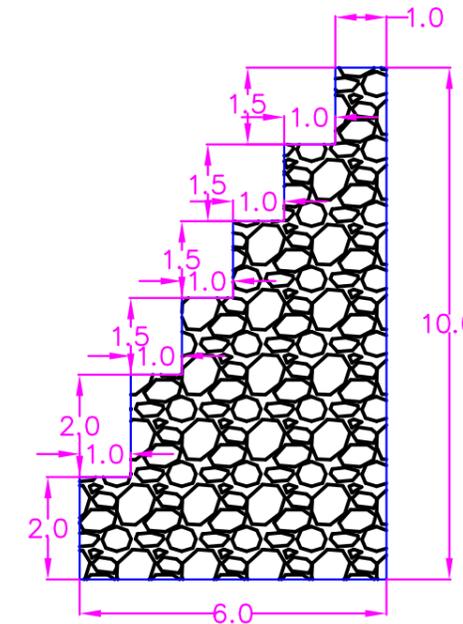
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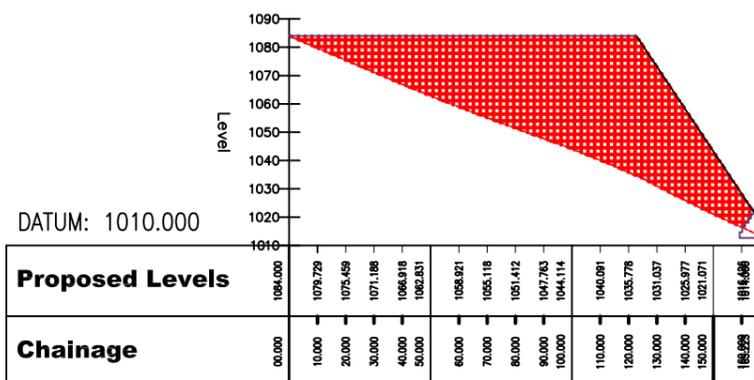
Layout Plan Of Muck Disposal-6
Scale 1:400



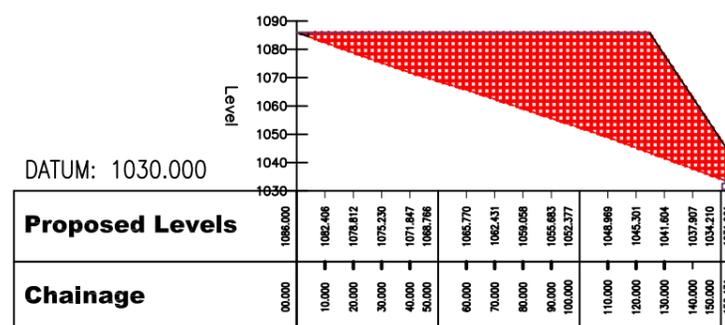
Section at 1-1
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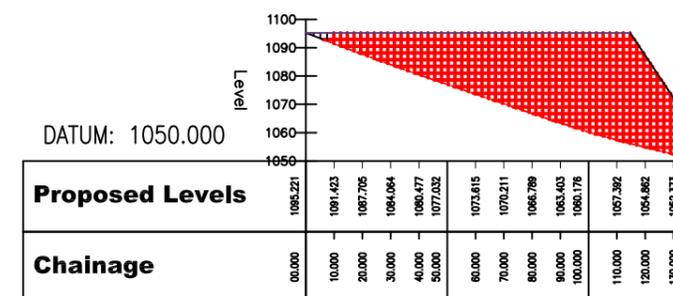
Typical Details Of Gabion Wall



Section at 2-2
Scale 1:400



Section at 3-3
Scale 1:400



Section at 4-4
Scale 1:400

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

PROJECT : Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 6

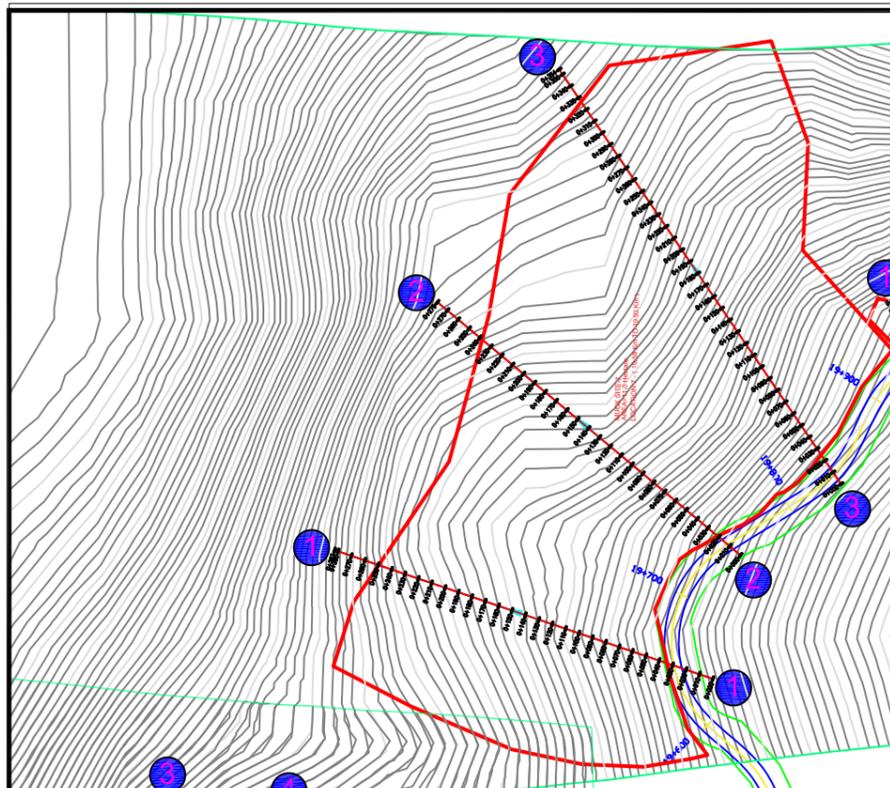
DRAWING NO. : - YN/MDP/R0

Prep. By	Chk. By	Date
S.K.M	B.B.M	OCT 2018

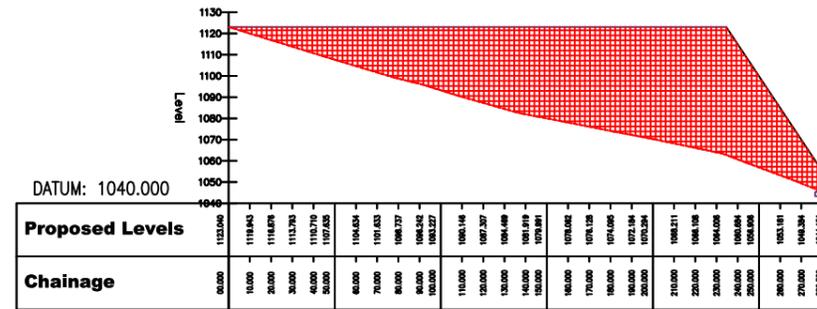
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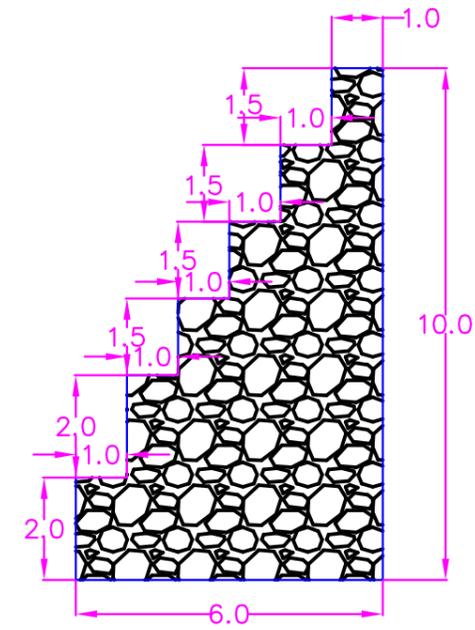
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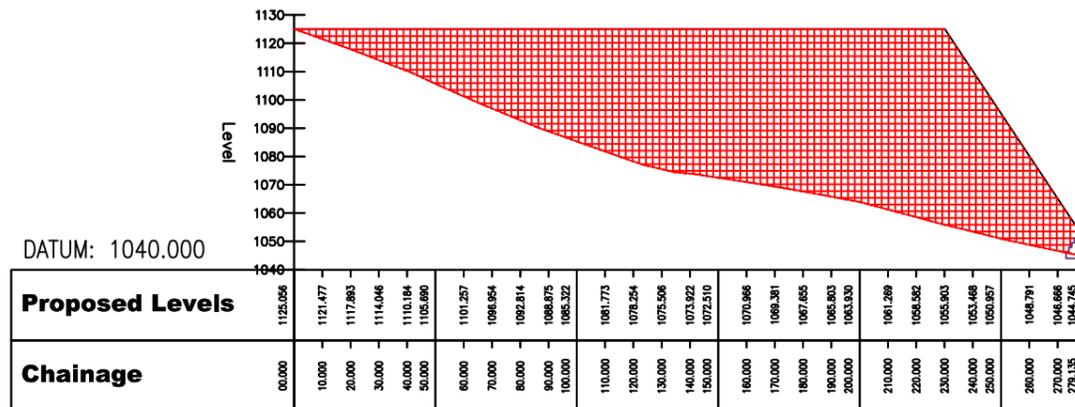
Layout Plan Of Muck Disposal-7
Scale 1:200



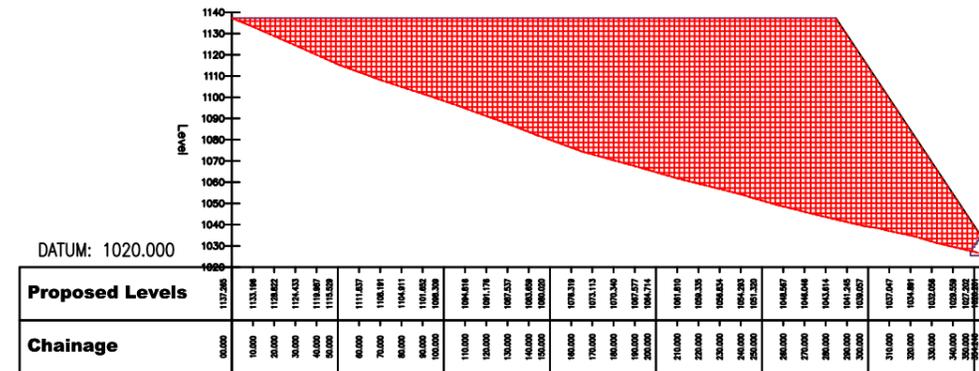
Section at 1-1
Scale 1:300



Typical Details Of Gabion Wall



Section at 2-2
Scale 1:400



Section at 3-3
Scale 1:300

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT :

Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 7

DRAWING NO. : - YN/MDP/R0

Prep. By

Chk. By

Date

S.K.M

B.B.M

OCT 2018

SHEET
SIZE

A3

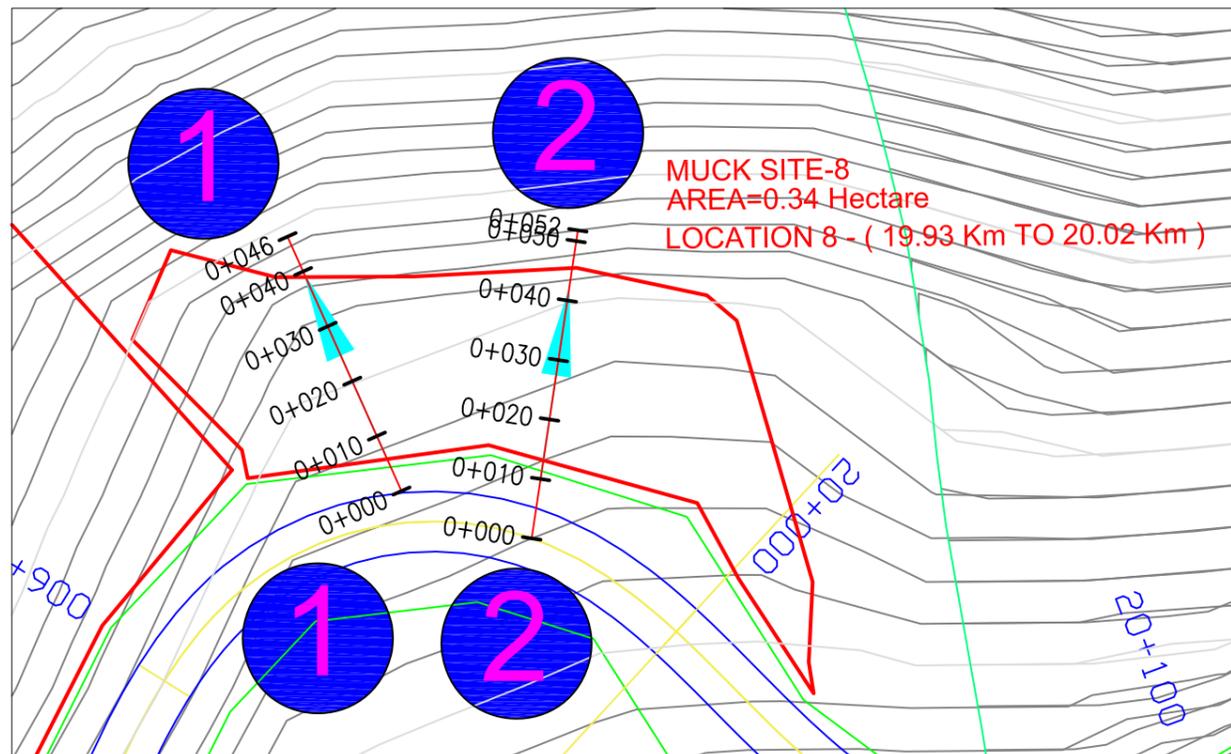
Rev. No.

02

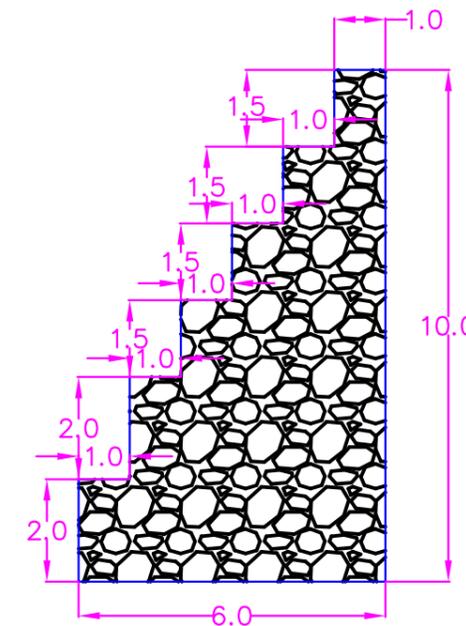
CONSULTANTS :

S.M. CONSULTANTS

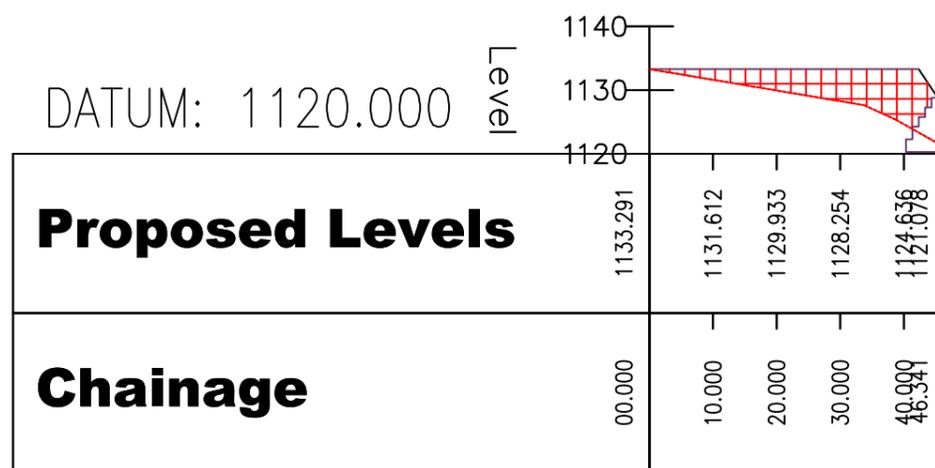
Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com



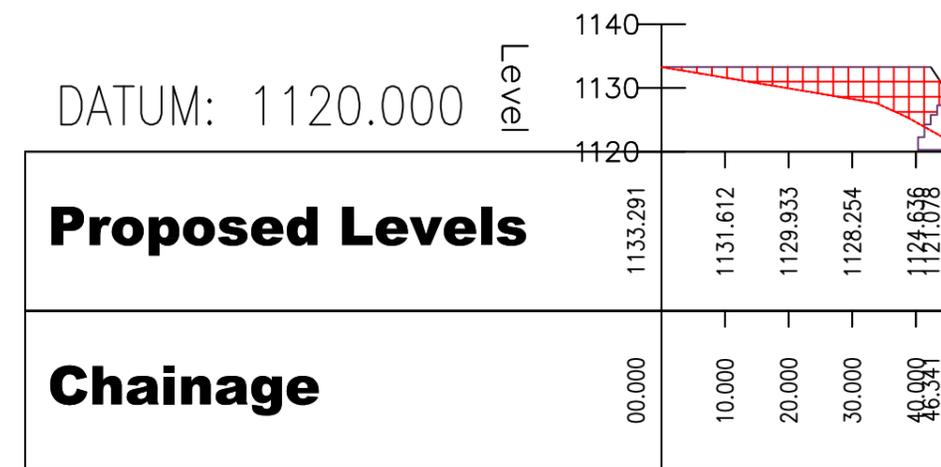
Layout Plan Of Muck Disposal-8
Scale 1:850



Typical Details Of Gabion Wall



Section at 1-1
Scale 1:900



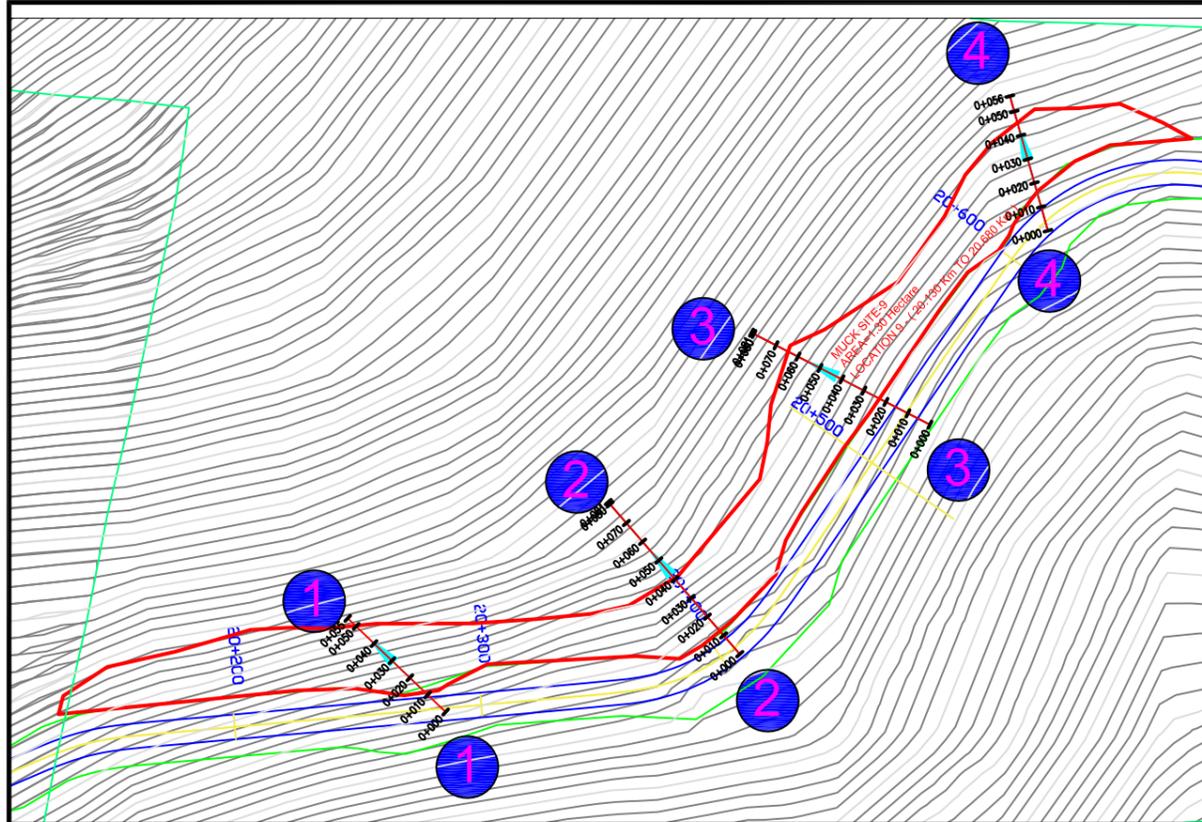
Section at 2-2
Scale 1:900

CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PROJECT : Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 8
DRAWING NO : - YN/MDP/R0
Prep. By : S.K.M
Chk. By : B.B.M
Date : OCT 2018

SHEET SIZE : A3
Rev. No. : 02
CONSULTANTS :  **S.M. CONSULTANTS**
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

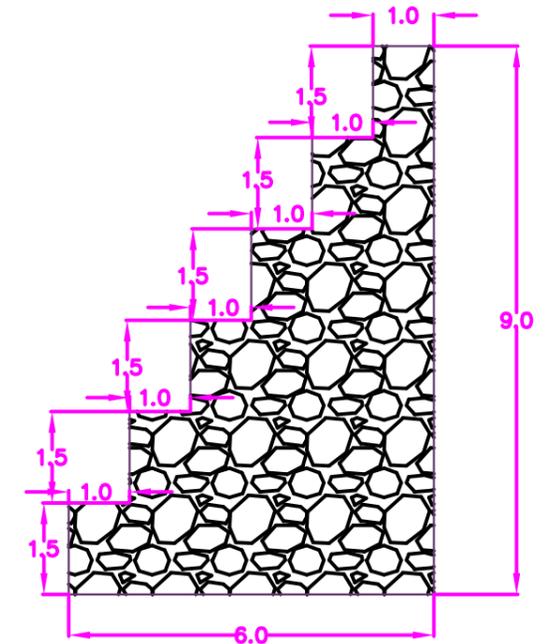


Layout Plan Of Muck Disposal-9
Scale 1:350

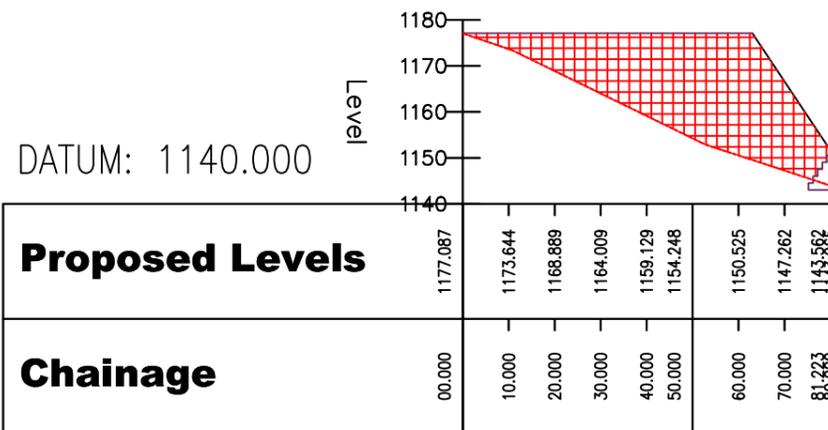
DATUM: 1140.000

Proposed Levels	1169.256	1164.952	1160.647	1156.285	1151.693	1147.026	1144.796
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	54.733

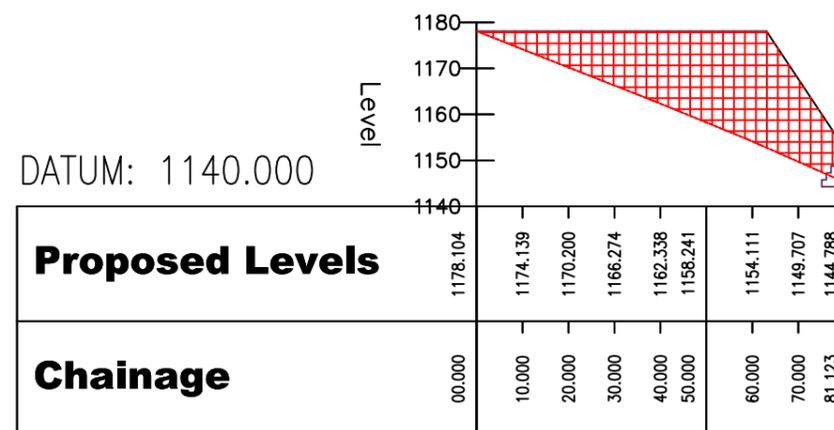
Section at 1-1
Scale 1:700



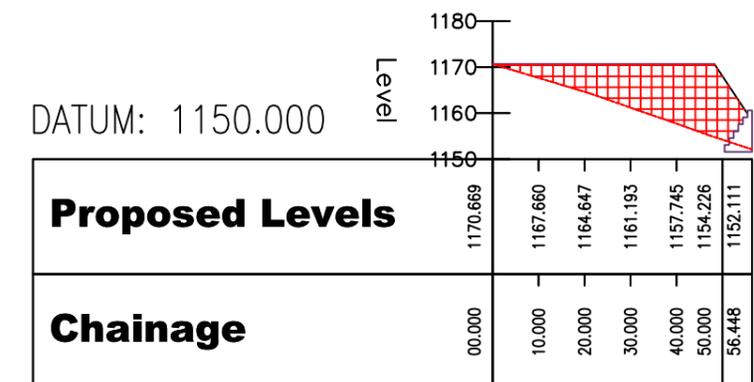
Typical Details Of Gabion Wall



Section at 2-2
Scale 1:650



Section at 3-3
Scale 1:650



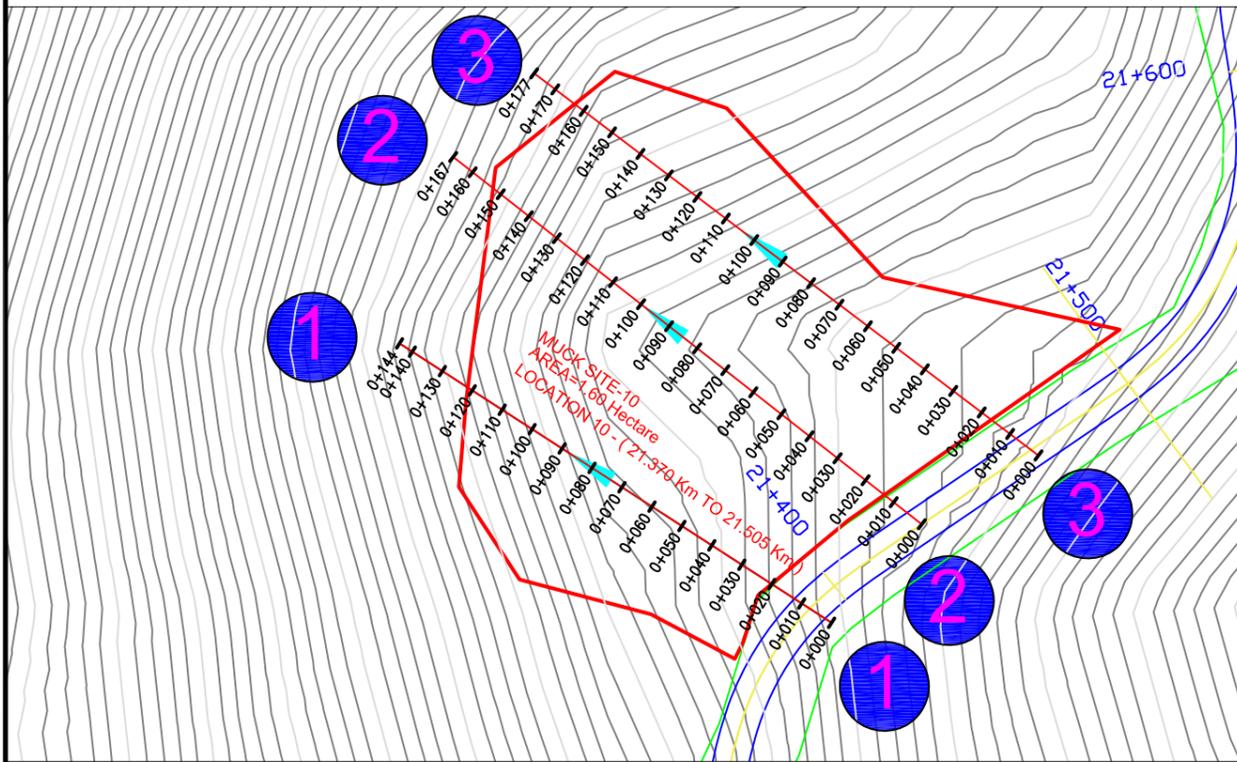
Section at 4-4
Scale 1:650

CLIENT : NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PROJECT : Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN THE DRAWING

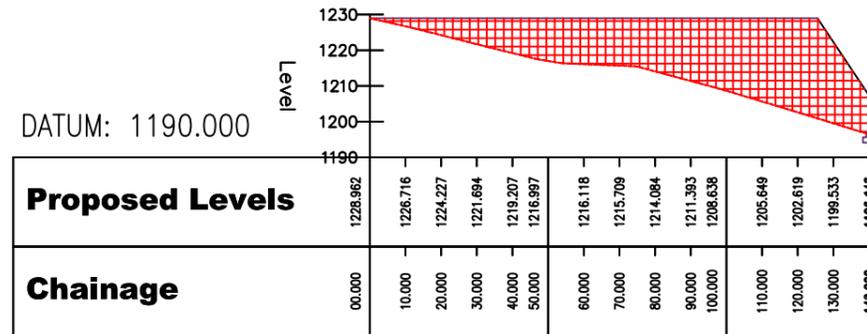
TITLE : MUCK DISPOSAL PLAN
MUCK SITE 9
DRAWING NO. : - YN/MDP/R0
Prep. By : S.K.M
Chk. By : B.B.M
Date : OCT 2018

SHEET SIZE : A3
Rev. No. : 02
CONSULTANTS : S.M. CONSULTANTS
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : http:// www.smcindia.com , e-mail: support@smcindia.com

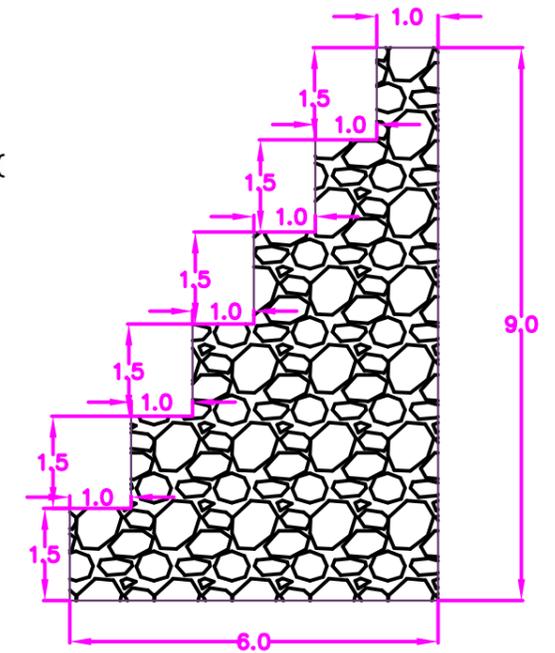


Layout Plan Of Muck Disposal-10
Scale 1:500

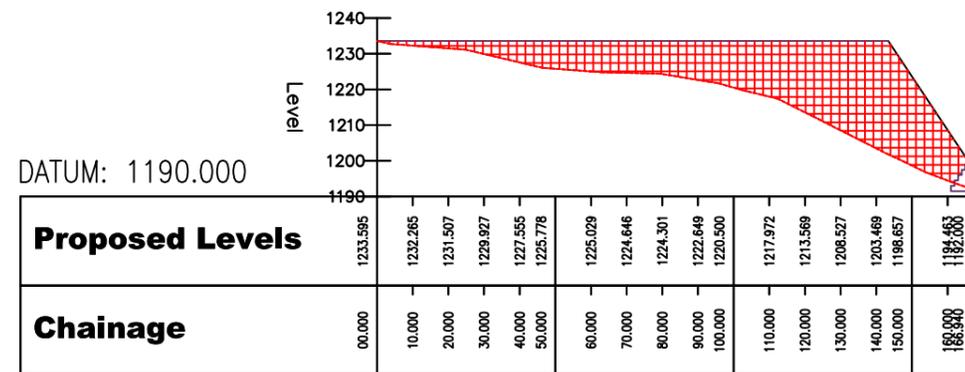
VERTICAL PROFILE (33)
SCALE: H 1:1000,V 1:1000. DATUM: 1190.00



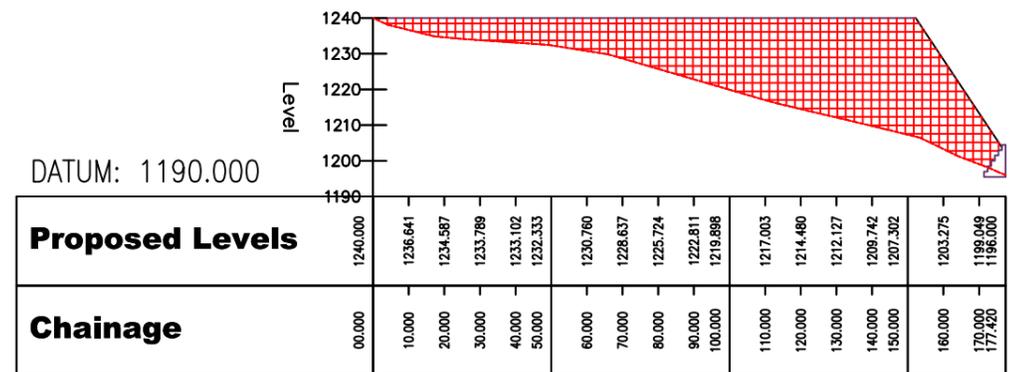
Section at 1-1
Scale 1:500



Typical Details Of Gabion Wall



Section at 2-2
Scale 1:500



Section at 3-3
Scale 1:500

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT :

Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 10

DRAWING NO : - YN/MDP/R0

Prep. By

Chk. By

Date

S.K.M

B.B.M

OCT 2018

SHEET
SIZE

A3

Rev. No.

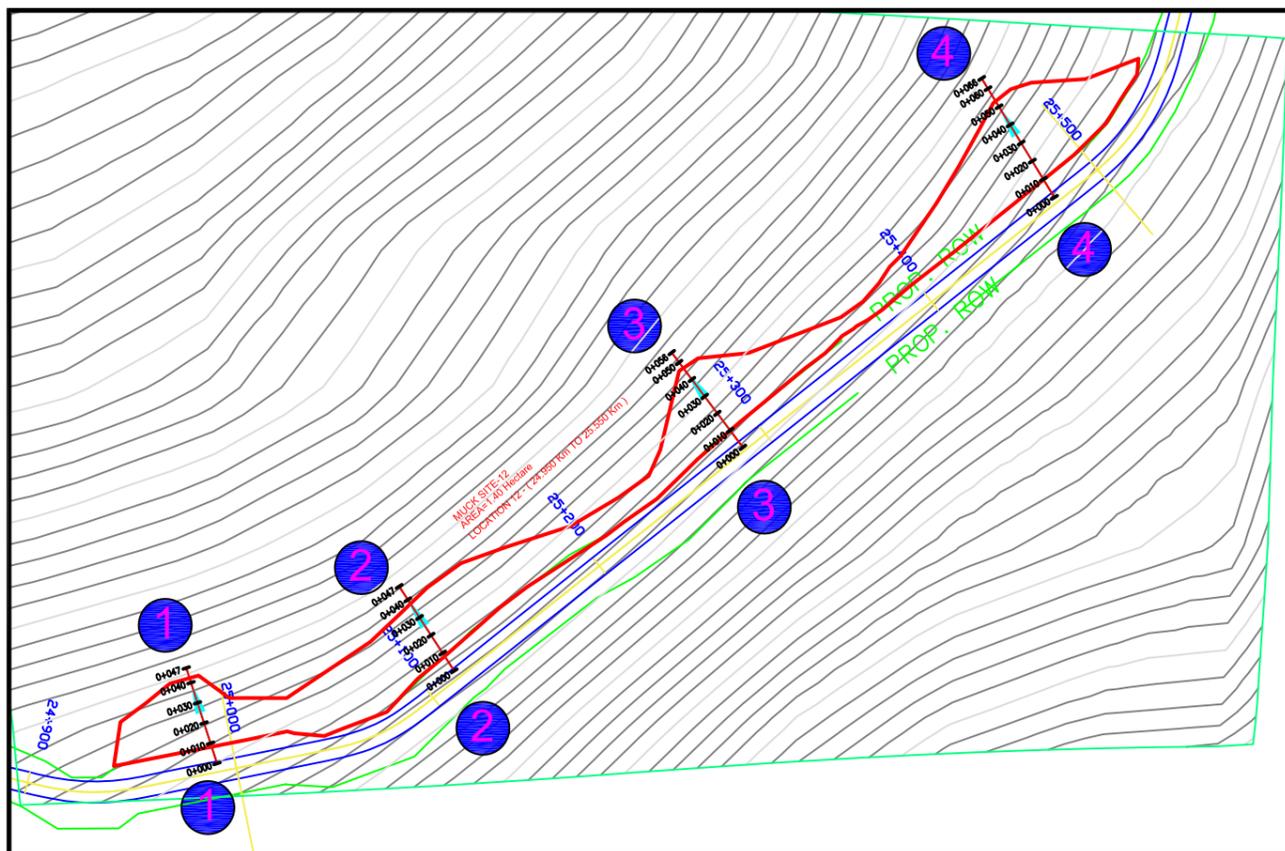
02

CONSULTANTS :



S.M. CONSULTANTS

Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

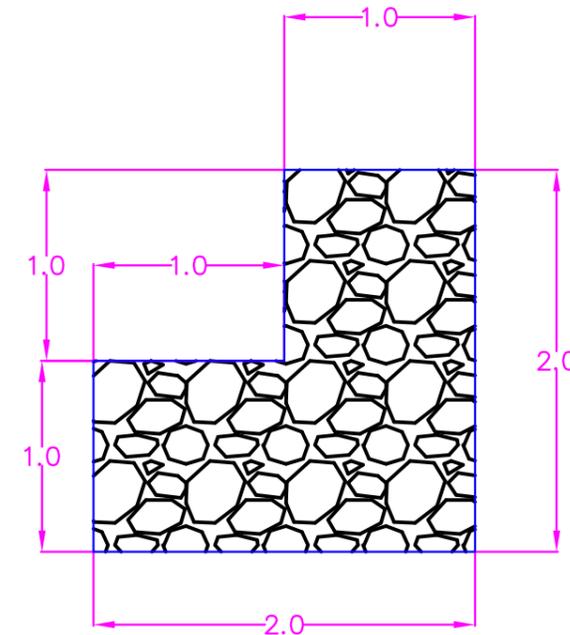


Layout Plan Of Muck Disposal-12
Scale 1:300

DATUM: 1380.000

Proposed Levels	1400.094	1397.894	1395.742	1393.431	1391.057	1389.349
Chainage	00.000	10.000	20.000	30.000	40.000	47.255

Section at 1-1
Scale 1:650



Typical Details Of Gabion Wall

DATUM: 1390.000

Proposed Levels	1405.286	1402.544	1399.786	1396.896	1393.974	1391.779
Chainage	00.000	10.000	20.000	30.000	40.000	47.493

Section at 2-2
Scale 1:650

DATUM: 1390.000

Proposed Levels	1408.403	1405.599	1402.718	1399.885	1397.105	1394.448	1393.052
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	55.835

Section at 3-3
Scale 1:650

DATUM: 1390.000

Proposed Levels	1414.270	1412.181	1410.087	1407.973	1405.774	1403.493	1399.216
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	66.898

Section at 4-4
Scale 1:650

CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

PROJECT : Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN THE DRAWING

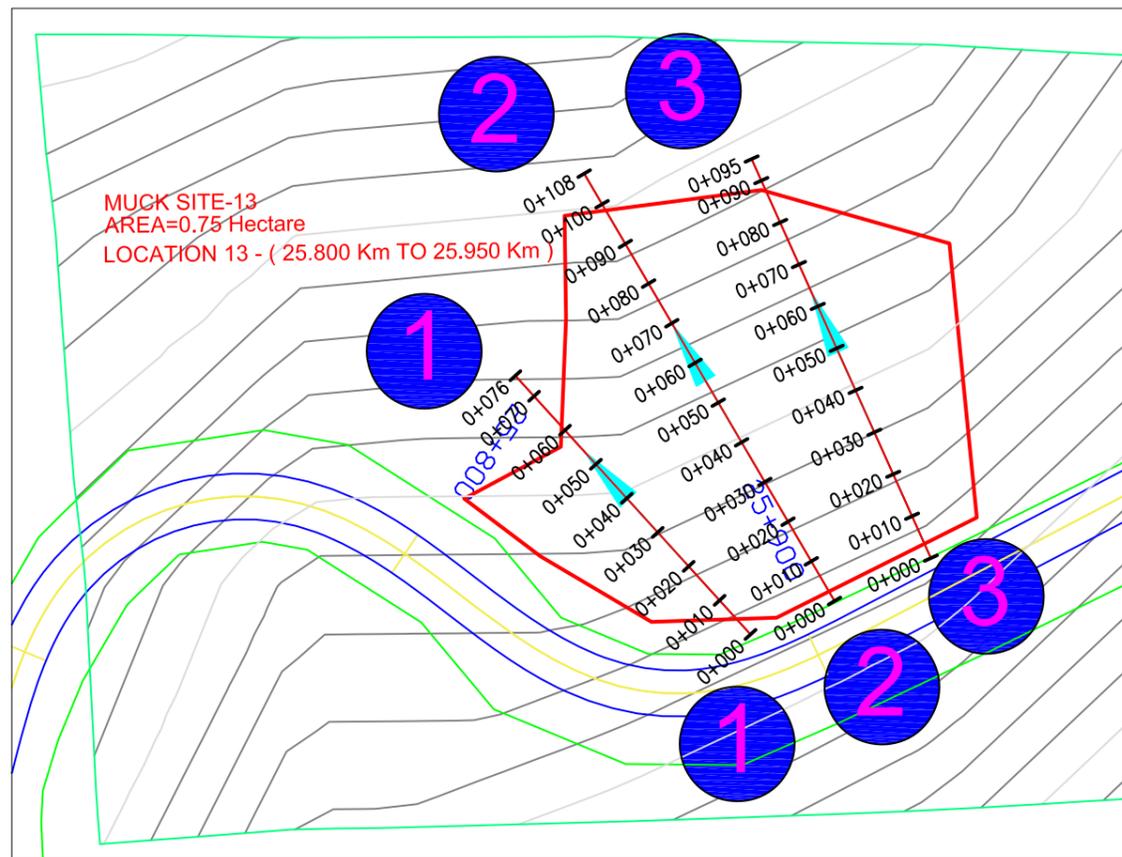
TITLE : MUCK DISPOSAL PLAN
MUCK SITE 12

DRAWING NO : - YN/MDP/R0

Prep. By	Chk. By	Date
S.K.M	B.B.M	OCT 2018

SHEET SIZE : A3

CONSULTANTS :  **S.M. CONSULTANTS**
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

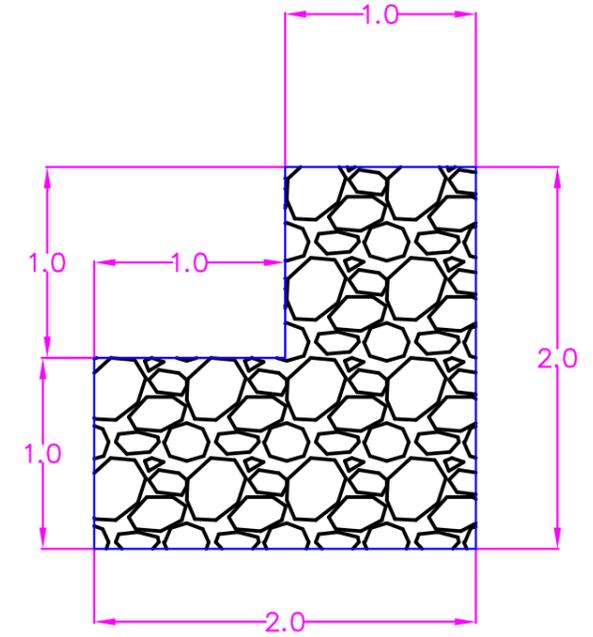


Layout Plan Of Muck Disposal-13
Scale 1:650

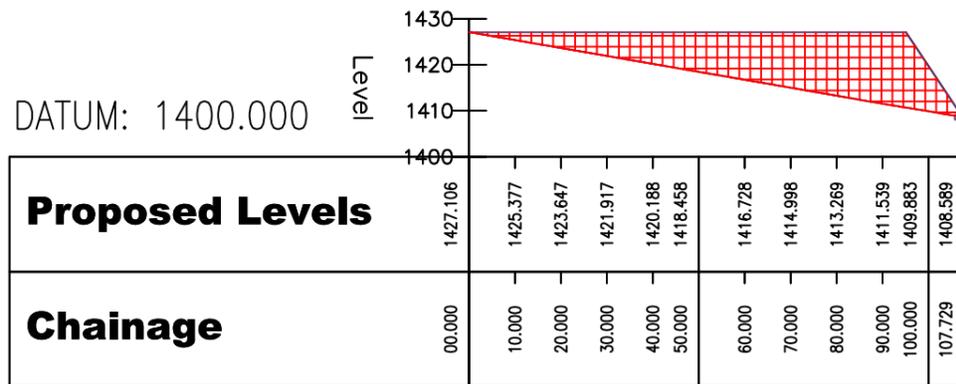
DATUM: 1410.000

Proposed Levels	1426.901	1425.241	1423.582	1421.922	1420.263	1418.973	1417.765	1416.587
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	76.928

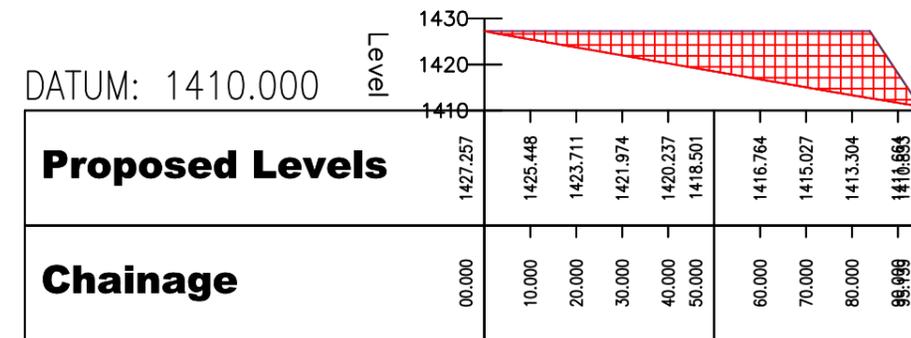
Section at 1-1
Scale 1:700



Typical Details Of Gabion Wall



Section at 2-2
Scale 1:650



Section at 3-3
Scale 1:650

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT :

Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 13

DRAWING NO : - YN/MDP/R0

Prep. By

S.K.M

Chk. By

B.B.M

Date

OCT 2018

SHEET
SIZE

A3

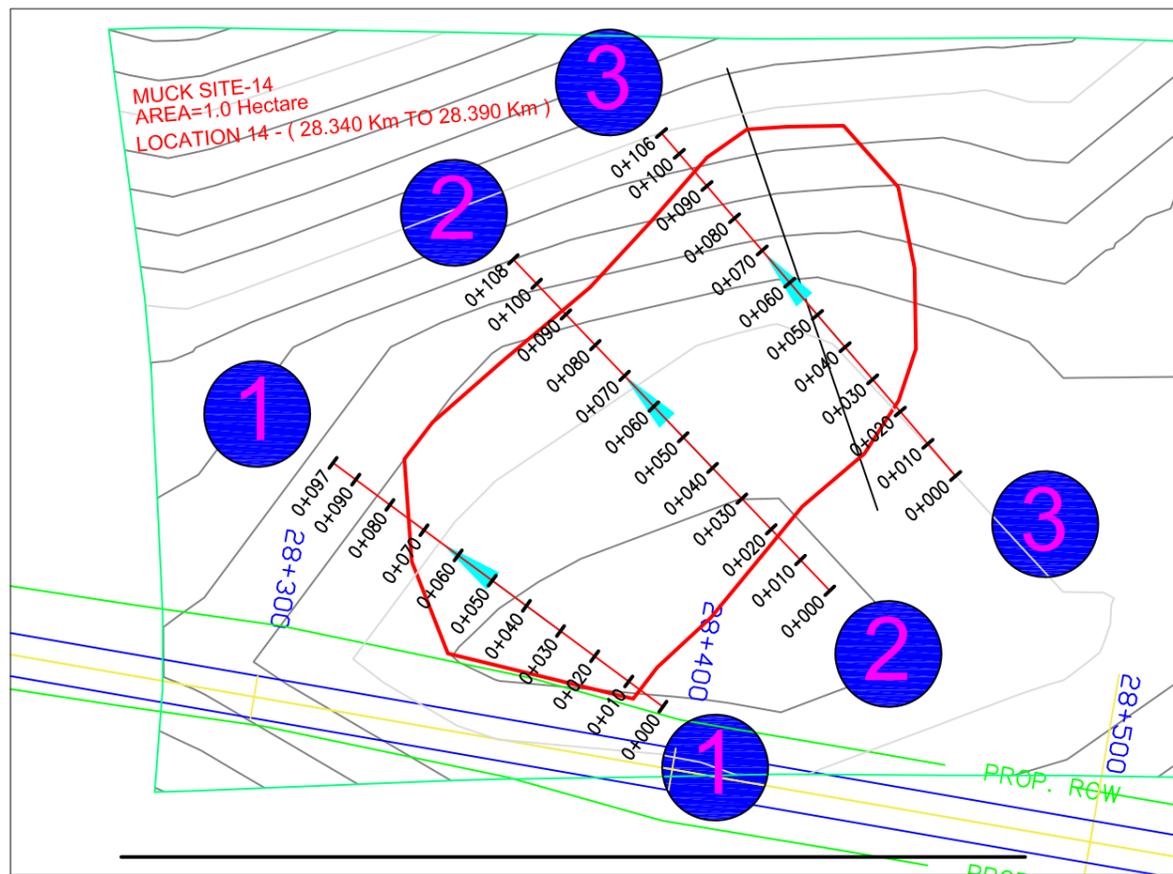
Rev. No.

02

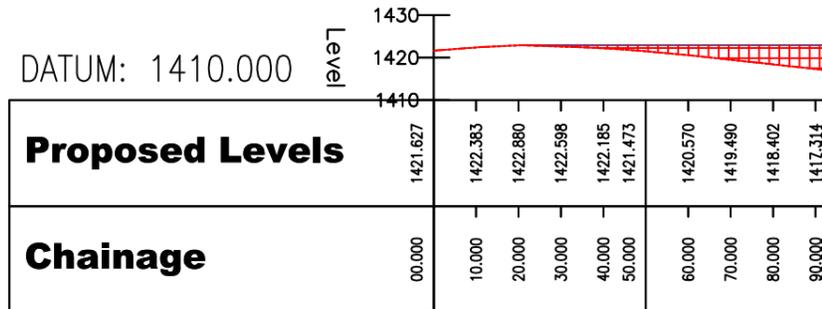
CONSULTANTS :

S.M. CONSULTANTS

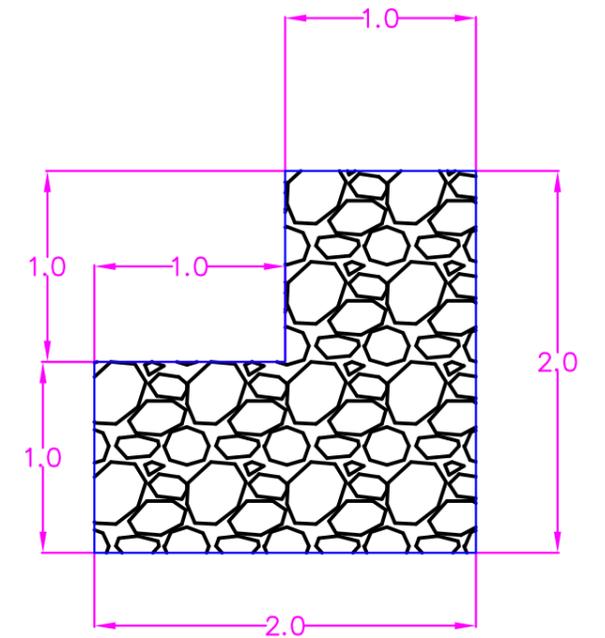
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Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com



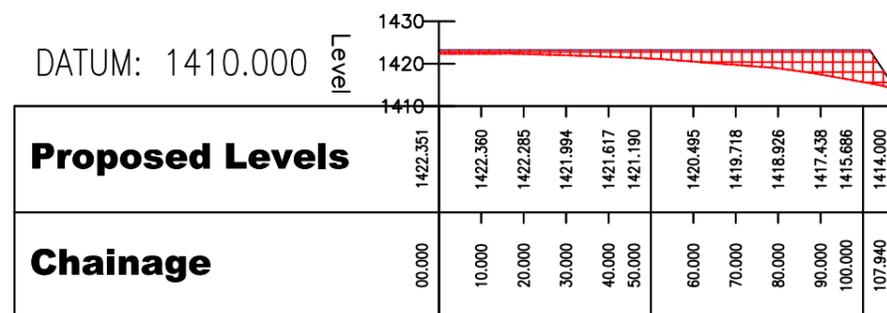
Layout Plan Of Muck Disposal-14
Scale 1:300



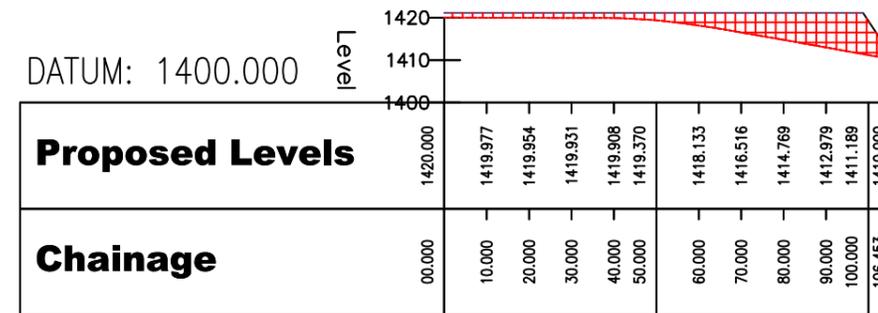
Section at 1-1
Scale 1:600



Typical Details Of Gabion Wall



Section at 2-2
Scale 1:600



Section at 3-3
Scale 1:600

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT :

Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 14

DRAWING NO : - YN/MDP/R0

Prep. By

Chk. By

Date

S.K.M

B.B.M

OCT 2018

SHEET
SIZE

A3

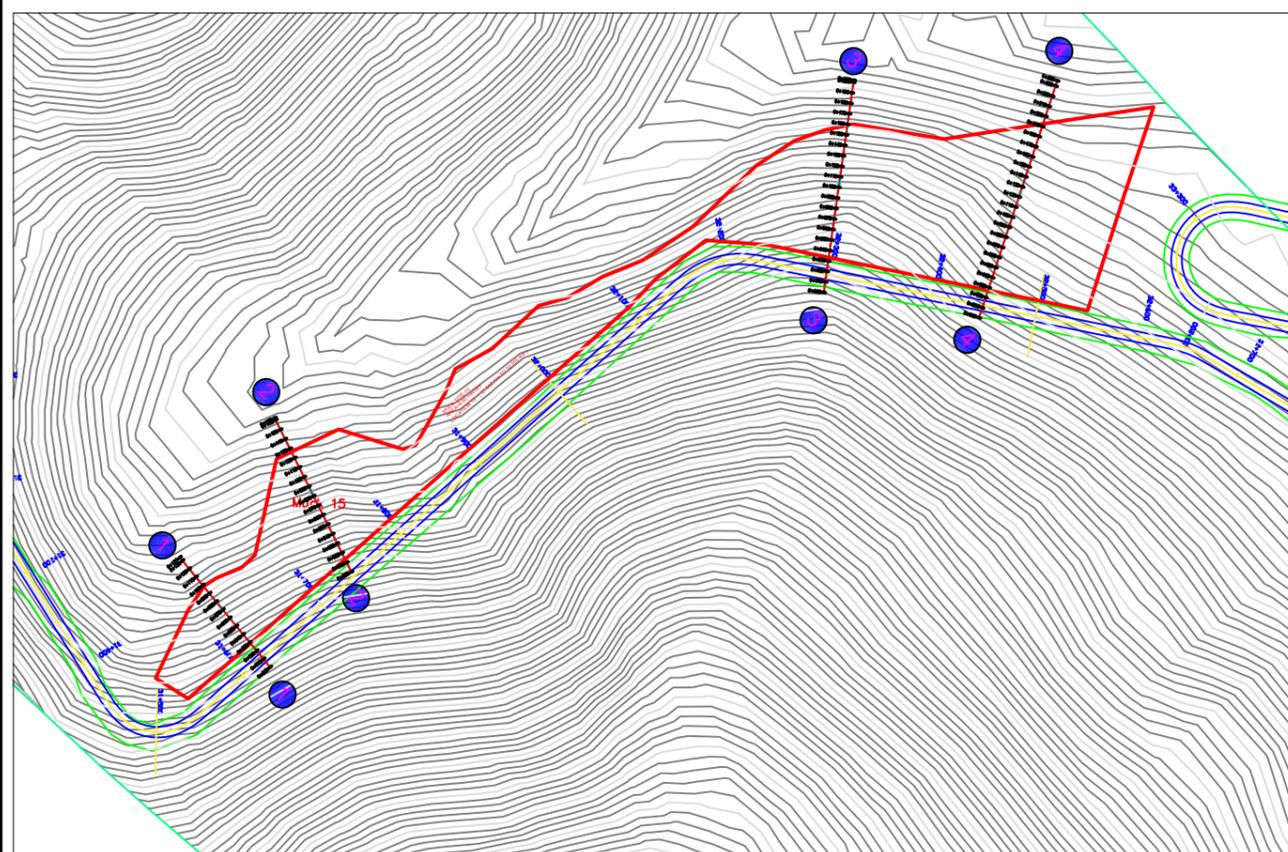
Rev. No.

02

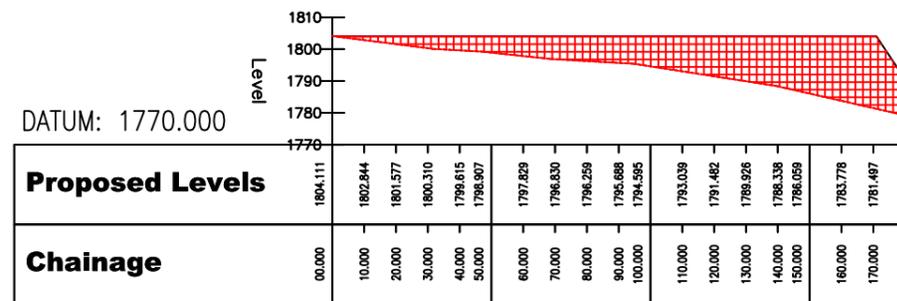
CONSULTANTS :

S.M. CONSULTANTS

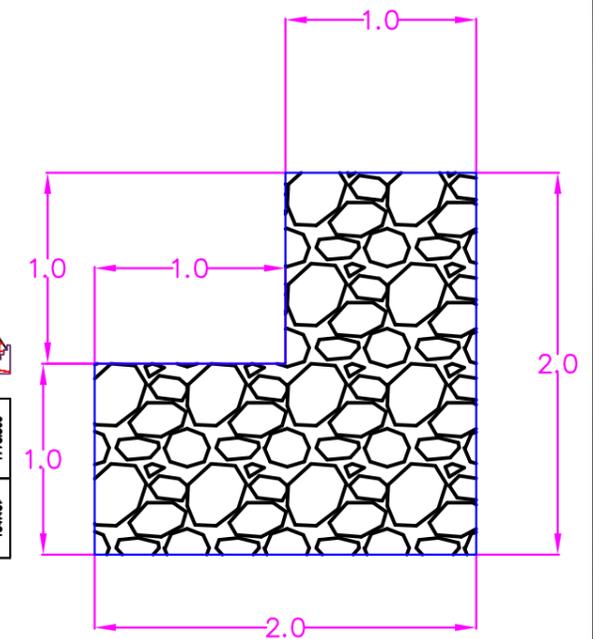
Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com



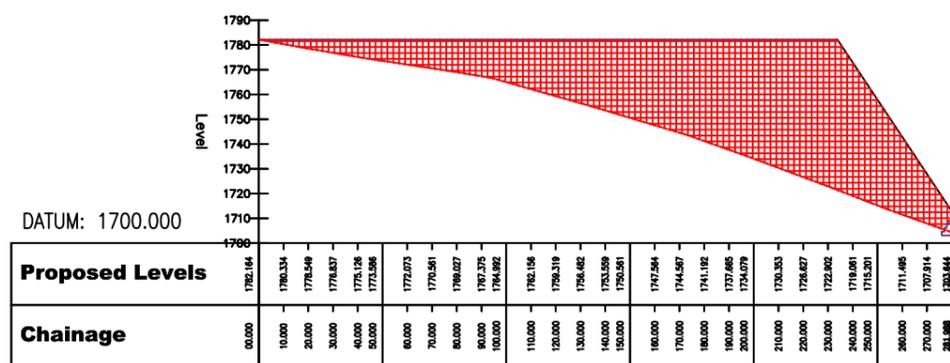
Layout Plan Of Muck Disposal-15
Scale 1:150



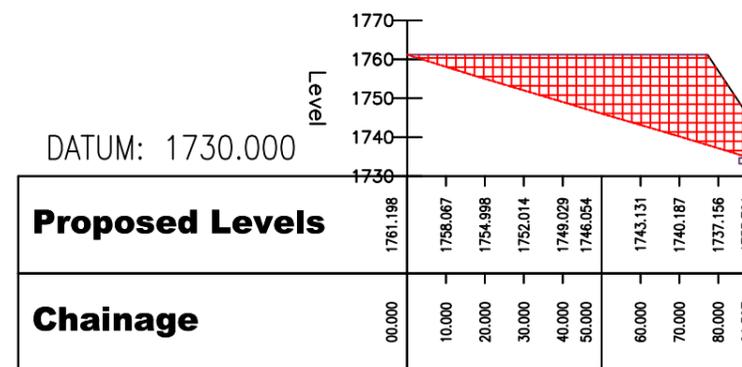
Section at 1-1
Scale 1:450



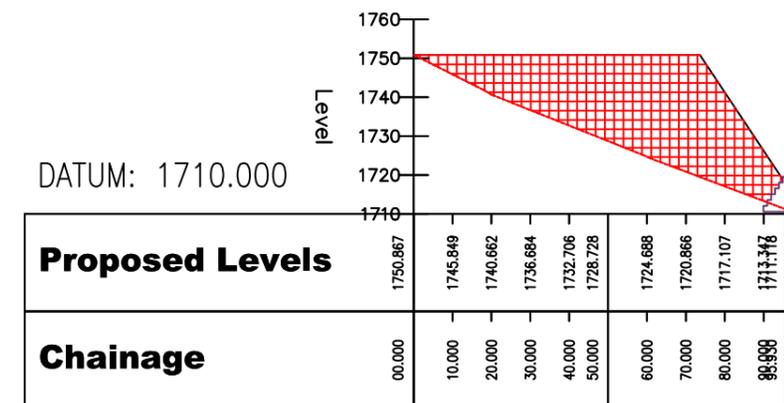
Typical Details Of Gabion Wall



Section at 4-4
Scale 1:350



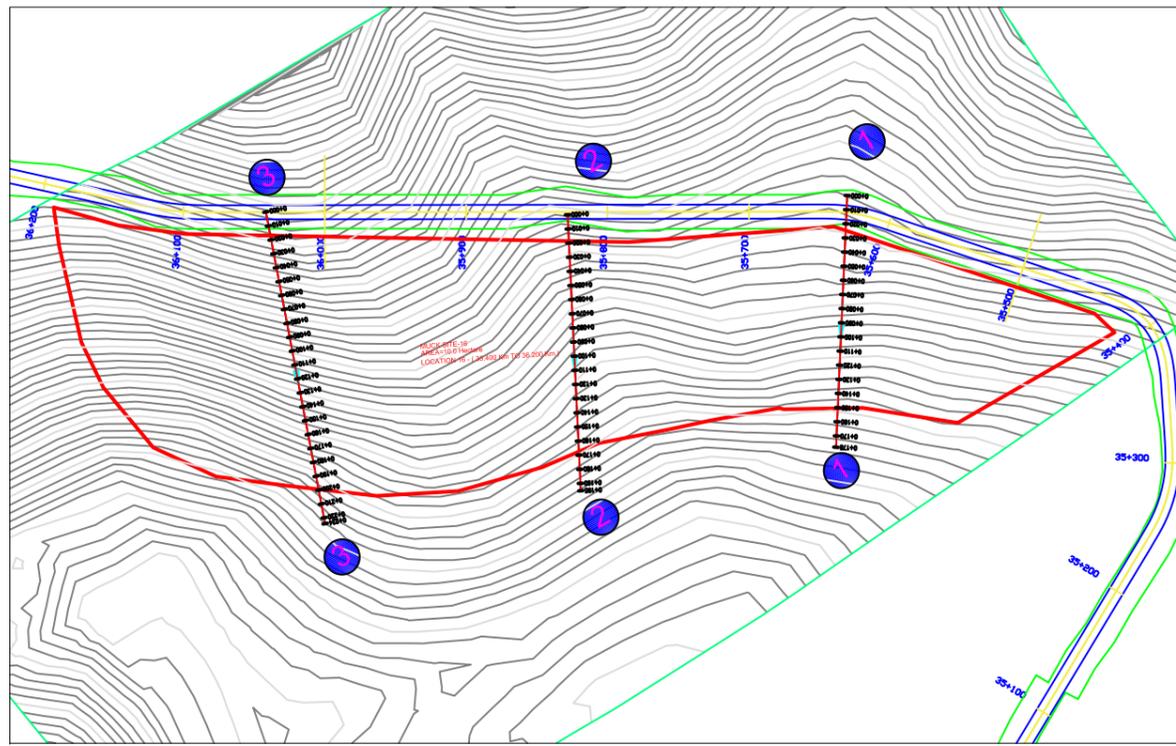
Section at 2-2
Scale 1:550



Section at 3-3
Scale 1:550

CLIENT :	 NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	SCALE :	AS SHOWN IN THE DRAWING	TITLE :	MUCK DISPOSAL PLAN MUCK SITE 15	SHEET SIZE	CONSULTANTS :
PROJECT :				CONTOUR SERVICE FOR CARRYING OUT FEASIBILITY STUDY, PREPARATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION SERVICES IN RESPECT OF 2 LANING WITH PAVED SHOULDER OF YAINGANGPOKPI-NAGALAND BORDER ROAD ON NH-202 ON ENGINEERING, PROCUREMENT AND CONSTRUCTION MADE IN THE STATE OF MANIPUR.		DRAWING NO. :-	
		Prep. By	Chk. By	Date	Rev. No.		
		S.K.M	B.B.M	OCT 2018	02		

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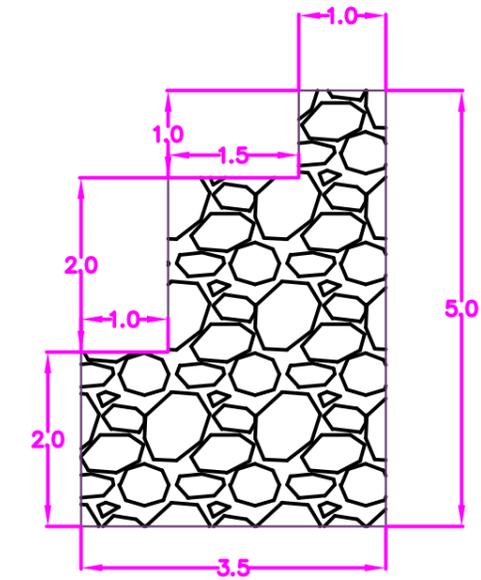
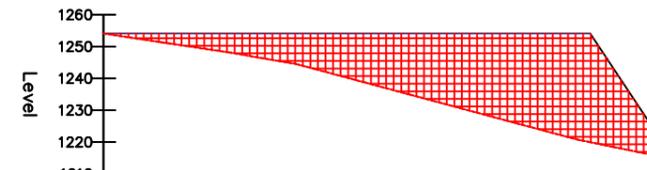


Layout Plan Of Muck Disposal-16
Scale 1:400

DATUM: 1210.000

Proposed Levels	Chainage
1254.089	00.000
1252.590	10.000
1251.082	20.000
1249.566	30.000
1248.058	40.000
1246.537	50.000
1244.624	60.000
1241.979	70.000
1239.289	80.000
1236.599	90.000
1233.909	100.000
1231.219	110.000
1228.529	120.000
1225.846	130.000
1223.172	140.000
1220.556	150.000
1218.506	160.000
1216.467	170.000
1214.839	178.002

Section at 1-1
Scale 1:450



Typical Details Of Gabion Wall

DATUM: 1210.000

Proposed Levels	Chainage
1258.382	00.000
1255.027	10.000
1252.122	20.000
1249.582	30.000
1247.025	40.000
1244.468	50.000
1241.882	60.000
1239.263	70.000
1237.188	80.000
1235.215	90.000
1233.448	100.000
1231.598	110.000
1229.428	120.000
1227.531	130.000
1226.087	140.000
1224.199	150.000
1222.246	160.000
1219.530	170.000
1217.414	180.000
1215.988	188.000

Section at 2-2
Scale 1:450

DATUM: 1210.000

Proposed Levels	Chainage
1287.509	00.000
1283.844	10.000
1280.370	20.000
1276.778	30.000
1273.090	40.000
1269.371	50.000
1265.703	60.000
1262.001	70.000
1258.228	80.000
1254.391	90.000
1250.604	100.000
1246.865	110.000
1243.343	120.000
1239.939	130.000
1236.453	140.000
1232.949	150.000
1229.433	160.000
1225.886	170.000
1222.216	180.000
1219.257	190.000
1217.038	200.000
1214.672	210.000
1212.846	220.000

Section at 3-3
Scale 1:400

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT :

Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.

SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 16

DRAWING NO : - YN/MDP/R0

Prep. By

S.K.M

Chk. By

B.B.M

Date

OCT 2018

SHEET
SIZE

A3

Rev. No.

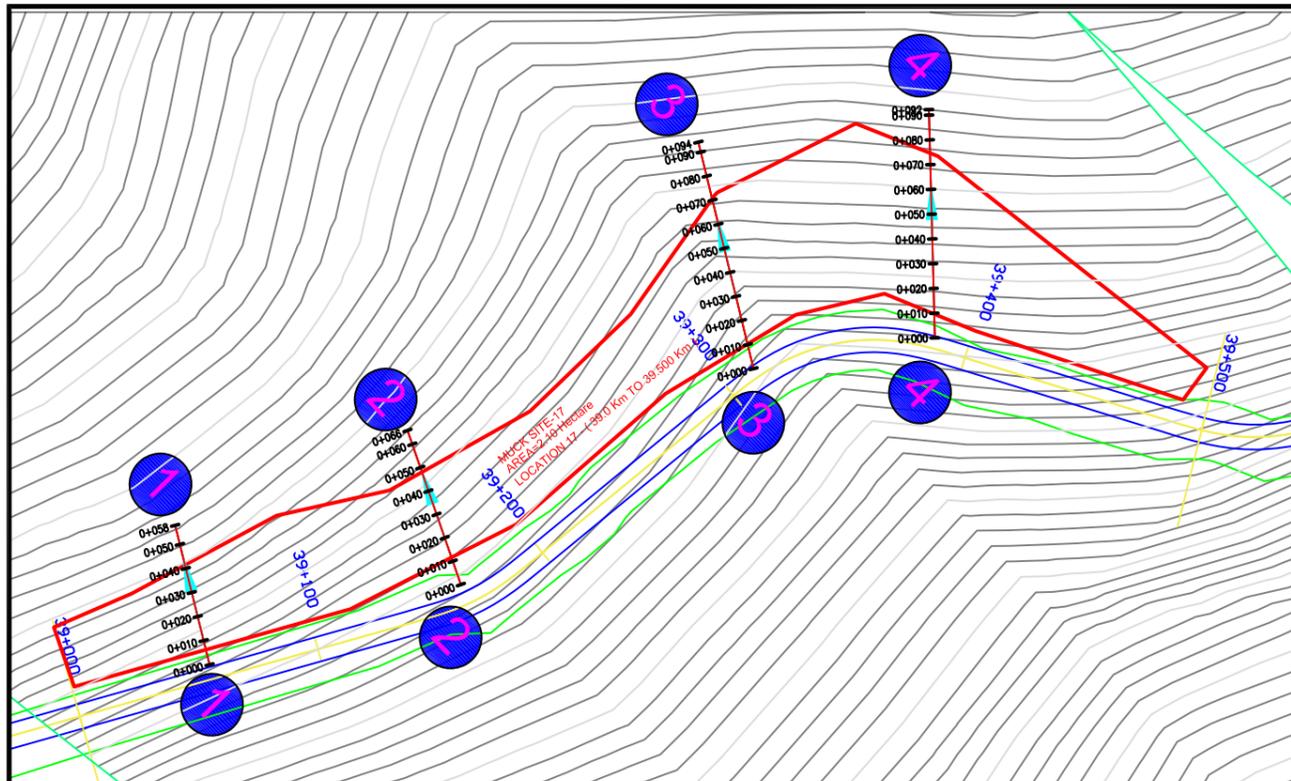
02

CONSULTANTS :



S.M. CONSULTANTS

Balasure / Bhubaneswar / Secunderabad / New Delhi / South Andaman
Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com

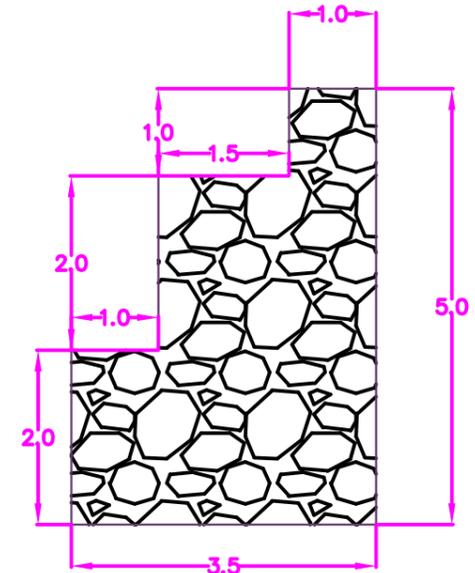


Layout Plan Of Muck Disposal-17
Scale 1:350

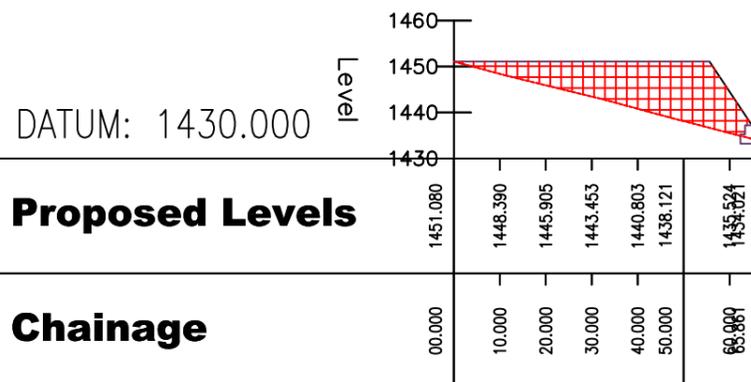
DATUM: 1420.000

Proposed Levels	1445.265	1441.583	1438.003	1434.423	1430.873	1427.763	1425.522
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	57.928

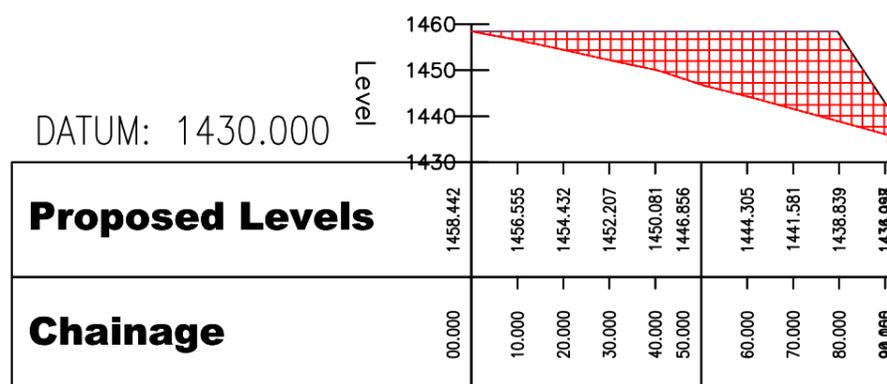
Section at 1-1
Scale 1:650



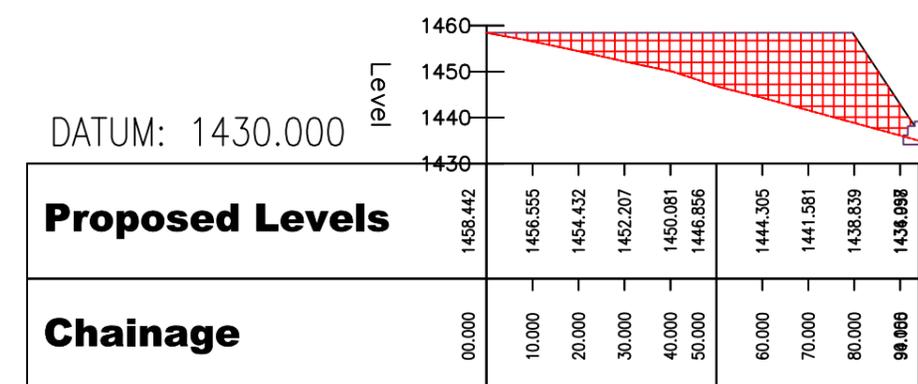
Typical Details Of Gabion Wall



Section at 2-2
Scale 1:650



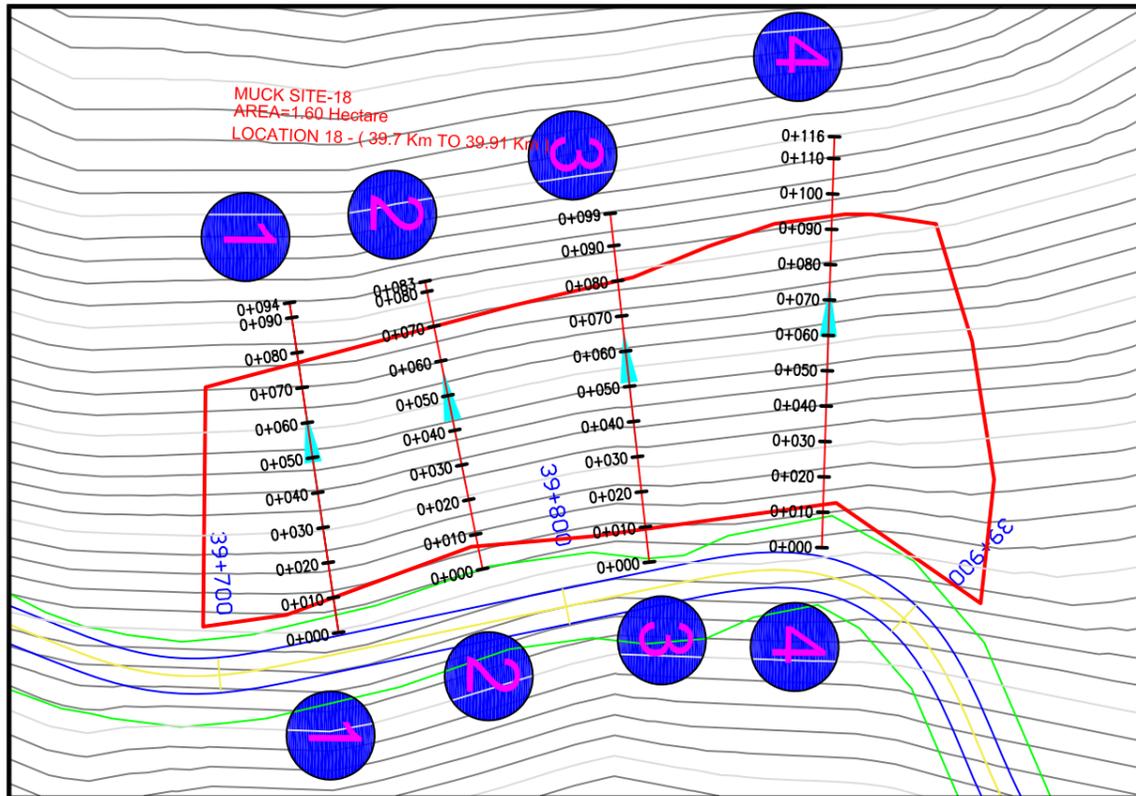
Section at 3-3
Scale 1:650



Section at 4-4
Scale 1:650

CLIENT :  NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.	SCALE : AS SHOWN IN THE DRAWING	TITLE : MUCK DISPOSAL PLAN MUCK SITE 17			SHEET SIZE	CONSULTANTS :  S.M. CONSULTANTS Balasore / Bhubaneswar / Secunderabad / New Delhi / South Andaman Web : http:// www.smcindia.com , e-mail: support@smcindia.com
		DRAWING NO : - YN/MDP/R0			A3	
PROJECT : Consultancy Service for Carrying out Feasibility Study, Preparation of Detailed Project Report and Providing Pre-Construction Services in respect of 2 Laning With Paved Shoulder of Yaingangpokpi-Nagaland Border Road On NH-202 On Engineering, Procurement and Construction Mode in the State Of Manipur.		Prep. By	Chk. By	Date	Rev. No.	
		S.K.M	B.B.M	OCT 2018	02	

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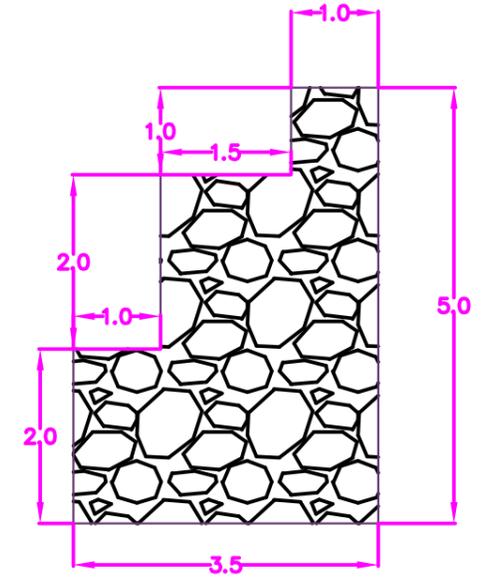


Layout Plan Of Muck Disposal-18
Scale 1:500

DATUM: 1440.000

Proposed Levels	1480.270	1476.710	1473.202	1469.696	1466.208	1462.789	1459.442	1456.112	1452.812	1448.589
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000

Section at 1-1
Scale 1:650



Typical Details Of Gabion Wall

DATUM: 1440.000

Proposed Levels	1477.940	1474.286	1470.434	1466.659	1462.989	1459.323	1455.909	1452.495	1448.988
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000

Section at 2-2
Scale 1:650

DATUM: 1440.000

Proposed Levels	1480.097	1476.377	1472.672	1469.004	1465.416	1461.969	1458.335	1454.700	1451.065	1447.425	1444.175
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	99.133

Section at 3-3
Scale 1:650

DATUM: 1440.000

Proposed Levels	1479.086	1475.920	1472.755	1469.466	1466.122	1462.669	1459.193	1455.733	1452.283	1448.856	1445.449	1442.195
Chainage	00.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.988

Section at 4-4
Scale 1:550

CLIENT :



NATIONAL HIGHWAYS & INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD.

PROJECT :

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SCALE : AS SHOWN IN
THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 18

DRAWING NO. : - YN/MDP/R0

Prep. By

Chk. By

Date

S.K.M

B.B.M

OCT 2018

SHEET
SIZE

A3

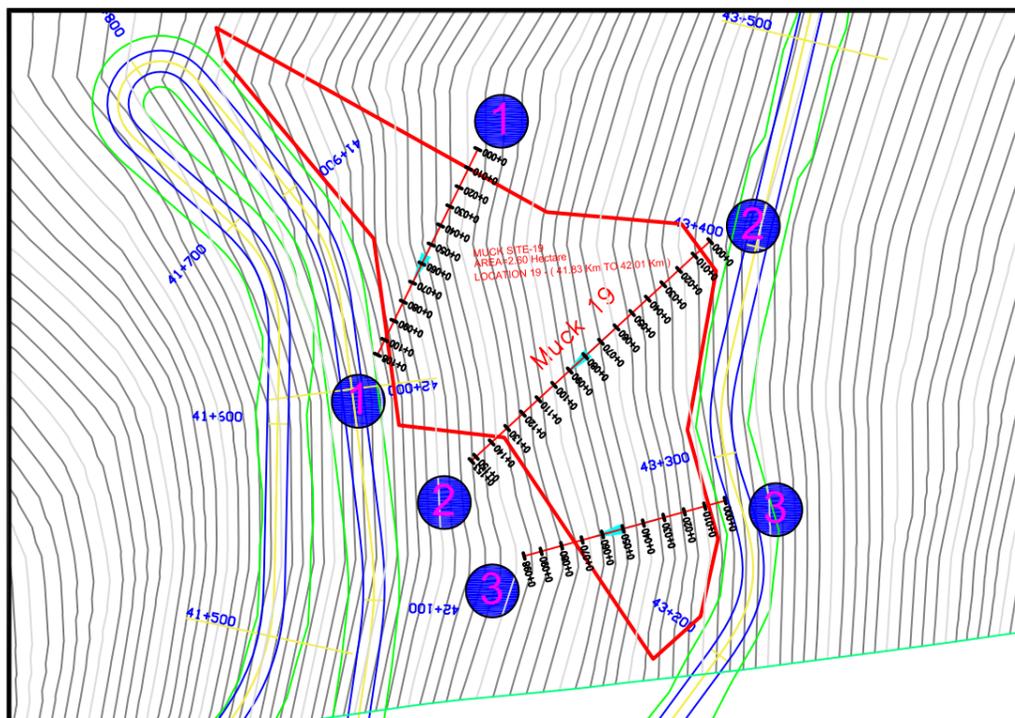
Rev. No.

02

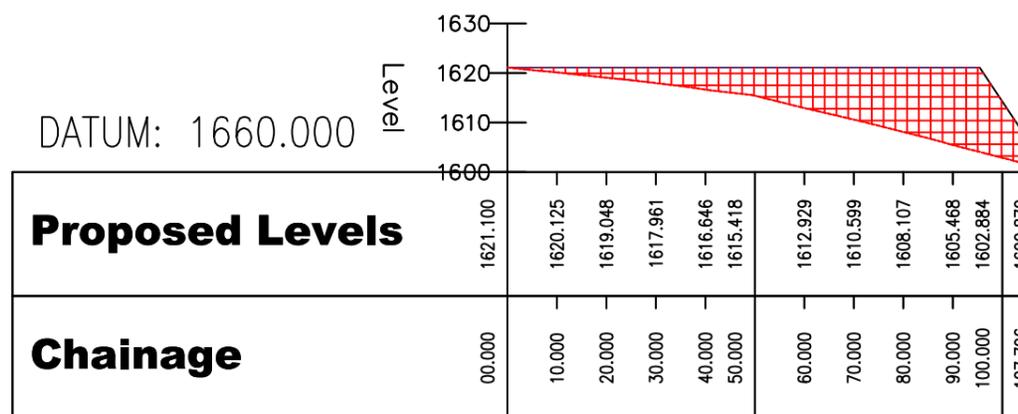
CONSULTANTS :

S.M. CONSULTANTS

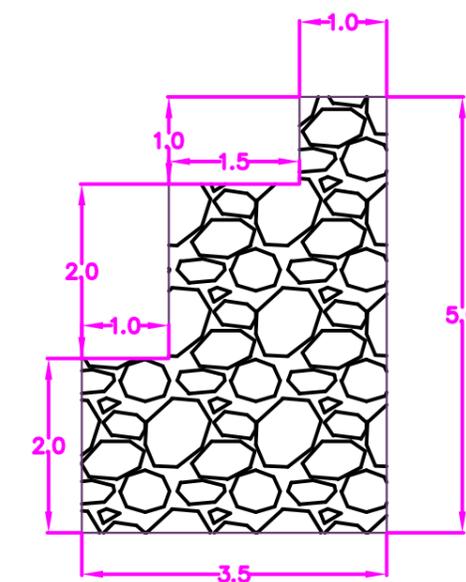
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Web : [http:// www.smcindia.com](http://www.smcindia.com) , e-mail: support@smcindia.com



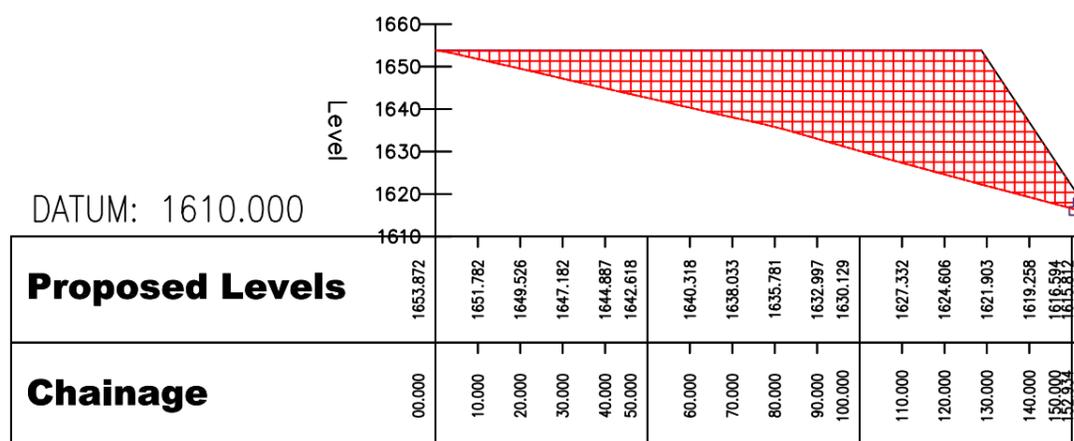
Layout Plan Of Muck Disposal-19
Scale 1:300



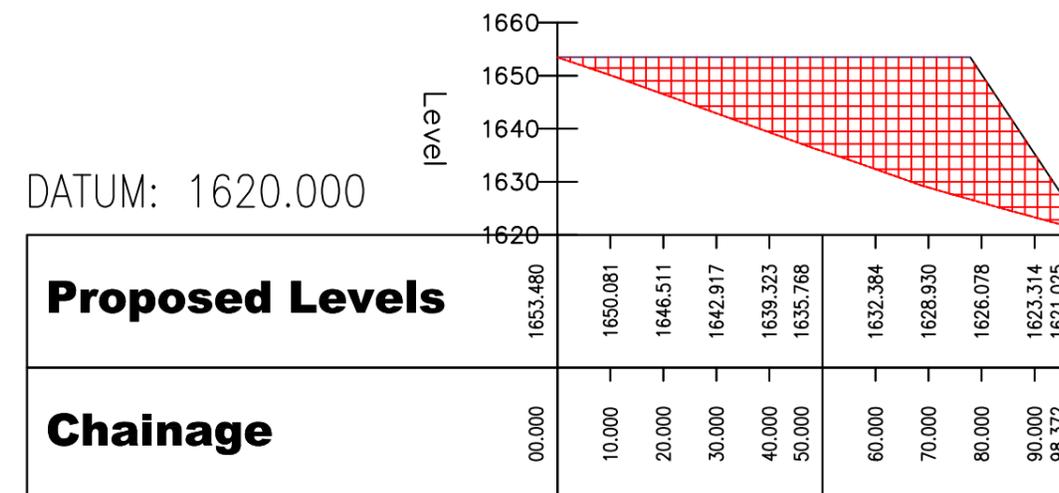
Section at 1-1
Scale 1:700



Typical Details Of Gabion Wall



Section at 2-2
Scale 1:600



Section at 3-3
Scale 1:750

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SCALE : AS SHOWN IN THE DRAWING

TITLE : MUCK DISPOSAL PLAN
MUCK SITE 19

DRAWING NO : - YN/MDP/R0

Prep. By	Chk. By	Date
S.K.M	B.B.M	OCT 2018

SHEET SIZE : A3

Rev. No. : 02

CONSULTANTS : S.M. CONSULTANTS

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