



## Department of Roads Norms/Rate of Plant and Machinery

SN	Equipments	Activity/ Usages	Ownership Cost (NRs/Hr)	Servicing (NRs/Hr)	Maintenance (NRs/Hr)	Fuel/Electricity Demand			Crew, hr		Assistant,hr
						Fuel (L/hr)	Electricity (Units/hr)	Fuel Oil (Heating) (L/hr)	Skilled	Helper/Unskilled	
1	Air compressor /compressor with pneumatic breaker	General	192	42	50	5.73			0.125		
2	Asphalt Plant (Batch mix HMP/Drum mix plant/Hot Mix Plant )	Asphalt/DBM Production	693	108	173	6.91	15.00	200.00	0.125		0.250
3	Batching Plant	Concrete Production	352	44	88	6.14	25.00		0.125		0.250
4	Bentonite pump	Drilled Hole Stabilization	26	3	8		2.00				
5	Bitumen boiler	Bitumen Heating	40	3	8	1.96		5.00			
6	Bitumen pressure distributor/Bitumen Distributor/ Bitumen Sprayer	Bitumen Spray	443	63	176	10.24		3.00	0.125		0.125
7	Chip spreader	Surface Dressing/Chips Seal/Otta Seal	196	30	64	7.06			0.125		0.125
8	Cold mix plant	Cold Mix Asphalt/Premix	375	50	75	3.89	20.00		0.125		
9	Concrete Pump	Concreting	80	5	10	3.06			0.125		0.125
10	Crane	Lifting	820	145	338	10.13			0.125		0.125
11	Crane (3 T)	Lifting	599	106	170	6.75			0.125		0.125
12	Crane 15 t capacity	Lifting	1,147	163	431	14.63			0.125		0.125
13	Crane with grab bucket/dredger crane	Dredging	1,000	120	200	8.96			0.125		0.125
14	Dozer	Earthwork	1,300	330	550	14.14			0.125		
15	Drilling machine with bit and accessories	Earth Hole Drilling	126	24	36	1.30			0.125		0.125
16	Electric generator	Electricity	77	10	17	4.54			0.125		
17	Electric hand driller (HDEP work)	Hole Drilling	105	0	10		1.00				
18	Electric heating plate	Connection work	63	6	12		1.00				
19	Emulsion pressure distributor	Emulsion distribution	46	4	8	1.15			0.125		
20	Excavator	Excavation/Earthwork	620	165	275	14.40			0.125		
21	Grout Injection Equipment	Crack Repair	68	12	24		1.00		0.125		
22	Grouting pump with agitator	PSC Bridge construction related	147	28	56		2.00		0.125		
23	Hacking Machine	Jacketing purpose	42	8	16	1.30			0.125		
24	Hydraulic Jack ( 40 tonne capacity)	Bearing Installation/Repair	105	20	40	0.00					
25	Hydraulic Jack ( required capacity normally 200 tonne)	Bearing Installation/Repair	256	33	56		5.00				
26	Jack hammer /Rock drill / Portable rock driller	Earthwork	22	3	5	1.62					
27	Loader	Material Loading	543	136	227	9.79			0.125		
28	Mastic cooker	Mastic Asphalt Production	69	5	16		1.00	2.88	0.125		0.125
29	Mixture machine/Concrete Mixture Machine	Concrete Production	31	3	11	1.92					
30	Mobile slurry seal equipment	Maintenance	211	32	86	6.07			0.125		0.125
31	Motor grader	Laying	1,016	256	351	8.67			0.125		
32	Paver finisher	Asphalt	775	119	298	6.94			0.125		0.125
33	Piling rig ( with all accessories)	Pile Construction upto 1.2m	1,600	267	267	7.84			0.125		0.125
34	Plate compactor/power rammer	Light Compaction	54	9	19	1.46			0.125		
35	Pneumatic roller/Pneumatic tired roller	Compaction	539	57	296	8.19			0.125		
36	Premix Mixer	Premix Production	115	25	25	4.25		20.00	0.125		0.125
37	Road marking machine	Thermoplastic Painting	92	8	21	1.30					
38	Road sweeper/Mechanical broom	Sweeping	297	34	68	6.40			0.125		
39	Screw Jack	Pipe Connection	53	0	0		0.00				

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**Department of Roads  
Norms/Rate of Plant and Machinery**

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						Fuel (L/hr)	Electricity (Units/hr)	Fuel Oil (Heating) (L/hr)	Skilled	Helper/Unskilled	
40	Smooth wheeled roller/Smooth 3 wheeled steel roller	Compaction	173	13	40	5.40			0.125		
41	Stressing jack with pump	Prestressing	104	8	20		1.00				
42	Tipper	Transportation/Carry	148	23	55	6.76			0.125	0.125	
43	Tractor with ripper attachment/Tractor Trolley	Ripping/Carry	83	13	33	4.50			0.125	0.125	
44	Truck flat body/Trailer	Carry	532	37	153	10.80			0.125	0.125	
45	Vibratory roller	Compaction	461	66	159	7.28			0.125		
46	Water Tanker	Watering	270	38	110	4.32			0.125		
47	Wet mix plant	Base Production	433	67	100		30.00		0.125	0.125	
48	Cutter(Bitumen Pavement/RCC Cutter)	Cutting	168	8	12	1.22					

Note :

District Rate Crew/hr =30x Daily Rate/(8\*26)

District Rate Assistant/hr =30x Daily Rate/(8\*26)

Fuel Cost = Fuel Demand x Fuel Cost per liter at site / 1.13

Electricity Cost = Electricity Demand x Electricity Unit Cost

Crew/Assistant Cost = (Crew,hr x District Rate of Crew/hr) + (Assistant, hr x District Rate of Assistant/hr)

Rate of Plant & Machinery = Ownership Cost + Operational Cost (Servicing Cost + Maintenance Cost + Crew/Assistant Cost + Fuel/Electricity Cost)



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