Cost Estimate
(Flexible Pavement) 10.1
Package-III:- Km 29+000 to Km 44+525

SUMMARY OF COST FOR FLEXIBLE PAVEMENT (Cl.10.1)			
Name of Road: Kohima Bypass			
Existing Length of Road: Nil		**Proposed length: 15+525**	
Bill No.	**Description**	**Item Price (Rupees)**	**Cost in Crores**
1	Site Clearance	1,997,096.23	0.20
2	Earthworks	832,461,122.37	83.25
3	Sub-base and Base Courses	755,818,112.52	75.58
4	Flexible Pavement	694,201,806.27	69.42
5	Structures		-
A	Culverts	280,098,585.55	28.01
B	Bridges	585,834,829.36	58.58
C	Tunnel	-	-
D	Landslide Protection	737,041,602.93	73.70
6	Road Junctions	35,951,847.65	3.60
7	Bus Bays / Bus Shelters	20,352,318.87	2.04
8	Drainage	23,704,174.05	2.37
9	Protection Works	1,115,764,891.03	111.58
10	Traffic Signs, Markings & Road Appurtenances	34,345,800.70	3.43
A	**Total Civil Cost of the project**	**5,117,572,187.53**	511.76
	Total Civil Cost of the project in Crores	**511.76**	0.00
	Cost Per Km in Rs (crores) =	**32.963**	0.00
	GST @ 6% of A	**307,054,331.252**	30.71
	Add Contingency 2.8 % on A	**143,292,021.251**	14.33
B	**Total 'B'**	**5,567,918,540.035**	556.79
	Escalation @ 15% of (A) for 3 years' construction period [5% every year; total 15%]	**767,635,828.130**	76.76
	Supervision Charges@ 3 % on (B)	**167,037,556.201**	16.70
	Agency charges @ 3% of (B)	**167,037,556.201**	16.70
	Quality Control @ 0.25% of (B)	**13,919,796.350**	1.39
	Road Safety @ 0.25% of (B)	**13,919,796.350**	1.39
	Total Cost of the project without EIA, Land & Utility Shifting	**6,697,469,073.267**	**669.75**

BILL NO: 1 - SITE CLEARANCE

Item No.	SOR Ref. No.	Description	Unit	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)
1.01	2.3 (ii) A & B	Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 meters including removal and disposal of top organic soil not exceeding 150 mm in thickness as per Technical Specifications Clause 201.								
			Ha	1	15525	30		46.575	42,879.15	1,997,096.23
									TOTAL FOR BILL NO: 1 (CARRIED FORWARD TO SUMMARY)	1,997,096.23

BILL NO: 2 - EARTHWORKS

Item No.	SOR Ref. No.	Description	Unit	Nos	Length (m)	Breadth (m)	Height (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)	Remarks
2.01	3.3	Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.	cum	1	Refer Earthwork Calculation sheet			1,359,557.14	**195.49**	**265,774,659.37**	**Considering 50% of total Qty**
2.02	3.33	Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.	cum	1	Refer Earthwork Calculation sheet			951,690.00	**276.04**	**262,708,028.69**	**Considering 35% of total Qty**
2.03	3.34	Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 meters	cum	1	Refer Earthwork Calculation sheet			407,867.14	**424.27**	**173,045,588.66**	**Considering 15% of total Qty**
2.06	3.17	**Construction of Embankment** with Material Deposited from Roadway Cutting (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)									
			cum	1	Refer Earthwork Calculation			391,542.41	**270.67**	**105,980,036.51**	
2.07	**3.19**	**Compacting Original Ground**									
		Case-I Compacting original ground supporting sub-grade									
		Loosening of the ground upto a level of 500 mm below the sub-grade level, watered, graded and compacted in layers to meet requirement of table 300-2 for sub-grade construction.	cum	1	14922	25.00	0.5	186,525.00	**89.15**	**16,628,759.71**	**Total Length - Length of treatment**
2.08		**Case-II: 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.	cum	1	14922	25.00	0.15	55,957.50	**55.85**	**3,125,405.44**	
2.09	3.22	**Turfing with Sods:** Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of sods and watering.	Sqm	1	1000	10.00		10,000.00	**129.97**	**1,299,661.00**	
2.10	3.23	**Seeding and Mulching** Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sqm and laying and **fixing jute netting**, including watering for 3 months all as per clause 308.	Sqm	1	1000	10.00		10,000.00	**389.90**	**3,898,983.00**	
									TOTAL FOR BILL NO: 2 (CARRIED FORWARD TO SUMMARY)	**832,461,122.37**	

Earthwork

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
50	0	0	0	0
100			0	0
150			0	0
200			0	0
250			0	0
300			0	0
350			0	0
400			0	0
450			0	0
500			0	0
550			0	0
600			0	0
650			0	0
700			0	0
750			0	0
800			0	0
850			0	0
900			0	0
950			0	0
1000			0	0
1050			0	0
1100			0	0
1150			0	0
1200			0	0
1250			0	0
1300			0	0
1350			0	0
1400			0	0
1450			0	0
1500			0	0
1550			0	0
1600			0	0
1650			0	0
1700			0	0
1750			0	0
1800			0	0
1850			0	0
1900			0	0
1950			0	0
2000			0	0
2050			0	0
2100			0	0
2150			0	0
2200			0	0
2250			0	0
2300			0	0
2350			0	0
2400			0	0
2450			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
2500			0	0
2550			0	0
2600			0	0
2650			0	0
2700			0	0
2750			0	0
2800			0	0
2850			0	0
2900			0	0
2950			0	0
3000			0	0
3050			0	0
3100			0	0
3150			0	0
3200			0	0
3250			0	0
3300			0	0
3350			0	0
3400			0	0
3450			0	0
3500			0	0
3550			0	0
3600			0	0
3650			0	0
3700			0	0
3750			0	0
3800			0	0
3850			0	0
3900			0	0
3950			0	0
4000			0	0
4050			0	0
4100			0	0
4150			0	0
4200			0	0
4250			0	0
4300			0	0
4350			0	0
4400			0	0
4450			0	0
4500			0	0
4550			0	0
4600			0	0
4650			0	0
4700			0	0
4750			0	0
4800			0	0
4850			0	0
4900			0	0
4950			0	0
5000			0	0
5050			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
5100			0	0
5150			0	0
5200			0	0
5250			0	0
5300			0	0
5350			0	0
5400			0	0
5450			0	0
5500			0	0
5550			0	0
5600			0	0
5650			0	0
5700			0	0
5750			0	0
5800			0	0
5850			0	0
5900			0	0
5950			0	0
6000			0	0
6050			0	0
6100			0	0
6150			0	0
6200			0	0
6250			0	0
6300			0	0
6350			0	0
6400			0	0
6450			0	0
6500			0	0
6550			0	0
6600			0	0
6650			0	0
6700			0	0
6750			0	0
6800			0	0
6850			0	0
6900			0	0
6950			0	0
7000			0	0
7050			0	0
7100			0	0
7150			0	0
7200			0	0
7250			0	0
7300			0	0
7350			0	0
7400			0	0
7450			0	0
7500			0	0
7550			0	0
7600			0	0
7650			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
7700			0	0
7750			0	0
7800			0	0
7850			0	0
7900			0	0
7950			0	0
8000			0	0
8050			0	0
8100			0	0
8150			0	0
8200			0	0
8250			0	0
8300			0	0
8350			0	0
8400			0	0
8450			0	0
8500			0	0
8550			0	0
8600			0	0
8650			0	0
8700			0	0
8750			0	0
8800			0	0
8850			0	0
8900			0	0
8950			0	0
9000			0	0
9050			0	0
9100			0	0
9150			0	0
9200			0	0
9250			0	0
9300			0	0
9350			0	0
9400			0	0
9450			0	0
9500			0	0
9550			0	0
9600			0	0
9650			0	0
9700			0	0
9750			0	0
9800			0	0
9850			0	0
9900			0	0
9950			0	0
10000			0	0
10050			0	0
10100			0	0
10150			0	0
10200			0	0
10250			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
10300			0	0
10350			0	0
10400			0	0
10450			0	0
10500			0	0
10550			0	0
10600			0	0
10650			0	0
10700			0	0
10750			0	0
10800			0	0
10850			0	0
10900			0	0
10950			0	0
11000			0	0
11050			0	0
11100			0	0
11150			0	0
11200			0	0
11250			0	0
11300			0	0
11350			0	0
11400			0	0
11450			0	0
11500			0	0
11550			0	0
11600			0	0
11650			0	0
11700			0	0
11750			0	0
11800			0	0
11850			0	0
11900			0	0
11950			0	0
12000			0	0
12050			0	0
12100			0	0
12150			0	0
12200			0	0
12250			0	0
12300			0	0
12350			0	0
12400			0	0
12450			0	0
12500			0	0
12550			0	0
12600			0	0
12650			0	0
12700			0	0
12750			0	0
12800			0	0
12850			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
12900			0	0
12950			0	0
13000			0	0
13050			0	0
13100			0	0
13150			0	0
13200			0	0
13250			0	0
13300			0	0
13350			0	0
13400			0	0
13450			0	0
13500			0	0
13550			0	0
13600			0	0
13650			0	0
13700			0	0
13750			0	0
13800			0	0
13850			0	0
13900			0	0
13950			0	0
14000			0	0
14050			0	0
14100			0	0
14150			0	0
14200			0	0
14250			0	0
14300			0	0
14350			0	0
14400			0	0
14450			0	0
14500			0	0
14550			0	0
14600			0	0
14650			0	0
14700			0	0
14750			0	0
14800			0	0
14850			0	0
14900			0	0
14950			0	0
15000			0	0
15050			0	0
15100			0	0
15150			0	0
15200			0	0
15250			0	0
15300			0	0
15350			0	0
15400			0	0
15450			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
15500			0	0
15550			0	0
15600			0	0
15650			0	0
15700			0	0
15750			0	0
15800			0	0
15850			0	0
15900			0	0
15950			0	0
16000			0	0
16050			0	0
16100			0	0
16150			0	0
16200			0	0
16250			0	0
16300			0	0
16350			0	0
16400			0	0
16450			0	0
16500			0	0
16550			0	0
16600			0	0
16650			0	0
16700			0	0
16750			0	0
16800			0	0
16850			0	0
16900			0	0
16950			0	0
17000			0	0
17050			0	0
17100			0	0
17150			0	0
17200			0	0
17250			0	0
17300			0	0
17350			0	0
17400			0	0
17450			0	0
17500			0	0
17550			0	0
17600			0	0
17650			0	0
17700			0	0
17750			0	0
17800			0	0
17850			0	0
17900			0	0
17950			0	0
18000			0	0
18050			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
18100			0	0
18150			0	0
18200			0	0
18250			0	0
18300			0	0
18350			0	0
18400			0	0
18450			0	0
18500			0	0
18550			0	0
18600			0	0
18650			0	0
18700			0	0
18750			0	0
18800			0	0
18850			0	0
18900			0	0
18950			0	0
19000			0	0
19050			0	0
19100			0	0
19150			0	0
19200			0	0
19250			0	0
19300			0	0
19350			0	0
19400			0	0
19450			0	0
19500			0	0
19550			0	0
19600			0	0
19650			0	0
19700			0	0
19750			0	0
19800			0	0
19850			0	0
19900			0	0
19950			0	0
20000			0	0
20050			0	0
20100			0	0
20150			0	0
20200			0	0
20250			0	0
20300			0	0
20350			0	0
20400			0	0
20450			0	0
20500			0	0
20550			0	0
20600			0	0
20650			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
20700			0	0
20750			0	0
20800			0	0
20850			0	0
20900			0	0
20950			0	0
21000			0	0
21050			0	0
21100			0	0
21150			0	0
21200			0	0
21250			0	0
21300			0	0
21350			0	0
21400			0	0
21450			0	0
21500			0	0
21550			0	0
21600			0	0
21650			0	0
21700			0	0
21750			0	0
21800			0	0
21850			0	0
21900			0	0
21950			0	0
22000			0	0
22050			0	0
22100			0	0
22150			0	0
22200			0	0
22250			0	0
22300			0	0
22350			0	0
22400			0	0
22450			0	0
22500			0	0
22550			0	0
22600			0	0
22650			0	0
22700			0	0
22750			0	0
22800			0	0
22850			0	0
22900			0	0
22950			0	0
23000			0	0
23050			0	0
23100			0	0
23150			0	0
23200			0	0
23250			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
23300			0	0
23350			0	0
23400			0	0
23450			0	0
23500			0	0
23550			0	0
23600			0	0
23650			0	0
23700			0	0
23750			0	0
23800			0	0
23850			0	0
23900			0	0
23950			0	0
24000			0	0
24050			0	0
24100			0	0
24150			0	0
24200			0	0
24250			0	0
24300			0	0
24350			0	0
24400			0	0
24450			0	0
24500			0	0
24550			0	0
24600			0	0
24650			0	0
24700			0	0
24750			0	0
24800			0	0
24850			0	0
24900			0	0
24950			0	0
25000			0	0
25050			0	0
25100			0	0
25150			0	0
25200			0	0
25250			0	0
25300			0	0
25350			0	0
25400			0	0
25450			0	0
25500			0	0
25550			0	0
25600			0	0
25650			0	0
25700			0	0
25750			0	0
25800			0	0
25850			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
25900			0	0
25950			0	0
26000			0	0
26050			0	0
26100			0	0
26150			0	0
26200			0	0
26250			0	0
26300			0	0
26350			0	0
26400			0	0
26450			0	0
26500			0	0
26550			0	0
26600			0	0
26650			0	0
26700			0	0
26750			0	0
26800			0	0
26850			0	0
26900			0	0
26950			0	0
27000			0	0
27050			0	0
27100			0	0
27150			0	0
27200			0	0
27250			0	0
27300			0	0
27350			0	0
27400			0	0
27450			0	0
27500			0	0
27550			0	0
27600			0	0
27650			0	0
27700			0	0
27750			0	0
27800			0	0
27850			0	0
27900			0	0
27950			0	0
28000			0	0
28050			0	0
28100			0	0
28150			0	0
28200			0	0
28250			0	0
28300			0	0
28350			0	0
28400			0	0
28450			0	0

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
28500			0	0
28550			0	0
28600			0	0
28650			0	0
28700			0	0
28750			0	0
28800			0	0
28850			0	0
28900			0	0
28950			0	0
29000			0	0
29050	22467.87	215.334	22467.87	215.334
29100	19024.722	625.842	41492.592	841.176
29150	11341.614	1350.948	52834.206	2192.124
29200	5981.196	2606.97	58815.402	4799.094
29250	5828.214	3217.518	64643.616	8016.612
29300	9216.39	2823.36	73860.006	10839.972
29350	13358.1	2189.82	87218.106	13029.792
29400	16202.538	1121.694	103420.644	14151.486
29450	16720.092	933.924	120140.736	15085.41
29500	15469.386	1010.286	135610.122	16095.696
29550	13833.03	961.992	149443.152	17057.688
29600	11388.636	753.036	160831.788	17810.724
29650	7744.998	812.892	168576.786	18623.616
29700	4126.806	1464.846	172703.592	20088.462
29750	2702.736	1456.14	175406.328	21544.602
29800	2263.956	1905.78	177670.284	23450.382
29850	1406.886	2533.65	179077.17	25984.032
29900	1057.236	3340.758	180134.406	29324.79
29950	2473.602	4488.372	182608.008	33813.162
30000	9136.146	2899.644	191744.154	36712.806
30050	20273.298	1098.546	212017.452	37811.352
30100	25539.54	811.152	237556.992	38622.504
30150	21814.056	764.61	259371.048	39387.114
30200	13010.868	1017.618	272381.916	40404.732
30250	5490.258	1183.992	277872.174	41588.724
30300	2462.322	1591.776	280334.496	43180.5
30350	3375.666	1983.138	283710.162	45163.638
30400	3272.712	2274.204	286982.874	47437.842
30450	3034.326	1690.692	290017.2	49128.534
30500	2882.328	803.652	292899.528	49932.186
30550	633.582	652.662	293533.11	50584.848
30600	260.676	701.478	293793.786	51286.326
30650	1187.196	470.388	294980.982	51756.714
30700	1988.85	1196.004	296969.832	52952.718
30750	7029.252	1244.694	303999.084	54197.412
30800	11149.926	46.914	315149.01	54244.326
30850	8660.442	183.084	323809.452	54427.41
30900	5761.62	7235.658	329571.072	61663.068
30950	6018.078	10333.596	335589.15	71996.664
31000	4569.102	4864.83	340158.252	76861.494
31050	1349.226	4454.286	341507.478	81315.78

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
31100	470.526	5889.702	341978.004	87205.482
31150	1162.164	4189.998	343140.168	91395.48
31200	3284.454	567.426	346424.622	91962.906
31250	5078.094	983.148	351502.716	92946.054
31300	5883.666	2712.468	357386.382	95658.522
31350	5985.936	3546.654	363372.318	99205.176
31400	5562.57	3086.538	368934.888	102291.714
31450	7450.692	1321.062	376385.58	103612.776
31500	11091.39	354.588	387476.97	103967.364
31550	11790.948	170.166	399267.918	104137.53
31600	9698.22	147.186	408966.138	104284.716
31650	5374.422	380.112	414340.56	104664.828
31700	1002.12	1033.302	415342.68	105698.13
31750	1183.674	898.728	416526.354	106596.858
31800	4377.654	778.62	420904.008	107375.478
31850	4796.25	751.698	425700.258	108127.176
31900	2325.72	175.062	428025.978	108302.238
31950	1654.638	0	429680.616	108302.238
32000	2229.51	0	431910.126	108302.238
32050	1454.97	678.264	433365.096	108980.502
32100	982.836	806.478	434347.932	109786.98
32150	1561.794	1235.94	435909.726	111022.92
32200	3181.488	2289.306	439091.214	113312.226
32250	3569.844	1981.692	442661.058	115293.918
32300	1891.002	1892.346	444552.06	117186.264
32350	1143.96	2897.808	445696.02	120084.072
32400	887.436	3545.478	446583.456	123629.55
32450	890.82	3655.374	447474.276	127284.924
32500	466.2	4380.528	447940.476	131665.452
32550	574.662	4052.742	448515.138	135718.194
32600	1786.374	2474.58	450301.512	138192.774
32650	4009.248	744.822	454310.76	138937.596
32700	3619.146	757.224	457929.906	139694.82
32750	2284.386	1561.248	460214.292	141256.068
32800	1913.466	1700.49	462127.758	142956.558
32850	3275.094	834.42	465402.852	143790.978
32900	3575.694	963.462	468978.546	144754.44
32950	5012.724	874.068	473991.27	145628.508
33000	11864.01	991.776	485855.28	146620.284
33050	12255.888	2026.818	498111.168	148647.102
33100	9561.102	2162.604	507672.27	150809.706
33150	11970.108	1414.218	519642.378	152223.924
33200	12509.454	1005.618	532151.832	153229.542
33250	10072.332	1404.678	542224.164	154634.22
33300	5834.19	1247.358	548058.354	155881.578
33350	3269.736	996.48	551328.09	156878.058
33400	1393.59	912.468	552721.68	157790.526
33450	25.302	746.766	552746.982	158537.292
33500	0.66	709.566	552747.642	159246.858
33550	534.144	337.152	553281.786	159584.01
33600	2347.848	327.624	555629.634	159911.634
33650	4219.41	386.796	559849.044	160298.43

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
33700	5066.268	271.776	564915.312	160570.206
33750	5275.08	363.366	570190.392	160933.572
33800	5674.308	660.234	575864.7	161593.806
33850	7003.044	670.086	582867.744	162263.892
33900	8803.818	516.48	591671.562	162780.372
33950	10661.202	348.576	602332.764	163128.948
34000	13574.724	103.626	615907.488	163232.574
34050	13460.736	204.144	629368.224	163436.718
34100	6433.932	2344.086	635802.156	165780.804
34150	5329.764	2487.978	641131.92	168268.782
34200	7386.288	982.68	648518.208	169251.462
34250	6868.47	1784.43	655386.678	171035.892
34300	6669.33	3141.234	662056.008	174177.126
34350	6546.312	2395.53	668602.32	176572.656
34400	8830.248	1070.868	677432.568	177643.524
34450	10542.312	954.24	687974.88	178597.764
34500	12292.338	1408.926	700267.218	180006.69
34550	16338.372	1088.04	716605.59	181094.73
34600	20446.08	43.362	737051.67	181138.092
34650	20117.052	126.15	757168.722	181264.242
34700	14804.754	1679.616	771973.476	182943.858
34750	13867.458	1633.026	785840.934	184576.884
34800	13661.49	1435.512	799502.424	186012.396
34850	9584.358	3389.964	809086.782	189402.36
34900	7506.57	2550.474	816593.352	191952.834
34950	4292.724	2288.538	820886.076	194241.372
35000	4166.022	2537.898	825052.098	196779.27
35050	4359.162	1351.008	829411.26	198130.278
35100	1912.854	1059.336	831324.114	199189.614
35150	1759.428	1737.606	833083.542	200927.22
35200	2645.298	2369.454	835728.84	203296.674
35250	2464.614	3143.94	838193.454	206440.614
35300	1155.162	3047.124	839348.616	209487.738
35350	2305.602	1558.854	841654.218	211046.592
35400	2378.07	2159.112	844032.288	213205.704
35450	3864.216	2876.556	847896.504	216082.26
35500	4982.88	1455.534	852879.384	217537.794
35550	2698.332	2695.134	855577.716	220232.928
35600	2203.296	5031.81	857781.012	225264.738
35650	2641.698	3512.646	860422.71	228777.384
35700	8135.1	846.918	868557.81	229624.302
35750	20475.678	1700.502	889033.488	231324.804
35800	28526.832	586.386	917560.32	231911.19
35850	24191.466	487.596	941751.786	232398.786
35900	17879.28	944.532	959631.066	233343.318
35950	10725.684	2221.68	970356.75	235564.998
36000	9170.742	2383.05	979527.492	237948.048
36050	12439.482	495.606	991966.974	238443.654
36100	14899.674	0	1006866.648	238443.654
36150	18620.898	0	1025487.546	238443.654
36200	10134.522	3453.84	1035622.068	241897.494
36250	18.504	6530.796	1035640.572	248428.29

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
36300	73.89	3231.924	1035714.462	251660.214
36350	1825.494	549.414	1037539.956	252209.628
36400	4511.382	263.106	1042051.338	252472.734
36450	6443.232	338.604	1048494.57	252811.338
36500	10079.094	311.358	1058573.664	253122.696
36550	13035.336	165.018	1071609	253287.714
36600	12332.484	86.832	1083941.484	253374.546
36650	10899.156	80.652	1094840.64	253455.198
36700	10553.478	155.49	1105394.118	253610.688
36750	12473.16	125.184	1117867.278	253735.872
36800	14995.854	55.716	1132863.132	253791.588
36850	15783.072	4.884	1148646.204	253796.472
36900	16458.426	10.302	1165104.63	253806.774
36950	18012.084	108.804	1183116.714	253915.578
37000	20416.968	248.454	1203533.682	254164.032
37050	27796.176	163.596	1231329.858	254327.628
37100	27856.338	901.596	1259186.196	255229.224
37150	18781.65	2106.108	1277967.846	257335.332
37200	15899.196	2194.638	1293867.042	259529.97
37250	27779.214	907.2	1321646.256	260437.17
37300	31505.67	574.386	1353151.926	261011.556
37350	19133.124	1545.684	1372285.05	262557.24
37400	9699.702	2908.206	1381984.752	265465.446
37450	4822.998	3833.352	1386807.75	269298.798
37500	6159.06	2729.742	1392966.81	272028.54
37550	11016.708	1740.054	1403983.518	273768.594
37600	13673.46	1651.032	1417656.978	275419.626
37650	14476.998	1942.062	1432133.976	277361.688
37700	15917.904	1016.76	1448051.88	278378.448
37750	11178.93	813.972	1459230.81	279192.42
37800	5017.434	1017.948	1464248.244	280210.368
37850	4622.508	810.372	1468870.752	281020.74
37900	7845.174	482.184	1476715.926	281502.924
37950	9380.256	574.692	1486096.182	282077.616
38000	7969.854	921.138	1494066.036	282998.754
38050	5918.226	887.052	1499984.262	283885.806
38100	4141.752	876.72	1504126.014	284762.526
38150	2568.384	702.672	1506694.398	285465.198
38200	1082.97	631.476	1507777.368	286096.674
38250	350.25	1025.496	1508127.618	287122.17
38300	216.978	1945.662	1508344.596	289067.832
38350	7.008	2358.9	1508351.604	291426.732
38400	10.212	1985.46	1508361.816	293412.192
38450	862.494	1119.126	1509224.31	294531.318
38500	1599.156	482.832	1510823.466	295014.15
38550	1878.108	374.616	1512701.574	295388.766
38600	5124.408	378.222	1517825.982	295766.988
38650	9387.858	277.086	1527213.84	296044.074
38700	10999.428	275.802	1538213.268	296319.876
38750	8784.048	1252.764	1546997.316	297572.64
38800	4784.676	1962.996	1551781.992	299535.636
38850	2887.8	1685.868	1554669.792	301221.504

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
38900	2842.494	2544.642	1557512.286	303766.146
38950	4310.838	2362.35	1561823.124	306128.496
39000	7369.332	1783.392	1569192.456	307911.888
39050	15581.772	1049.298	1584774.228	308961.186
39100	23166.048	399.474	1607940.276	309360.66
39150	25696.83	0	1633637.106	309360.66
39200	26909.208	290.922	1660546.314	309651.582
39250	35666.754	379.326	1696213.068	310030.908
39300	35694.306	0	1731907.374	310030.908
39350	19170.6	1833.606	1751077.974	311864.514
39400	9871.776	1833.606	1760949.75	313698.12
39450	7618.146	0	1768567.896	313698.12
39500	5315.184	0	1773883.08	313698.12
39550	3266.082	0	1777149.162	313698.12
39600	1681.794	0	1778830.956	313698.12
39650	928.314	421.368	1779759.27	314119.488
39700	1599.462	1310.49	1781358.732	315429.978
39750	1729.584	1713.012	1783088.316	317142.99
39800	943.56	1112.502	1784031.876	318255.492
39850	400.74	1647.282	1784432.616	319902.774
39900	927.678	1835.898	1785360.294	321738.672
39950	3205.518	491.004	1788565.812	322229.676
40000	5613.852	13.77	1794179.664	322243.446
40050	7227.588	0	1801407.252	322243.446
40100	8986.902	0	1810394.154	322243.446
40150	11260.542	0	1821654.696	322243.446
40200	12400.35	0	1834055.046	322243.446
40250	12514.23	2.346	1846569.276	322245.792
40300	12747.966	15.618	1859317.242	322261.41
40350	13503.228	14.148	1872820.47	322275.558
40400	13187.736	0	1886008.206	322275.558
40450	10029.594	0	1896037.8	322275.558
40500	5912.55	0	1901950.35	322275.558
40550	3307.992	0	1905258.342	322275.558
40600	1770.084	8.538	1907028.426	322284.096
40650	666.6	987.492	1907695.026	323271.588
40700	217.224	2140.116	1907912.25	325411.704
40750	59.976	1680.822	1907972.226	327092.526
40800	1311.168	734.448	1909283.394	327826.974
40850	5307.948	331.452	1914591.342	328158.426
40900	10734.996	155.058	1925326.338	328313.484
40950	15905.874	33.42	1941232.212	328346.904
41000	18663.798	0	1959896.01	328346.904
41050	17754.696	489.282	1977650.706	328836.186
41100	14600.922	1334.856	1992251.628	330171.042
41150	12429.24	1258.53	2004680.868	331429.572
41200	11002.044	1007.682	2015682.912	332437.254
41250	8725.14	1278.804	2024408.052	333716.058
41300	6941.292	1471.368	2031349.344	335187.426
41350	6794.568	1446.978	2038143.912	336634.404
41400	8636.004	1158.864	2046779.916	337793.268
41450	9372.462	506.172	2056152.378	338299.44

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
41500	9767.604	0	2065919.982	338299.44
41550	10983.648	92.556	2076903.63	338391.996
41600	11716.812	428.142	2088620.442	338820.138
41650	12017.742	541.8	2100638.184	339361.938
41700	11147.772	416.22	2111785.956	339778.158
41750	10214.364	572.274	2122000.32	340350.432
41800	12021.33	851.478	2134021.65	341201.91
41850	14446.182	961.764	2148467.832	342163.674
41900	14348.7	1337.142	2162816.532	343500.816
41950	13322.652	1612.926	2176139.184	345113.742
42000	12656.988	1913.556	2188796.172	347027.298
42050	13224.96	1577.196	2202021.132	348604.494
42100	11491.362	1415.784	2213512.494	350020.278
42150	9536.766	1584.882	2223049.26	351605.16
42200	8221.608	1435.086	2231270.868	353040.246
42250	10009.23	671.292	2241280.098	353711.538
42300	16296.54	0	2257576.638	353711.538
42350	22654.254	151.95	2280230.892	353863.488
42400	23556.696	469.248	2303787.588	354332.736
42450	19825.914	504.498	2323613.502	354837.234
42500	17815.434	452.532	2341428.936	355289.766
42550	17896.38	451.908	2359325.316	355741.674
42600	17657.988	607.266	2376983.304	356348.94
42650	16473.162	713.892	2393456.466	357062.832
42700	16282.32	648.288	2409738.786	357711.12
42750	16644.828	595.674	2426383.614	358306.794
42800	17478.012	684	2443861.626	358990.794
42850	13711.662	809.196	2457573.288	359799.99
42900	6225.756	1060.26	2463799.044	360860.25
42950	2341.242	1736.61	2466140.286	362596.86
43000	1726.038	2185.488	2467866.324	364782.348
43050	2758.104	2133.846	2470624.428	366916.194
43100	3695.88	1381.446	2474320.308	368297.64
43150	2579.91	1259.904	2476900.218	369557.544
43200	794.022	1554.702	2477694.24	371112.246
43250	1429.416	698.796	2479123.656	371811.042
43300	3499.794	44.262	2482623.45	371855.304
43350	4467.81	0	2487091.26	371855.304
43400	3372.438	37.362	2490463.698	371892.666
43450	2248.362	354.456	2492712.06	372247.122
43500	2682.192	514.362	2495394.252	372761.484
43550	3717.348	225.942	2499111.6	372987.426
43600	5181.498	33.03	2504293.098	373020.456
43650	5458.956	15.822	2509752.054	373036.278
43700	4622.802	42.426	2514374.856	373078.704
43750	3307.254	376.686	2517682.11	373455.39
43800	1715.022	467.838	2519397.132	373923.228
43850	1761.474	289.11	2521158.606	374212.338
43900	2712.24	793.134	2523870.846	375005.472
43950	3619.536	762.24	2527490.382	375767.712
44000	4438.578	153.678	2531928.96	375921.39
44050	4738.302	93.204	2536667.262	376014.594

Station	Cut Volume (Cu.m.)	Fill Volume (Cu.m.)	Cum. Cut Vol. (Cu.m.)	Cum. Fill Vol. (Cu.m.)
44100	4915.2	51.504	2541582.462	376066.098
44150	4550.856	6.57	2546133.318	376072.668
44200	2596.71	40.188	2548730.028	376112.856
44250	7752.732	1549.248	2556482.76	377662.104
44300	74057.634	4006.782	2630540.394	381668.886
44350	86875.038	4230.15	2717415.432	385899.036
44400	96.702	3859.332	2717512.134	389758.368
44450	495.198	1429.344	2718007.332	391187.712
44500	1106.952	354.696	2719114.284	391542.408

Total Cut Volume	2719114.28
Total Filling required	391542.41
Reused Quantity	391542.41
Balance quantity for disposal	2327571.88

BILL NO: 3 - SUB-BASE AND BASE COURSES FOR FLEXIBLE PAVEMENT

Item No.	SOR Ref	Description	Unit	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)	Remarks
3.01		**Granular Sub-Base** with Coarse Graded Material (Table:- 400- 2) (Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)									
a)	4.2 (i)	Drainage layer of 100mm thick (Grading of Table - 400 -2 Grading I)	cum	1	15525.00	21.9	0.100	33,999.75	**4,574.00**	**155,514,856.50**	
b)	4.2 (ii)	Second layer of 100mm thick (Grading of Table - 400 -2 Grading II)	cum	1	14922.00	20.9	0.100	31,186.98	**4,574.00**	**142,649,246.52**	
3.02	4.12	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)									
		a) For widening Portion (250mm thick) in two layers	cum	1	14922.00	21.5	0.250	80,205.75	**5,706.00**	**457,654,009.50**	
TOTAL FOR BILL NO: 3B (CARRIED FORWARD TO SUMMARY)										**755,818,112.52**	

BILL NO: 4 - BITUMINOUS WORKS FOR FLEXIBLE PAVEMENT

Item No.	SOR Ref No.	Description	Unit	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)	Remarks
4.01		Providing and applying bituminous Prime Coat over granular surface with bitumen emulsion complete as per Technical Specifications Clause 502									
	5.1	**a) @ 6.0 kg per 10 sqm**	sqm	1	14,922.00	21		313,362.00	**40.00**	**12,534,480.00**	
4.02		Providing and applying bituminous Tack coat over prepared surface with bituminous emulsion all complete as per Technical Specification Clause 503									
	5.20	**a) @ 2.5 kg per 10 sqm over granular surface treated with**	sqm	1	14,922.00	21		313,362.00	**15.00**	**4,700,430.00**	
		b) @ 2.0 kg per 10 sqm over bituminous surface	cum	1	14,922.00	21		313,362.00	**15.00**	**4,700,430.00**	
4.03	5.6 (i)	Providing and laying Dense Bituminous Macadam (DBM) course complete as per Technical Specifications Clauses 507 and as directed by the Engineer	cum	1	14,922.00	21	0.095	29,769.39	**15,793.00**	**470,147,976.27**	
4.04	5.8 (i)	Providing and laying Bituminous Concrete wearing course using Modified Bitumen as per drawing and Technical Specifications Clauses 509 & 521.	cum	1	14,922.00	21	0.040	12,534.48	**16,125.00**	**202,118,490.00**	
TOTAL FOR BILL NO: 4 (CARRIED FORWARD TO SUMMARY)										**694,201,806.27**	

DETAILS OF QUANTITIES

Box Culverts **2X2 (12.00M. Width)**

No. of Box Culvert 93

SOR Ref.	SI. No.	Description	Unit	No.	Qty.	Total Quantity	Rate	Amount
	1	Earthwork in excavation of foundation for structures including pipe culverts in all types of soil complete as per drawings and Technical Specification Clause 304, 309 and 2903.	cum.					
3.13 i B		Box Cell		1	28.54			
		Wing wall at Abutment end		4	117.60			
		Wing wall at Return wall end		4	21.59			
		Flexible apron U/S		1	30.82			
		Flexible apron D/S		1	61.64			
		Floor apron U/S		1	9.11			
		Floor apron D/S		1	15.19			
		Curtain wall U/S		1	41.10			
		Curtain wall D/S		1	63.36			
					388.94	**36171.44**	**220.82**	**7987376.392**
	2	Cement concrete in foundation/M-15 levelling course on pipe culvert and under approach slab etc.including centering and shuttering all complete as drawing and Technical Specifications Sections 2100 and 2200.	cum.					
12.8 A		Box Cell		1	5.35			
		Wing wall at Abutment end		4	10.69			
		Wing wall at Return wall end		4	1.96			
		Floor apron U/S		1	3.04			
		Floor apron D/S		1	5.06			
		Curtain wall U/S		1	3.08			
		Curtain wall D/S		1	3.80			
					32.99	**3067.77**	**10438.32**	**32022383.25**
	3	Providing and laying filter medium, behind abutments, retaining wall and return wall complete as per drawing and Technical Specifications Clause 2504.	cum.					
13.10		Wing wall		4	18.93			
					18.93	**1760.72**	**5498.00**	**9680437.068**
	4	Back filling behind abutments, wing walls/ retaining and return walls or any other area with selected granular material of approved quality complete as per drawing and Technical Specification clause 300.	cum.					
13.9A		Wing wall		4	10.70			
					10.70	**994.95**	**1611.62**	**1603481.769**
	5	M-20 grade Plain cement concrete in foundation and substructure including centering and shuterring but excluding reinforcement, complete as per drawing and Technical Specifications Sections 1500, 1700, 2100, 2200 and 2300	cum.					
12.8 C ii		M-20 grade Concrete						
		Wing Wall Foundation at Abutment end		4	39.87			
		Wing Wall Foundation at end		4	6.52			
		Wing Wall Substructure at Abutment end		4	42.41			
		Wing Wall Substructure at end		4	3.78			
					92.58	**8610.12**	**9857.00**	**84869975.26**
	6	M-25 grade Reinforced cement concrete in Box Structure including centering and shuttering but excluding reinforcement, complete as per drawing and Technical Specifications Sections 1500 ,1700 and 2300.	cum.					
12.8 D ii		M-25 grade Concrete						
		Bottom Slab		1	10.92			
		Shear Key		2	3.20			
		Top Slab		1	9.36			
		Vertical outer wall		2	14.94			
		Vertical inner wall		0	0.00			
		Haunch		4	0.54			
		Bracket		0	0.00			
		Parapet wall		2	0.39			
					39.35	**3659.97**	**9980.00**	**36526485.63**

12.40	7	HYSD bar reinforcement for culverts, underpass, retaining walls etc. complete as per drawings and Technical Specifiations Section 1600.	MT					
		For Box			2.75			
		Wing Wall Skin Reinforcement			0.37			
		2X4X1/2(1.739+0.61)X6.72	63.108					
		4X0.5X0.3X2	1.2					
		4X0.35X0.4X2	1.12					
		Return Wall Skin Reinforcement						
		2X4X0.61X1.4	6.832					
		4X0.5X0.3X2	1.2					
		4X0.35X0.4X2	1.12					
					3.13	**290.88**	**84675.00**	**24630061.1**
13.8	8	Providing weep holes in abutments, wing walls, retaining walls, return walls etc. complete as per drawing and Technical Specifications Clause 2706.	Nr.					
		Wing wall		32	32			
					32	**2976.00**	**662.72**	**1972253.827**
8.8	9	Painting of culvert no. and span arrangement as per Technical Specifications Clause 803	Nr.					
		For Box		2	2			
					2	**186.00**	**147.62**	**27457.32**
15.4	10	Stone Pitching 300 mm thick on slopes as per drawings and Technical Specifications Section 2500.	cum.					
		Abutment Corner		4	15.14			
					15.14	**1407.66**	**2287.50**	**3220024.504**
15.5	11	Filter material underneath stone pitching on slopes complete as per drawing and Technical Specifications Section 2500.	cum.					
		Abutment Corner		4	7.57			
					7.57	**703.83**	**2017.88**	**1420245.475**
15.11	12	Providing and laying Flexible apron complete as per drawing and Technical Specifications.	cum.					
		Flxible apron u/s		1	30.82			
		Flxible apron d/s		1	61.64			
					92.47	**8599.27**	**3601.00**	**30965987.2**
15.1A	13	Providing and laying Stone apron complete as per drawing and Technical Specifications Clause 2500.	cum.					
		Floor apron U/S		1	6.07			
		Floor apron D/S		1	10.12			
					16.20	**1506.44**	**1936.00**	**2916467.642**
	14	Providing and fixing of Guard post complete as per drawing and Technical Specification or as directed by Engineer.	Nr.					
		For Span		2	2.00			
					2.00	**186.00**		
12.8 C ii	15	Providing cement concrete M-20 grade in cut off wall complete as per drawing and Technical Specifications Sections 1500 & 1700 and Clause 2507.	cum.					
		Wall u/s		1	20.103			
		Wall d/s		1	25.993			
					46.096	**4286.90**	**9857.00**	**42255949.12**
							TOTAL	**280098585.6**

Cost Summary of Kohima Bridges

Sl.no.	Chainage	Type	Span Arrangement	Total Cost
1	4+020	Truss	1 x 80m	0
2	14+850	Truss	1 x 80m	0
3	23+620	Truss	1 x 80m	0
4	32+400	PSC	13x30m	467581011
5	35+600	RCC Girder	1 x 24m	118253818.4
			Total Cost	**585,834,829.36**

Cost Estimate of Kohima Bypass (37+500)						
Sl.No.	**Particular of Items**	**Unit**	**Quanitites**	**Rate (in INR)**	**Amount (in INR)**	**Scope**
1	**Earthwork** Excavation in hilly area in ordinary rock not requiring blasting by mechanical means	Cum	10990	223.00	2450725	Contractor
2	**Reinforced Earth Composite System:** Supply of prefabricated galvanized steel mesh facing units (dia. of bars to be used is 8mm and 12mm with galvanization of 610 grams per sqm) including supply of high adherence geosynthetic staps 50mm wide with trapezoidal groove like rib (lateral teeth) on both edge of the strap,supply of mechanical connection to connect the geosynthetic stap with the steel mesh fascia and also with the soil nails, supply of back steel mesh, supply of connectors,non-woven geotextiles etc. including the design, preparation of construction drawings and detail construction methodology of Reinforced Earth Composite System. The slope angle of the structure is maximum 70 degree with horizontal.	Sqm	2128	11266	23978054	Specialized System Supplier
3	PCC M-20 for levelling pad (150mm wide x 100mm thick)	Cum	2	5500	8250	Contractor
4	Labour cost for Installation of Reinforced Earth Composite System	Sqm of face area	2128	350	744924	Contractor
5	Providing and Laying of selected backfill soil as per MoRT&H's specification in between slope surface and the facing element to a full height compacted to a firm condition complete as per drawings and Technical Specification.	Cum of filling	19414	2296	44573855	Contractor
6	Providing 600 mm drainage gallery as Chimney drain wrapped with non-woven geotextile with 19.5mm passing and 9.1mm retaining aggregates behind reinforced earth zone with proper compaction for entrapping of seepage or subsurface water from the existing slope area .	Cum	2322	1000	2322000	Contractor
7	150-200 crushed boulder packing of 400mm wide at the face of Reinforced Earth Composite System structure	Cum	851	4182	3560313	Contractor
8	**Soil Nail for Reinforced Earth Composite System:** Supply of fully threaded hot-dip galvanized solid geotechnical bars as soil nails (galvanization minimum 500 grams per sqm) of 25 mm diameter, having yield strength > 670N/mm^2 and tensile strength > 800N/mm^2, spherical nut, Nail head, coupler including supply of necessary arrangement for connecting the nail with polymeric strap.	Rmt of Soil Nail	13304	3398	45208038	Specialized System Supplier

Sl.No.	Particular of Items	Unit	Quanitites	Rate (in INR)	Amount (in INR)	Scope
9	Drilling, grouting and fixing of Soil Nail and Reinforced Earth Composite System structure connection arrangement as per the construction method and guidance of System Supplier.	Rmt of Soil Nail	13304	1000	13304308	Contractor
10	Drilling of 100mm diameter semi-perforated PVC pipe inside the hill slope wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	3422	200	684378	Contractor
11	Providing and laying 100 mm diameter Semi-Perforated PVC pipe in lateral direction wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	3422	200	684378	Contractor
12	Supply of OPC-43 Grade cement including handling charges etc.	Bags	13304	350	4656508	Contractor
13	Supply of Admixture to make smooth non shrink grout for anchoring activities including handling charges etc	Kgs	3326	250	831519	Contractor
14	Supply of 200mm thick Articulating Block fabric form mattress with bi-direction cable reinforcement for toe erosion protection as per the detailed technical specifications and drawings.	sqm	1170	2233	2613166	Specialized System Supplier
15	Supply and pouring of High Strength Fine Aggregate Concrete for Articulating Block Fabric Form Concrete mattress including all materials, manpower, equipment, tools and tackles.	cum	130	5500	715000	Contractor
16	Supply of Non-Woven Geotextile of 200 gsm below Articulating Block fabric form mattress.	sqm	1080	209	225596	Specialized System Supplier
17	Providing and Laying of backfill soil for building normal embankmnet including berms	cum	500	1611	805500	Contractor
18	Supply and pouring of M-20 grade 1:1.5:3 nominal mix concrete for anchoring of Articulating Block fabric form mattress as shown in drawing.	cum	68	5500	371250	Contractor
TOTAL in INR:					**147,737,761**	

Cost Estimate of Kohima Bypass (38+000)						
Sl.No.	**Particular of Items**	**Unit**	**Quanitites**	**Rate (in INR)**	**Amount (in INR)**	**Scope**
1	**Earthwork** Excavation in hilly area in ordinary rock not requiring blasting by mechanical means	Cum	7693	223.00	1715508	Contractor
2	**Reinforced Earth Composite System:**Supply of prefabricated galvanized steel mesh facing units (dia. of bars to be used is 8mm and 12mm with galvanization of 610 grams per sqm) including supply of high adherence geosynthetic staps 50mm wide with trapezoidal groove like rib (lateral teeth) on both edge of the strap,supply of mechanical connection to connect the geosynthetic stap with the steel mesh fascia and also with the soil nails, supply of back steel mesh, supply of connectors,non-woven geotextiles etc. including the design, preparation of construction drawings and detail construction methodology of Reinforced Earth Composite System. The slope angle of the structure is maximum 70 degree with horizontal.	Sqm	1490	11266.00	16784637	Specialized System Supplier
3	PCC M-20 for levelling pad (150mm wide x 100mm thick)	Cum	1	5500.00	5775	Contractor
4	Labour cost for Installation of Reinforced Earth Composite System	Sqm of face area	1490	350.00	521447	Contractor
5	Providing and Laying of selected backfill soil as per MoRT&H's specification in between slope surface and the facing element to a full height compacted to a firm condition complete as per drawings and Technical Specification.	Cum of filling	13590	2296.00	31201699	Contractor
6	Providing 600 mm drainage gallery as Chimney drain wrapped with non-woven geotextile with 19.5mm passing and 9.1mm retaining aggregates behind reinforced earth zone with proper compaction for entrapping of seepage or subsurface water from the existing slope area .	Cum	1625	1000.00	1625400	Contractor
7	150-200 crushed boulder packing of 400mm wide at the face of Reinforced Earth Composite System structure	Cum	596	4182.00	2492219	Contractor
8	**Soil Nail for Reinforced Earth Composite System:** Supply of fully threaded hot-dip galvanized solid geotechnical bars as soil nails (galvanization minimum 500 grams per sqm) of 25 mm diameter, having yield strength > 670N/mm^2 and tensile strength > 800N/mm^2, spherical nut, Nail head, coupler including supply of necessary arrangement for connecting the nail with polymeric strap.	Rmt of Soil Nail	9372	3398.00	31846056	Specialized System Supplier

Sl.No.	Particular of Items	Unit	Quanitites	Rate (in INR)	Amount (in INR)	Scope
9	Drilling, grouting and fixing of Soil Nail and Reinforced Earth Composite System structure connection arrangement as per the construction method and guidance of System Supplier.	Rmt of Soil Nail	9372	1000.00	9372000	Contractor
10	Drilling of 100mm diameter semi-perforated PVC pipe inside the hill slope wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	2425	200.00	485044	Contractor
11	Providing and laying 100 mm diameter Semi-Perforated PVC pipe in lateral direction wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	2425	200.00	485044	Contractor
12	Supply of OPC-43 Grade cement including handling charges etc.	Bags	9372	350.00	3280200	Contractor
13	Supply of Admixture to make smooth non shrink grout for anchoring activities including handling charges etc	Kgs	2343	250.00	585750	Contractor
14	Supply of 200mm thick Articulating Block fabric form mattress with bi-direction cable reinforcement for toe erosion protection as per the detailed technical specifications and drawings.	sqm	1638	2233.48	3658432	Specialized System Supplier
15	Supply and pouring of High Strength Fine Aggregate Concrete for Articulating Block Fabric Form Concrete mattress including all materials, manpower, equipment, tools and tackles.	cum	182	5500.00	1001000	Contractor
16	Supply of Non-Woven Geotextile of 200 gsm below Articulating Block fabric form mattress.	sqm	1512	208.88	315834	Specialized System Supplier
17	Providing and Laying of backfill soil for building normal embankmnet including berms	cum	500	1611.00	805500	Contractor
18	Supply and pouring of M-20 grade 1:1.5:3 nominal mix concrete for anchoring of Articulating Block fabric form mattress as shown in drawing.	cum	95	5500.00	519750	Contractor
TOTAL in INR:					**106,701,296**	

Cost Estimate of Kohima Bypass (39+900)						
Sl.No.	Particular of Items	Unit	Quanitites	Rate (in INR)	Amount (in INR)	Scope
1	**Earthwork** Excavation in hilly area in ordinary rock not requiring blasting by mechanical means	Cum	7029	223.00	1567523	Contractor
2	**Reinforced Earth Composite System:** Supply of prefabricated galvanized steel mesh facing units (dia. of bars to be used is 8mm and 12mm with galvanization of 610 grams per sqm) including supply of high adherence geosynthetic staps 50mm wide with trapezoidal groove like rib (lateral teeth) on both edge of the strap,supply of mechanical connection to connect the geosynthetic stap with the steel mesh fascia and also with the soil nails, supply of back steel mesh, supply of connectors,non-woven geotextiles etc. including the design, preparation of construction drawings and detail construction methodology of Reinforced Earth Composite System. The slope angle of the structure is maximum 70 degree with horizontal.	Sqm	1330	11266.00	14986283	Specialized System Supplier
3	PCC M-20 for levelling pad (150mm wide x 100mm thick)	Cum	1	5500.00	4125	Contractor
4	Labour cost for Installation of Reinforced Earth Composite System	Sqm of face area	1330	350.00	465578	Contractor
5	Providing and Laying of selected backfill soil as per MoRT&H's specification in between slope surface and the facing element to a full height compacted to a firm condition complete as per drawings and Technical Specification.	Cum of filling	12417	2296.00	28509432	Contractor
6	Providing 600 mm drainage gallery as Chimney drain wrapped with non-woven geotextile with 19.5mm passing and 9.1mm retaining aggregates behind reinforced earth zone with proper compaction for entrapping of seepage or subsurface water from the existing slope area .	Cum	1647	1000.00	1646550	Contractor
7	150-200 crushed boulder packing of 400mm wide at the face of Reinforced Earth Composite System structure	Cum	532	4182.00	2225196	Contractor
8	**Soil Nail for Reinforced Earth Composite System:** Supply of fully threaded hot-dip galvanized solid geotechnical bars as soil nails (galvanization minimum 500 grams per sqm) of 25 mm diameter, having yield strength > 670N/mm^2 and tensile strength > 800N/mm^2, spherical nut, Nail head, coupler including supply of necessary arrangement for connecting the nail with polymeric strap.	Rmt of Soil Nail	10267	3398.00	34887658	Specialized System Supplier
9	Drilling, grouting and fixing of Soil Nail and Reinforced Earth Composite System structure connection arrangement as per the construction method and guidance of System Supplier.	Rmt of Soil Nail	10267	1000.00	10267115	Contractor

Sl.No.	Particular of Items	Unit	Quanitites	Rate (in INR)	Amount (in INR)	Scope
10	Drilling of 100mm diameter semi-perforated PVC pipe inside the hill slope wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	2564	200.00	512711	Contractor
11	**Ground Anchors** Supply of permanent ground anchors for strenthening and stabilizing the hill slopes including its accessories only as per the tender drawing and specification.	Rmt of Anchor	5075	17899	90837425	Specialized System Supplier
12	Drilling, grouting and fixing of Permanent Ground Anchors.	Rmt of Anchor	5075	2000	10150000	Contractor
13	**Soil Nail for Hill Slope Protection:** Supply of fully threaded hot-dip galvanized solid geotechnical bars as soil nails (galvanization minimum 500 grams per sqm) of 25 mm diameter, having yield strength > 670N/mm^2 and tensile strength > 800N/mm^2, spherical nut, Nail head.	Rmt of Soil Nail	2232	4070	9082883	Specialized System Supplier
14	Drilling, grouting and fixing of Soil Nail and HTS wire mesh on the slope surface.	Rmt of Soil Nail	2232	2000	4463333	Contractor
15	Drilling of 100mm diameter semi-perforated PVC pipe inside the hill slope wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	1541	200	308100	Contractor
16	Supply of OPC-43 Grade cement including handling charges etc.	Bags	17574	350	6150824	Contractor
17	Supply of Admixture to make smooth non shrink grout for anchoring activities including handling charges etc	Kgs	4393	250	1098361	Contractor
18	Supply of rhomboid shaped high tensile erosion control / re-vegetation steel mesh having diameter of 2 mm and a three dimensional mat of PP monofilaments as per the tender drawing and specification.	Sqm	4553	3987	18154011	Specialized System Supplier
19	Providing and laying 100 mm diameter Semi-Perforated PVC pipe in lateral direction wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	4104	200	820811	Contractor
20	Supply of 200mm thick Articulating Block fabric form mattress with bi-direction cable reinforcement for toe erosion protection as per the detailed technical specifications and drawings.	sqm	1560	2233	3484221	Specialized System Supplier
21	Supply and pouring of High Strength Fine Aggregate Concrete for Articulating Block Fabric Form Concrete mattress including all materials, manpower, equipment, tools and tackles.	cum	329	5500	1811333	Contractor
22	Supply of Non-Woven Geotextile of 200 gsm below Articulating Block fabric form mattress.	sqm	1440	209	300794	Specialized System Supplier
23	Providing and Laying of backfill soil for building normal embankmnet including berms	cum	250	1611	402750	Contractor
24	Supply and pouring of M-20 grade 1:1.5:3 nominal mix concrete for anchoring of Articulating Block fabric form mattress as shown in drawing.	cum	90	5500	495000	Contractor

Sl.No.	Particular of Items	Unit	Quanitites	Rate (in INR)	Amount (in INR)	Scope
TOTAL in INR:					242,632,018	

Cost Estimate of Kohima Bypass (41+500-43+000)						
Sl.No.	Particular of Items	Unit	Quanitities	Rate (in INR)	Amount (in INR)	Scope
1	**Earthwork** Excavation in hilly area in ordinary rock not requiring blasting by mechanical means	Cum	2996	223.00	668044	Contractor
2	**Soil Nail for Hill Slope Protection:** Supply of fully threaded hot-dip galvanized solid geotechnical bars as soil nails (galvanization minimum 500 grams per sqm) of 25 mm diameter, having yield strength > 670N/mm^2 and tensile strength > 800N/mm^2, spherical nut, Nail head including 100 mm diameter Semi-Perforated PVC pipe wrapped with non woven geotextile	Rmt of Soil Nail	38810	4070	157956114	Specialized System Supplier
3	Drilling, grouting and fixing of Soil Nail and HTS wire mesh on the slope surface.	Rmt of Soil Nail	38810	1000	38809856	Contractor
4	Drilling of 100mm diameter semi-perforated PVC pipe inside the hill slope wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	4580	200	915919	Contractor
5	Supply of OPC-43 Grade cement including handling charges etc.	Bags	38810	250	9702464	Contractor
6	Supply of Admixture to make smooth non shrink grout for anchoring activities including handling charges etc	Kgs	9702	2500	24256160	Contractor
7	Supply of rhomboid shaped high tensile erosion control / re-vegetation steel mesh having diameter of 2 mm and a three dimensional mat of PP monofilaments as per the tender drawing and specification.	Sqm	1635	3987	6517072	Specialized System Supplier

8	Providing and laying 100 mm diameter Semi-Perforated PVC pipe in lateral direction wrapped with non woven geotextile complete as per drawing and as directed by the engineer.	Rmt of pipe	4580	250	1144899	Contractor
TOTAL in INR:					**239,970,528**	

Bill No. 7 Junctions

Item No.	SOR Ref. No.	Description	Unit	No.	Area	Depth	Qty	Unit Rate	Amount	Remarks
Major Junction										
Bill No 1: Site Clearance										
6.01	2.3 (i) A	Clearing and grubbing road land by mechanical means in area of light jungle including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.	Ha	1.0	1800.0		0.2	**42,879.15**	**7,718.25**	
6.02	3-32	Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.	Cum	1.0	540.00	0.20	108.0	**195.49**	**21,112.51**	**Consederin g 30% of total area**
6.03	3-33	Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.	Cum	1.00	540.00	1.00	540.0	**276.04**	**149,063.60**	**Consederin g 30% of total area**
6.04	3-34	Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 meters	Cum	1.0	720.00	1.00	720.0	**424.27**	**305,474.04**	**Consederin g 40% of total area**
6.08	4.2 (ii)	**Granular Sub-Base with Coarse Graded Material (Table:- 400- 2)**								
		Granular Sub-Base with Coarse Graded Material (Table:- 400- 2) (Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)	Cum	4.0	1800.0	0.200	1440.0	**4,574.00**	**6,586,560.00**	
6.09	4.12	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)	Cum	4.0	1800.0	0.250	1800.0	**5,706.00**	**10,270,800.00**	
6.10	5.6 (i)	Providing and laying Dense Bituminous Macadam (DBM) course complete as per Technical Specifications Clauses 507 and as directed by the Engineer	Cum	4.0	1800.0	0.095	684.0	**15,793.00**	**10,802,412.00**	
6.11	5.8 (i)	Providing and laying Bituminous Concrete wearing course using Modified Bitumen as per drawing and Technical Specifications Clauses 509 & 521.	Cum	4.0	1800.0	0.040	288.0	**16,125.00**	**4,644,000.00**	

Item No.	SOR Ref. No.	Description	Unit	No.	Area	Depth	Qty	Unit Rate	Amount	Remarks
Minor Junction										
Bill No 1: Site Clearance										
6.01	2.3 (i) A	Clearing and grubbing road land by mechanical means in area of light jungle including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.	Ha	2.0	660.0		0.1	**42,879.15**	**5,660.05**	
6.02	3-32	Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres.	Cum	2.0	198.00	0.20	79.2	**195.49**	**15,482.51**	**Consederin g 30% of total area**
6.03	3-33	Excavation in hilly area in ordinary rock not requiring blasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres.	Cum	2.00	198.00	1.00	396.0	**276.04**	**109,313.31**	**Consederin g 30% of total area**
6.04	3-34	Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 meters	Cum	2.0	264.00	1.00	528.0	**424.27**	**224,014.30**	**Consederin g 40% of total area**
6.08	4.2 (ii)	**Granular Sub-Base with Coarse Graded Material (Table:- 400- 2)**								
		Granular Sub-Base with Coarse Graded Material (Table:- 400- 2) (Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401)	Cum	1.0	660.0	0.150	99.0	**4,574.00**	**452,826.00**	
6.09	4.12	**Wet Mix Macadam** (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)	Cum	1.0	660.0	0.250	165.0	**5,706.00**	**941,490.00**	
6.10	5.6 (i)	Providing and laying Dense Bituminous Macadam (DBM) course complete as per Technical Specifications Clauses 507 and as directed by the Engineer	Cum	1.0	660.0	0.095	62.7	**15,793.00**	**990,221.10**	
6.11	5.8 (i)	Providing and laying Bituminous Concrete wearing course using Modified Bitumen as per drawing and Technical Specifications Clauses 509 & 521.	Cum	1.0	660.0	0.040	26.4	**16,125.00**	**425,700.00**	
		TOTAL FOR BILL NO: 7 (CARRIED FORWARD TO SUMMARY)							**35,951,847.65**	

Bill 7 :- Bus Bays / Bus Shelter

Sl. No.	SOR Ref No	Item Description	Unit	Plan Area /Length	Nos. of Bus Bays	Effective Area/ Length	Depth (m)	Quantity	Unit Rate (per sqm/cum)	Amount
A)		**Bus Bay for One Buses:**								
i)		Approx. Area of Existing Pavement (sqm)		-		-				
ii)		Approx. Area of Pavement Improvement (sqm)		500.0	**8.0**	4,000.0				
iii)		Approx. Area of Islands & Medians (sqm)		-		-				
		Approx. Length along the edges of Islands & Medians (m)		-		-				
Quantities:										
1	5.8(i)	BC	Cum			4,000.0	0.040	160.0	16,125.0	**2,580,000.00**
2	5.6(i)	DBM	Cum			4,000.0	0.095	380.0	15,793.0	**6,001,340.00**
3	4.1	WMM	Cum			4,000.0	0.250	1,000.0	5,706.0	**5,706,000.00**
4	4.2 (ii)	GSB	Cum			4,000.0	0.200	800.0	4,574.0	**3,659,200.00**
5	4.14	Isand/Median Filling	Cum			35.0	0.610	21.4	270.7	**5,778.87**
5	4.16	Bus Shelter	Each			16.0		16.0	150,000.0	**2,400,000.0**
								TOTAL FOR BILL NO: 8 (CARRIED FORWARD TO SUMMARY)		**20,352,318.9**

Note:

Pavement Strength is considered to be equal to that of Service Road.

Tack coat shall be applied in 2 layers, in the case of Bus Bay.

1 layer shall be applied @ 2.0 kg/10 sqm on normal bituminous courses

1 layer shall be applied @ 2.5 kg/10 sqm (quantity can be taken as equal to that of Prime coat) on hungry Surface, etc.

* - Quantity for the Tack Coat applied @ 2.0 kg/10 sqm on normal bituminous courses

BILL NO: 8 - DRAINAGE

Item No.	SOR Ref No	Description	Unit	No.	Length (m)	Breadth (m)	Depth (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)	Remarks
8.01	3-29	Drain at Edge of Pavement (Construction of an underground drain 1 m x 1 m (inside dimensions) lined with RCC-20 cm thick and covered with RCC slab10 cm in thickness on urban roads)	m	2.00	250.00			500.00	**6,209.37**	**3,104,686.05**	Length of TCS-III
8.02	8.2 (B)	Cast in Situ Cement Concrete M 20 Kerb with Channel (Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408)	m	1.00	14,672.00			14,672.00	**1,404.00**	**20,599,488.00**	
								TOTAL FOR BILL NO: 9 (CARRIED FORWARD TO SUMMARY)		**23,704,174.05**	

BILL NO: 9 - PROTECTION WORKS

Item No.	SOR Ref No	Description	Unit	No.	Length (m)	Breadth (m)	Depth (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)	Remarks
9.01	8.23 (A)	**Metal Beam Crash Barrier:** Type - A, "W" : Metal Beam Crash Barrier (Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 810)	Rm	1.00	1,492.00			1,492.00	**3,878.58**	**5,786,834.05**	Length = total length - Length of bridges/structures
								TOTAL FOR BILL NO: 9 (CARRIED FORWARD TO SUMMARY)		**5,786,834.05**	

Detailed Estimate for the construction of 3.00m High Guard wall

Sl.	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	QTY	RATE	AMOUNT
1	3.2	301	Excavation for roadway in soil using manual means including loading in truck for carrying of cut earth to embankment site with all lifts and lead upto1000 metres. 1150 x 1.7 x 1.6	Cum	1	3128	**490.00**	**1532720.00**
2	12.8	**1500,1700 & 2100**	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. 1150 x 1.7 x 0.2	Cum	1	391	**0.00**	**0.00**
3	12.7	1400	Stone Masonry Work in Cement Mortar 1:3 in Foundation complete as per Drawing and Technical Specifications. $\frac{1150}{1}$ x $\frac{(1.5+1.250)}{2}$ x 1.4	Cum	1	2213.75	**10534.00**	**23319643.00**
4	13.4	1400 & 2200	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications $\frac{1150}{1}$ x $\frac{(1.05+.40)}{2}$ x 2	Cum	1	1667.5	**9215.78**	**15367310.00**
5	12.8	**1500,1700 & 2100**	Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. 1150 x 0.4 x 0.075	Cum	1	34.5	**0.00**	**0.00**
6	13.8	2200, 2706	Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing foce. Complete as per drawing and Technical Specifications	Nos	2	0	**127.26**	**0.00**
7			Provinding cement flush pointing with clean coarse sand of F.M. 1.5 including screening curing with all leads and lifts of water including taxes and royalties all complete job as per specification and direction of E/I. 1150 x 2	Sqm	1	2300	**43.94**	**101062.00**
			Total (Rs.)					**40320735.00**

BILL OF QUANTITY (RETAINING WALL)

S.I. NO	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	LENGTH	WIDTH	HEIGHT	AREA	QUANTITY	RATE	AMOUNT
1	12.1(IB)	304	**Earthwork Excavation**									
			Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.									
				cum.	1	1850	4.3	2.1		16705.50		
									Total=	**16705.50**	**76.00**	**1269673.40**
2	13.9	710.1.4.of IRC:78 & 2200	**BACKFILLING**									
			Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification									
				cum.	1	1850	1.80	5.00		16650.00		
									Total=	**16650.00**	**11925.50**	**198559575.00**
3	12.8	1500, 1700 & 2100	**PCC GRADE M15**									
			Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications									
				cum.	1	1850	4.3	0.10		795.50		
									Total=	**795.50**	**0.00**	**0.00**
4	13.10	710.1.4.of IRC:78 and 2200	**FILTER MEDIA**									
			Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.									
				cum.	1	1850.0	0.6	4.40		4884.00		
									Total=	**4884.00**	**17654.49**	**86224519.39**
5	12.8	1500, 1700 & 2100	**RCC GRADE M35 For Foundation**									
			Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.									
				cum.	1	1850.0			2.13	3940.50		

S.I. NO	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	LENGTH	WIDTH	HEIGHT	AREA	QUANTITY	RATE	AMOUNT
									Total=	**3940.50**	**770.40**	**3035761.20**
6	**13.5**	**1500,1700 & 2200**	**RCC GRADE M35 For Shaft**									
			Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications									
				cum.	1	1850			2.42	4477.00		
									Total=	**4477.00**	**662.04**	**2963967.85**
7	**12.40**	**1600**	**HYSD Fe 500**									
			For Foundation									
			Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.									
			Steel @ 140kg/cum	MT						**551.67**	**0.00**	**0.00**
8	**13.6**	**1600 & 2200**	**For Shaft**									
			Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications									
			Steel @ 140kg/cum	MT						**626.78**	**17308.92**	**10848885.04**
											TOTAL	**302902381.88**

BILL OF QUANTITY (RETAINING WALL)

S.I. NO	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	LENGTH	WIDTH	HEIGHT	AREA	QUANTITY	RATE	AMOUNT
1	12.1(IB)	304	**Earthwork Excavation**									
			Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.									
				cum.	1	1850	8.0	2.1		31080.00		
									Total=	**31080.00**	**76.00**	**2362183.06**
2	13.9	710.1.4.of IRC:78 & 2200	**BACKFILLING**									
			Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification									
				cum.	1	1850	3.30	8.00		48840.00		
									Total=	**48840.00**	**11925.50**	**582441420.00**
3	12.8	1500, 1700 & 2100	**PCC GRADE M15**									
			Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications									
				cum.	1	1850	8.0	0.10		1480.00		
									Total=	**1480.00**	**0.00**	**0.00**
4	13.10	710.1.4.of IRC:78 and 2200	**FILTER MEDIA**									
			Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.									
				cum.	1	1850.0	0.6	7.40		8214.00		
									Total=	**8214.00**	**17654.49**	**145013964.43**
5	12.8	1500, 1700 & 2100	**RCC GRADE M35 For Foundation**									
			Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.									
				cum.	1	1850.0			3.69	6826.50		

S.I. NO	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	LENGTH	WIDTH	HEIGHT	AREA	QUANTITY	RATE	AMOUNT
									Total=	**6826.50**	**770.40**	**5259135.60**
6	**13.5**	**1500,1700 & 2200**	**RCC GRADE M35 For Shaft**									
			Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications									
				cum.	1	1850			5.55	10267.50		
									Total=	**10267.50**	**662.04**	**6797529.58**
7	**12.40**	**1600**	**HYSD Fe 500**									
			For Foundation									
			Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.									
			Steel @ 140kg/cum	MT						**955.71**	**0.00**	**0.00**
8	**13.6**	**1600 & 2200**	**For Shaft**									
			Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications									
			Steel @ 140kg/cum	MT						**1437.45**	**17308.92**	**24880707.42**
											TOTAL	**766754940.10**

BILL NO: 10 - TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	SOR Ref No.	Description	Unit	No.	Length (m)	Breadth (m)	Depth (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)
10.01	8.16	Providing and fixing RCC boundary pillars including cost of reinforcement and two coats of painting with ready mix oil bound paint complete as per drawing and Technical Specifications Clause 806.	Nr.	78.00				78.00	**1,542.41**	**120,307.79**
10.02	8.14 (i), (ii), (iii)	Providing and fixing PCC/RCC hectometer, kilometer and 5th kilometer stones including cost of reinforcement complete as per Technical Specifications Clause 804.								
		a) 200-metre stone	Nr.	78.00				78.00	**1,045.10**	**81,517.75**
		b) Kilometre stone	Nr.	12.00				12.00	**4,090.17**	**49,082.07**
		c) 5th km. stone	Nr.	3.00				3.00	**6,625.05**	**19,875.15**
10.03	8.11 (i)	Providing and laying Pavement marking with hot applied thermoplastic material complete as per drawing and Technical Specifications Clause 803.								
		a) Lane/ Centre line/ Edge marking/ Transverse marking and any other marking.	Sqm	3.00	14,922.00	0.15		6,714.90	**300.75**	**2,019,492.75**
	8.11 (i)	b) Directional Arrows, Lettering etc. as per drawing No.61 of MORTH Type Designs for Intersections on National Highways.	Sqm	2.00	14,922.00	0.10		2,984.40	**300.75**	**897,552.33**
10.04	8.8	Providing and laying kerb painting with ordinary paints grade-I (IS:164) complete as per drawing and Technical Specifications Clause 803	Sqm	2.00	14,922.00	0.30		8,953.20	**216.97**	**1,942,559.69**
10.05	8.5, 8.4 (v)	Supplying and fixing sign boards complete as per Technical Specifications Clause 801 and as directed by Engineer, including the cost of posts, fitting and fixing. Sheeting will be retro reflecting type of high intensively grade and messages/borders will be screen printed								
A		Informatory signs								
		a) Advance Direction / Destination / Reassurance signs	Sqm	50.00		0.90		45.00	**11,210.38**	**504,467.18**
		b) Route marker signs (450mm x 600mm)	Nr.	50.00				50.00	**11,210.38**	**560,519.09**
B	8.4 (i)	Cautionary signs, size triangular 900mm side	Nr.	50.00				50.00	**5,804.44**	**290,221.82**
10.06	8.7 A & B	Supplying and fixing overhead signs complete as per drawing and Technical Specifications Section 800 including cost of posts, truss, erection, fitting and foundations. Sheeting will be retro reflective type of high intensity grade and message/borders will be screen-printed as per drawings.								
		a) Truss and Vertical Support (Portal type)	MT.	2.00				5.00	**109,433.60**	**547,168.02**
		b) Aluminium alloy plate for over head sign	MT.	4.00				10.00	**4,923.67**	**49,236.74**

BILL NO: 10 - TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	SOR Ref No.	Description	Unit	No.	Length (m)	Breadth (m)	Depth (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)
10.07	8.15	Providing and fixing road delineators complete as per drawing and Technical Specifications Clause 805 as directed by Engineer.								
		a) Road Indicators	Nr.	200.00				200.00	**1,163.25**	**232,650.06**
		b) Hazard Markers	Nr.	200.00				200.00	**1,163.25**	**232,650.06**
		c) Object Markers	Nr.	200.00				200.00	**1,163.25**	**232,650.06**
10.08	8.4	Retro- reflectorised Traffic signs (Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)								
	(i)	90 cm equilateral triangle	each	50.00				50.00	**5804.44**	**290,221.82**
	(v)	60 cm x 45 cm rectangular	each	50.00				50.00	**5177.16**	**258,858.10**
10.09	8.5	Direction and Place Identification signs upto 0.9 sqm size board. (Providing and erecting direction and place identification retro-reflectorised sign asper IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing)	Sqm	4.00				4.00	**11,210.38**	**44,841.53**
10.10	8.8	Painting Two Coats on New Concrete Surfaces (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces)	Sqm	1.00	1,188.00	12.00		14,256.00	**216.97**	**3,093,098.66**
10.12	8.35	Road Markers/Road Stud with Lense Reflector (Providing and fixing of road stud 100x 100 mm, die cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973)	each	2.00	1,000.00			666.67	**1,984.00**	**1,322,666.67**

BILL NO: 10 - TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCES

Item No.	SOR Ref No.	Description	Unit	No.	Length (m)	Breadth (m)	Depth (m)	Quantity	Unit Rate (Rs.)	Amount (Rs.)
10.13	8.27	**Street Lighting**								
		Providing and erecting street light mounted on a steel circular hollow pole of standard specifications for street lighting, 9 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.								
	(i)	For Fixing in Median (At every 100 m excluding structures)	each	149.00				149.00	**59,529.84**	**8,869,946.80**
	(ii)	For fixing in Footpath (At every 100 m excluding structures)	each	149.00				149.00	**59,382.69**	**8,848,021.20**
10.14	8.28	**Lighting on Bridges**								
		Providing and fixing lighting on bridges, mounted on steel hollow circular poles of standard specifications, 5 m high fixed on parapets with cement concrete, 20 m apart and fitted with sodium vapour lamp	each	16				16.00	**31,762.21**	**508,195.38**
10.15	8.29	**Cable Duct Across the Road**								
		Providing and laying of a reinforced cement concrete pipe duct, 300 mm dia, across the road (new construction), extending from drain to drain in cuts and toe of slope to toe of slope in fills, constructing head walls at both ends, providing a minimum fill of granular material over top and sides of RCC pipe as per IRC:98-1997, bedded on a 0.3 m thick layer of granular material free of rock pieces, outer to outer distance of pipe at least half dia of pipe subject to minimum 450 mm in case of double and triple row ducts, joints to be made leak proof, invert level of duct to be above higher than ground level to prevent entry of water and dirt, all as per IRC: 98 - 1997 and approved drawings.								
	(i)	Single row for one utility service	metre	-				-	**11,033.16**	**-**
10.16	8.40	**High Mast Pole Lighting at Interchanges and Flyovers**	each	-				-	**1,000,000.00**	**-**
10.17	11.9	Planting of Trees and their Maintenance for one Year (Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge mannure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year)	each	1,500.00				1,500.00	**2,220.00**	**3,330,000.00**
				TOTAL FOR BILL NO: 10 (CARRIED FORWARD TO SUMMARY)						**34,345,800.70**