

**WATER RESOURCES DEPARTMENT
GOVERNMENT OF KARNATAKA**

**SCHEDULE OF RATES
FOR THE YEAR : 2011-12**

**FINALISED BY SCHEDULE OF RATES COMMITTEE
G.O. No. WRD 123 KBN 2008 BANGALORE Dt: 04-06-2010**

FOREWORD

Committee constituted vide G.O.No.ಜಸಂಇ/123/ಕೆಆರ್ 2008 ಬೆಂಗಳೂರು ದಿನಾಂಕ 15.1.2010 under the Chairmanship of Sri.D.N.Desai, Chief Advisor, Water Resources Department, for preparing the DSR for the year 2010-11 in Water Resources Department is activated for preparing the Draft Schedule of Rates for the year 2011-12.

1. Sri.D.N.Desai, : Chairman
Chief Advisor,
Water Resources Department
2. Sri. J.R.K. Karadi, : Member
Engineer-in-Chief (Retd),
Water Resources Department
3. Sri.T.D.Manmohan, : Member
Chief Engineer (Retd),
Public Works Department
4. Sri.B.S.Mallapur, : Member
Chief Engineer (Retd),
Karnataka Power Corporation.
5. Chief Engineer, : Member
Water Resources Department
6. Superintending Engineer, : Member Secretary
Monitoring and Evaluation

Committee held meetings to discuss the various matters regarding adoption of Data and Specifications, accounting for increase in Markets Rates for Labour, Materials, Royalty Charges, Sales Tax etc.,

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Specification and Rates for following chapters were considered:

- a) Dams and Allied works
- b) Canal and Allied works
- c) Canals Cross drainage works
- d) Tunnel and Allied works
- e) Gates/Hoists and Allied works
- f) Preliminary and Maintenance works.

After detailed discussion / deliberations the following were considered:

1. Rationalization of Specifications for construction items in Water Resources Department.
2. Accounting for Market Rates for construction material other than cement and steel.
3. Adoption of current prices of construction materials such as cement and steel by revising the rates quarterly for the operation for Clause 13 (II) after getting approval from respective Superintending Engineers.
4. Adoption of latest Royalty charges as per G.O. issued by Mines and Geology Department.
5. Provision for composite Sales Tax.
6. Latest wages for workers.
7. Hire charges of Machinery.
8. Lead and Lift charges.
9. Materials required per unit of finished items of works.
10. Inclusion of new items under (i) Dam and Allied works
(ii) Gates/Hoists and Allied works and (iii) Preliminary and Maintenance works.
11. A weightage of 25% for Modernization works which are to be executed in closure period (3 to 4 months).
12. For Lift Irrigation works a separate chapter will be added.

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Precaution has been taken to incorporate in these specifications, the latest practices on the subject incorporating all the amendments issued so far.

Only the descriptions of the items contain brief specifications of work. For details the data rates have to be referred.

60/20211
5-12-2011
Chairman,
Schedule of Rates Committee.

**GENERAL NOTES ON SCHEDULE OF RATES
FOR THE YEAR : 2011-12**

1. These general notes are applicable to all sections of Schedule of Rates to the extent they are relevant.
2. All materials to be used on work shall conform to relevant specifications of Bureau of Indian standards.
3. The basic rates, except otherwise specified, are inclusive of initial lead upto 1 km and all lifts. Additional lead, lift, loading and unloading charges, wherever applicable, shall be added to basic rate as per the procedure stipulated under notes in each section and under notes to lead, lift, loading and unloading charges. The quantities of materials for working out lead, lift, loading and unloading charges shall be as per the statement of requirement of materials for various items of work included under relevant section.
4. The basic rates are inclusive of cost of all materials including finishing, wastage, machinery, labour, enabling works, small tools & plants, loss on stocks, contractor's profit and overheads and hidden cost on labour.
5. The basic rates are inclusive of royalty charges on materials as per Notification No: CI 56 MMN. 2006, Bangalore, dated 23 - 06 -2007.
The royalty charges, wherever applicable, shall be recovered at the prevailing rates and kept under suspense account. If the agency of execution produces the proof / certificate from the competent authority for having paid the royalty charges to the Government, the amount so recovered may be refunded. Any difference due to revision in royalty shall be charged to the estimate.
6. The basic rates for concrete items are inclusive of standard finishing to surfaces.
7. The cement content indicated for concrete items in the item description is based on theoretical mix computations. The actual cement content may vary based on trial mix studies. A suitable clause shall be included in tender document for the work for regulating the payment for any upward or downward variation in cement content.
8. The quantities of materials including wastage and requirement for incidentals for working out additional lead, loading and unloading charges shall be as per the statement of requirement of materials under each section.
9. The basic rates are exclusive of cost of site clearance, de-watering, working under watery situation, de-silting, river diversion arrangements etc., wherever applicable. For items of work involving de-watering and working under watery situation, the basic rates may be increased by 2 percent for estimate purpose only.
10. Rate for Cement and Steel shall be updated every quarter.
11. When the market rates for cement / steel fluctuate from the rates specified in the Schedule of rates, the difference in cost of these materials including contractor's profit & overheads shall be added to or deducted from the basic rate for finished item

at the stage of preparation of estimate (difference in rate approved for the quarter and rate provided in SR) and at the stage of preparation of statement of tendered rates and estimated rates (difference in rate approved for the quarter and rate considered for preparing estimate).

12. For operating Clause :13 of Contract agreement, the basic rates of affected items of Schedule of Rates shall be recast by considering the rates of Cement and Steel at the time of occurring of these items.
13. Useful rubble and stone chips obtained from excavation shall be issued to the contractor for use on works (including enabling works and aggregate crushing) at the rates specified for these materials in the Schedule of Rates. A suitable clause shall be included in the tender in this regard.
14. The rates as provided in the schedule of rates of PWD / KUWSSB / ESCOM / KPCL may be adopted for the items not found in this Schedule of Rates.
15. The basic rates are exclusive of Sales tax on Works Contract. Separate provision shall be made in the rate analysis of items of work in the estimate / tender / operation of Clause:13 in the Tender towards Sale Tax on Works Contract (Composition Tax) at the prevailing rates.
16. Under 'Canal and Allied works' a weightage of 25 percent may be adopted for all the items under Modernization works only if the work is executed during the closure period. This 25 percent weightage for different items under Modernization should be indicated separately in Schedule-B. A separate clause stating that " this weightage amount of 25 percent for different items under Modernization will be released to the contractor, only if the contractor completes 90 percent of Modernization works within the single closure period (as stipulated in the tender condition), otherwise if the contractor fails to complete 90 percent of the Modernization works within the single closure period (as stipulated in the tender condition), this 25 percent weightage amount will be forfeited ", should be incorporated in the Tender document for the Modernization works.
17. A separate weightage for the works executed under Malnad Area as in PWD SR for the year should be adopted, when the works under WRD are executed in Malnad Area. The area falling within the Malnad zone should be as per the areas proposed under Malnad Development Act.

SCHEDULE OF RATES
FOR THE YEAR : 2011-12

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WATER RESOURCES DEPARTMENT

SCHEDULE OF RATES BASIC DATA FOR THE YEAR : 2011-12

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**STATEMENT OF RATES FOR MATERIALS
FOR THE YEAR : 2011-12**

SI No.	DESCRIPTION OF MATERIAL	UNIT	RATE in `
1	2	3	4
I.	CONSTRUCTION MATERIALS :		
1	Acetylene gas	cum	284.00
2	Acid resisting mortar mix	kg	44.00
3	Acid resisting tiles	Dozen	181.00
4	Acrylic emulsion paint	ltr	198.00
5	Aluminium beading for glass fixing	Rm	22.00
6	Anti-corrosive bituminuous black paint	ltr	103.00
7	Asphalt 80 / 100 and 85 / 25 Grade	kg	33.00
8	Bentonite	tonne	5500.00
9	Binding wire	kg	55.00
10	Bolts / Nuts / Washers (galvanized general purpose)	kg	88.00
11	Bolts / Nuts / Washers (hot dipped galvanized)	kg	105.00
12	Bolts / Nuts / Washers (MS general purpose)	kg	60.00
13	Bolts / Nuts / Washers (stainless steel)	kg	165.00
14	Burnt bricks	1000 Nos	3850.00
15	Burnt stone slab 100 mm thick	sqm	210.00
16	Cast iron blocks	kg	35.00
17	Cement 43 Gr	tonne	4800.00
18	Cement concrete solid bricks	Each	19.00
19	Coal tar epoxy paint	ltr	230.00
20	Coarse aggregate 10-4.75 mm	cum	812.00
21	Coarse aggregate 20-10 mm	cum	631.00
22	Coarse aggregate 40-20 mm	cum	462.00
23	Coarse aggregate 80-40 mm	cum	304.00
24	Coir brush	Each	22.00
25	Copper sheet 16 SWG	kg	468.00
26	Coursed rubble stone 300 x 300 x 450 mm	Each	17.00
27	Coursed rubble stone 300 x 300 x 600 mm	Each	22.00
28	Curing Compound	ltr	105.00
29	D - cord	Rm	9.00
30	De-greasing / de-rusting compound	ltr	265.00
31	Detonating fuse coil	Rm	9.00
32	Detonator delay type	Each	20.00
33	Detonator electric	Each	11.00
34	Detonator ordinary	Each	6.00
35	Ductile iron pipe (18 kg / sqcm test pressure) 1000 mm dia	Rm	16500.00
36	Ductile iron pipe (18 kg / sqcm test pressure) 1200 mm dia	Rm	23320.00
37	Ductile iron pipe (18 kg / sqcm test pressure) 800 mm dia	Rm	11405.00
38	Empty cement bag	Each	2.00

STATEMENT OF RATES FOR MATERIALS (CONTD)

SI No.	DESCRIPTION OF MATERIAL	UNIT	RATE in `.
1	2	3	4
I.	CONSTRUCTION MATERIALS (Contd) :		
39	Explosive ANFO	kg	35.00
40	Explosive ANFO high strength booster	kg	55.00
41	Explosive small dia (Kelvex-220 or equivalent)	kg	50.00
42	Fine aggregate / sand (unscreened)	cum	192.00
43	Fine aggregate / sand (screened)	cum	248.00
44	Geo-textile (filter fabric) 200 gsm	sqm	165.00
45	Geo-textile (filter fabric) 250 gsm	sqm	198.00
46	G.I barbed wire 12 x 12 gauge	kg	55.00
47	G.I chain link mesh 10 gauge 50 x 50 mm opening	sqm	198.00
48	G I Pipe 15 mm dia A class	Rm	88.00
49	G I pipe 25 mm dia A class	Rm	110.00
50	G I pipe 40 mm dia B class	Rm	220.00
51	G I pipe 50 mm dia A class	Rm	220.00
52	G I Pipe 80 mm dia B Class	Rm	255.00
53	G I Pipe 100 mm dia B Class	Rm	275.00
54	G.I sheet (plain)	tonne	55000.00
55	G.I Stretcher wire	kg	66.00
56	Hariyala turfing sods	sqm	17.00
57	Hectometre stone one line dressed	Each	195.00
58	Hemp yarn	kg	60.00
59	Honne wood planks	cum	47300.00
60	Hume pipe with collar 150 mm dia	Rm	176.00
61	Hume pipe with collar 300 mm dia	Rm	358.00
62	Ironite compound	kg	17.00
63	J- Bolts 300 mm long	Each	22.00
64	Jungle wood planks	cum	20900.00
65	Kilometre stone one line dressed	Each	418.00
66	LDPE sheet 500 micron thick	sqm	88.00
67	LDPE sheet 750 micron thick	sqm	138.00
68	LDPE sheet 1000 micron thick	sqm	165.00
69	M.S pipe 200 / 300 mm dia	kg	50.00
70	M.S pipe 32 mm dia	Rm	140.00
71	Murum	cum	66.00
72	Oxalic acid	ltr	66.00
73	Oxygen gas	cum	53.00
74	Plain glass 4 mm thick	sqm	330.00
75	Pre-stressed concrete pipe (18 kg / sqcm test pressure) 1000 mm dia	Rm	5690.00
76	Pre-stressed concrete pipe (18 kg / sqcm test pressure) 1200 mm dia	Rm	7085.00
77	Pre-stressed concrete pipe (18 kg / sqcm test pressure) 800 mm dia	Rm	4235.00

STATEMENT OF RATES FOR MATERIALS (CONTD)

SI No.	DESCRIPTION OF MATERIAL	UNIT	RATE in `.
1	2	3	4
I.	CONSTRUCTION MATERIALS (Contd):		
78	PVC sealing strip	Rm	35.00
79	PVC water stopper 310 mm wide (central bulb type)	Rm	185.00
80	Rapid wire mesh 50 x 50 mm opening non-galvanized	sqm	121.00
81	Reinforcement steel	tonne	39820.00
82	Resin bond Cement capsule	Each	55.00
83	Rivets	kg	66.00
84	Rolling shutter	sqm	2240.00
85	Rolling shutter top cover	Rm	430.00
86	Rough stone 200 x 200 x 750 mm	Each	14.00
87	Rubber bottom seal for gate (flat type)	Rm	162.00
88	Rubber corner seal for gate (music note type teflon claded)	Rm	815.00
89	Rubber corner seal for gate (music note type uncladed)	Rm	325.00
90	Rubber side seal for gates (music note type teflon claded)	Rm	745.00
91	Rubber side seal for gate (music note type uncladed)	Rm	260.00
92	Rubber side seal for gate (Z type)	Rm	325.00
93	Size stone 150 to 200 mm height	Each	6.00
94	Size stone 200 to 250 mm height	Each	7.00
95	Size stone 250 to 300 mm height	Each	9.00
96	Shahabad stone slab	sqm	198.00
97	Shalimastic sealing compound	kg	99.00
98	Stainless steel plate / flats	kg	132.00
99	Steel door (frame and Shutter tubular sections)	sqm	4136.00
100	Steel door (frame CRCA sheet Shutter tubular sections)	sqm	3553.00
101	Steel window (tubular frame and tubular section shutter excluding glass)	sqm	1980.00
102	Steel window (tubular frame and Z section shutter excluding glass)	sqm	1540.00
103	Stone chips (at dump yard)	cum	176.00
104	Stone chips (at quarry)	cum	264.00
105	Structural steel angle / channel / beam / bars	tonne	41750.00
106	Structural steel plate / flats	tonne	44000.00
107	Super Plasticizer (Conplast RP-264 or equivalent)	ltr	83.00
108	Synthetic Enamel paint 1st quality	ltr	194.00
109	Tarfelt joint filler board 12 mm thick	sqm	358.00
110	Tarfelt joint filler board 20 mm thick	sqm	580.00
111	Through stones 200 x 200 x 300 to 450 mm long	Each	10.00
112	Through stones 250 x 250 x 450 to 600 mm long	Each	15.00
113	Through stones 300 x 300 x 650 to 750 mm long	Each	20.00
114	Un-coursed rubble stones (at dump yard)	cum	150.00
115	Un-coursed rubble stones (at quarry)	cum	220.00
116	Water proof cement paint	kg	35.00

STATEMENT OF RATES FOR MATERIALS (CONTD)

SI No.	DESCRIPTION OF MATERIAL	UNIT	RATE in `.
1	2	3	4
I.	CONSTRUCTION MATERIALS (Contd):		
117	Water proofing compound	kg	44.00
118	Welding electrodes 4 mm dia (general purpose)	Each	7.00
119	Welding electrodes 4 mm dia (radiographic low hydrogen)	Each	13.00
120	Welding electrodes 4 mm dia (stainless steel)	Each	47.00
121	Weld mess 100 x 50 mm 10 gauge non-galvanized	sqm	165.00
122	Wire brush	Each	33.00
123	Weld mesh 50 x 50 mm 13 gauge	sqm	165.00
124	Wire mesh 20 gauge (50 mm x 50 mm chain link)	sqm	165.00
125	Zinc	kg	155.00
126	Zinc chromate red oxide primer paint	ltr	155.00
127	Zinc rich epoxy primer paint (zinc content - 90 %)	ltr	655.00
II.	MANUFACTURED MATERIALS FOR GATES / HOISTS :		
1	Cast steel Wheel / Pulley / Hub / Plummer / Roller	kg	135.00
2	Cast steel Drum / Gear	kg	160.00
3	Cast steel Pinion	kg	165.00
4	Forged steel Hook / Shackle	kg	180.00
5	Alloy steel Shaft (Carbon steel)	kg	195.00
6	Alloy steel Pin (Stainless steel)	kg	235.00
7	Bronze-alluminium alloy Bearing / Bush	kg	700.00
III.	ACCESSORIES FOR MACHINERY / EQUIPMENT :		
1	Air hose 25 mm dia	Rm	165.00
2	Air hose 50 mm dia	Rm	217.00
3	Cardium compound	kg	88.00
4	Casing shoe bit	Each	9135.00
5	Diamond core bit BX size	Each	10420.00
6	Diamond core bit NX size	Each	13200.00
7	Diesel	ltr	46.65
8	Double tube core barrel	Each	12100.00
9	Electric power (HT - 2B category)	Kwhr	6.00
10	Extension rod with coupling sleeve	Rm	3630.00
11	Gear oil HP-90	ltr	175.00
12	Grease GEM-RR3	kg	213.00
13	Jack hammer drill rod 1.5 m	Each	3740.00
14	Jack hammer drill rod 2.5 m	Each	6225.00
15	Lubricant	ltr	187.00
16	Nozzle for guniting / sand blasting gun	Each	343.00

STATEMENT OF RATES FOR MATERIALS (CONTD)

SI No.	DESCRIPTION OF MATERIAL	UNIT	RATE in `.
1	2	3	4
III.	ACCESSORIES FOR MACHINERY / EQUIPMENT (Contd):		
17	Nylon conveyor belt 3 ply 600 mm width	Rm	1915.00
18	Nylon conveyor belt 3 ply 1000 mm width	Rm	2990.00
19	Paving cylinder	Each	24130.00
20	Petrol	ltr	65.65
21	Rails	tonne	46200.00
22	Reamer shell	Each	4460.00
23	Shutter oil	ltr	28.00
24	Spinning belt	Each	8800.00
25	T.C cross bit 100 mm dia	Each	10575.00
26	T.C cross bit 50 mm dia	Each	3835.00
27	T.C cross bit 75 mm dia	Each	8460.00
28	Tyre and tube set for truck	Set	14300.00
29	Water hose (pressure hose)	Rm	140.00
30	Wire rope (conforming to IS-2266)	kg	115.00

NOTES :

1. The rates provided for materials are inclusive of all taxes, duties and other local levies.
2. The rates provided for materials are inclusive of royalty charges wherever applicable.
3. The rates provided for materials, except those for which lead charges are admissible as per the statement of lead charges, are for all leads.
4. The rates provided for useful rubble and stone chips from excavation are at dump yard.
5. The width and length of Size stone shall not be less than 1.5 times the height.

**STATEMENT OF WAGES OF WORKERS
FOR THE YEAR : 2011-12**

SI No.	CATEGORY OF WORKER	Basic wage / Day in `.		Variable DA / Day	Total wage / Day in `.	
		ZONE-I	ZONE-II	ZONE-I&II	ZONE-I	ZONE-II
1	2	3	4	5	6	7
I.	SKILLED CATEGORY:					
1	Bar bender	111.70	108.70	62.05	173.75	170.75
2	Black smith / Tin smith / Rivetor	94.20	91.20	62.05	156.25	153.25
3	Blaster (Licensed)	99.70	96.70	62.05	161.75	158.75
4	Carpenter CI- I	111.70	108.70	62.05	173.75	170.75
5	Electrician (Licensed)	95.70	92.70	62.05	157.75	154.75
6	Fitter CI- I	98.20	95.20	62.05	160.25	157.25
7	Floor Polisher / Tile Layer	97.70	94.70	62.05	159.75	156.75
8	Foreman	129.70	126.70	62.05	191.75	188.75
9	Gauge reader	94.20	91.20	62.05	156.25	153.25
10	Maistry / Work Inspector	94.20	91.20	62.05	156.25	153.25
11	MasonCI - I / Brick layer CI- I	111.70	108.70	62.05	173.75	170.75
12	Mechanic CI- I	110.20	107.20	62.05	172.25	169.25
13	Operator Air compressor / DG set	100.20	97.20	62.05	162.25	159.25
14	Operator Batching plant	100.20	97.20	62.05	162.25	159.25
15	Operator Bus /Ambulance / Lorry/ Tanker	102.20	99.20	62.05	164.25	161.25
16	Operator Concrete / Asphalt mixer	100.20	97.20	62.05	162.25	159.25
17	Operator Concrete / Asphalt paver	100.20	97.20	62.05	162.25	159.25
18	Operator Concrete pump / Placer	100.20	97.20	62.05	162.25	159.25
19	Operator Core drilling machine	100.20	97.20	62.05	162.25	159.25
20	Operator Crane / Tower crane /Cable way	109.20	106.20	62.05	171.25	168.25
21	Operator Drilling jumbo / Loco / Winch	102.20	99.20	62.05	164.25	161.25
22	Operator Grouting /Guniting / Shotcreting	97.20	94.20	62.05	159.25	156.25
23	Operator Jackhammer/Pneumatic tamper	98.20	95.20	62.05	160.25	157.25
24	Operator Pump / Ventilation fan	96.20	93.20	62.05	158.25	155.25
25	Operator Lathe/Drilling/Shearing machine	105.20	102.20	62.05	167.25	164.25
26	Operator Bending / Planing machine	105.20	102.20	62.05	167.25	164.25
27	Operator Road roller	99.70	96.70	62.05	161.75	158.75
28	Operator Shovel / Scraper / Dozer	109.20	106.20	62.05	171.25	168.25
29	Operator Spillway / Sluice gate	101.70	98.70	62.05	163.75	160.75
30	Operator Crusher / Conveyor / Mucker	100.20	97.20	62.05	162.25	159.25
31	Operator Tipper / Dumper / Transit mixer	102.20	99.20	62.05	164.25	161.25
32	Operator Concrete vibrator	96.20	93.20	62.05	158.25	155.25
33	Operator Vibratory plain / padfoot roller	101.70	98.70	62.05	163.75	160.75
34	Operator Wagon drill / Drifter	98.20	95.20	62.05	160.25	157.25

STATEMENT OF WAGES OF WORKERS (CONTD)

SI No.	CATEGORY OF WORKER	Basic wage / Day in `.		Variable DA / Day	Total wage / Day in `.	
		ZONE-I	ZONE-II	ZONE-I&II	ZONE-I	ZONE-II
1	2	3	4	5	6	7
I.	SKILLED CATEGORY : (contd)					
35	Painter CI- I	98.20	95.20	62.05	160.25	157.25
36	Plumber (Licensed) / Pipe fitter	105.20	102.20	62.05	167.25	164.25
37	Sarang / Khalasi	98.20	95.20	62.05	160.25	157.25
38	Spun pipe moulder	100.70	98.20	62.05	162.75	160.25
39	Stone chiseller / cutter CI- I	100.70	98.20	62.05	162.75	160.25
40	Struct. steel Fabricator / Marker / Erector	110.20	107.20	62.05	172.25	169.25
41	Welder / Gas Cutter	110.20	107.20	62.05	172.25	169.25
II.	SEMI SKILLED CATEGORY :					
1	Asphalt Sprayer / Boiler attendant	94.20	91.20	62.05	156.25	153.25
2	Bhisti	93.20	90.70	62.05	155.25	152.75
3	Carpenter CI- II / Erector shuttering	100.70	98.20	62.05	162.75	160.25
4	Chavali / Navagani	126.20	123.20	62.05	188.25	185.25
5	Crowbarman / Jumperman	94.20	91.20	62.05	156.25	153.25
6	Fitter CI- II	100.70	98.20	62.05	162.75	160.25
7	Gangman / Head / Survey mazdoor	94.20	91.20	62.05	156.25	153.25
8	Gardener / Trained mali	94.20	91.20	62.05	156.25	153.25
9	Helper Air compressor / DG set	94.20	91.20	62.05	156.25	153.25
10	Helper Batching plant	94.20	91.20	62.05	156.25	153.25
11	Helper Blaster	94.20	91.20	62.05	156.25	153.25
12	Helper Bus / Ambulance / Lorry / Tanker	94.20	91.20	62.05	156.25	153.25
13	Helper Bending /Shearing /Planing m/c	94.20	91.20	62.05	156.25	153.25
14	Helper Carpenter	94.20	91.20	62.05	156.25	153.25
15	Helper Concrete / Asphalt mixer	94.20	91.20	62.05	156.25	153.25
16	Helper Concrete / Asphalt paver	94.20	91.20	62.05	156.25	153.25
17	Helper Core drilling machine	94.20	91.20	62.05	156.25	153.25
18	Helper Crane / Tower crane / Cable way	94.20	91.20	62.05	156.25	153.25
19	Helper Drilling jumbo / Loco / Winch	94.20	91.20	62.05	156.25	153.25
20	Helper Fitter / Fabrication	94.20	91.20	62.05	156.25	153.25
21	Helper Grouting / Guniting / Shotcreting	94.20	91.20	62.05	156.25	153.25
22	Helper Jack hammer / Pneumatic tamper	94.20	91.20	62.05	156.25	153.25
23	Helper Laboratory / Instrumentation	94.20	91.20	62.05	156.25	153.25
24	Helper Road roller	94.20	91.20	62.05	156.25	153.25
25	Helper Shovel / Scraper / Dozer	94.20	91.20	62.05	156.25	153.25
26	Helper Crusher / Conveyor / Mucker	94.20	91.20	62.05	156.25	153.25

STATEMENT OF WAGES OF WORKERS (CONTD)

SI No.	CATEGORY OF WORKER	Basic wage / Day in `.		Variable DA / Day	Total wage / Day in `.	
		ZONE-I	ZONE-II	ZONE-I&II	ZONE-I	ZONE-II
1	2	3	4	5	6	7
II.	SEMI SKILLED CATEGORY : (contd)					
27	Helper Tipper / Dumper/ Transit mixer	94.20	91.20	62.05	156.25	153.25
28	Helper Vibrator	94.20	91.20	62.05	156.25	153.25
29	Helper Vibratory plain / padfoot roller	94.20	91.20	62.05	156.25	153.25
30	Helper Wagon drill / Drifter	94.20	91.20	62.05	156.25	153.25
31	Lineman Electric / Telephone	94.20	91.20	62.05	156.25	153.25
32	Mason CI- II / Brick layer CI-II / moulder	100.70	98.20	62.05	162.75	160.25
33	Mechanic CI- II	103.70	100.70	62.05	165.75	162.75
34	Painter CI- II	94.20	91.20	62.05	156.25	153.25
35	Patkari / Neeraganti / Sowdy	93.20	90.70	62.05	155.25	152.75
36	Stone Chiseller CI II	98.20	95.70	62.05	160.25	157.75
37	Stone breaker / Hammerman	98.20	95.70	62.05	160.25	157.75
38	Valveman / Canal sluice operator	93.20	90.70	62.05	155.25	152.75
III.	UN-SKILLED CATEGORY:					
1	Cement / Asphalt handling mazdoor	85.70	83.70	62.05	147.75	145.75
2	Civic worker	84.70	82.70	62.05	146.75	144.75
3	Heavy mazdoor	83.20	81.70	62.05	145.25	143.75
4	Light mazdoor	81.70	80.20	62.05	143.75	142.25
5	Watchman	81.70	80.20	62.05	143.75	142.25
IV.	OTHER CATEGORY :					
1	Boatman with boat	122.20	119.20	62.05	184.25	181.25
2	Care-taker / conductor / Lift attender	93.70	90.70	62.05	155.75	152.75
3	Cartman with double bullock cart	131.20	128.20	62.05	193.25	190.25
4	Cartman with single bullock cart	111.70	108.70	62.05	173.75	170.75
5	Cook / Messman	95.20	92.20	62.05	157.25	154.25
6	Dhobi	93.70	90.70	62.05	155.75	152.75
7	Diploma Engineer	107.20	104.20	62.05	169.25	166.25
8	Diver with headgear	131.20	128.20	62.05	193.25	190.25
9	Graduate / Laboratory Assistant	101.70	98.70	62.05	163.75	160.75
10	Graduate Engineer/ Geologist	153.70	150.70	62.05	215.75	212.75
11	Horticulture Assistant / Photographer	94.20	91.20	62.05	156.25	153.25
12	ITI certificate holder / Tracer / Printer	95.20	92.20	62.05	157.25	154.25
13	Literate mazdoor	93.70	90.70	62.05	155.75	152.75
14	Stenographer / Computer Operator	104.20	101.70	62.05	166.25	163.75

STATEMENT OF WAGES OF WORKERS (CONTD)

SI No.	CATEGORY OF WORKER	Basic wage / Day in `.		Variable DA / Day	Total wage / Day in `.	
		ZONE-I	ZONE-II	ZONE-I&II	ZONE-I	ZONE-II
1	2	3	4	5	6	7
IV.	OTHER CATEGORY : (contd)					
15	Telephone / Wireless Operator	104.20	101.70	62.05	166.25	163.75
16	Typist	96.20	93.20	62.05	158.25	155.25

NOTES:

1. The wages under Zone-I are applicable to : Bangalore city agglomeration area and District headquarters agglomeration area.
2. The wages under Zone-II are applicable to: All areas other than those listed in Zone-I.
3. The wages of workmen of various categories are subject to revision during currency of SR for any revision in minimum daily wages and VDA by Govt of Karnataka.
4. The daily rates of wages and VDA of different categories of workers are computed by dividing the total monthly wage by 26.
5. For categories of workers for which provision has not been made in the list the rates prevailing in the Schedule of rates of other department may be adopted.

**STATEMENT OF HIRE CHARGES OF MACHINERY
FOR THE YEAR : 2011-12**

SI No:	Description of machinery	Unit	Hire charge in `.	Fuel charge in `.	Crew Charge in `.
1	2	3	4	5	6
1	Agitator car / Transit mixer 2 cum	Hour	654.00	706.00	98.10
2	Air compressor 5 cmm electric	Hour	71.00	181.00	60.90
3	Air compressor 7 cmm diesel	Hour	171.00	577.00	78.00
4	Air compressor 7 cmm electric	Hour	90.00	242.00	60.90
5	Air compressor 8.5 cmm diesel	Hour	208.00	722.00	78.00
6	Air compressor 8.5 cmm electric	Hour	111.00	302.00	60.90
7	Air compressor 15 cmm electric	Hour	111.00	671.00	65.00
8	Angle Dozer 90 hp	Hour	1189.00	494.00	83.60
9	Batching plant 6 cum / hour rated capacity	Hour	134.00	134.00	117.00
10	Batching plant 15 cum / hour rated capacity	Hour	312.00	242.00	117.00
11	Batching plant 50 cum / hour rated capacity	Hour	518.00	295.00	117.00
12	Bending machine	Hour	40.00	81.00	49.50
13	Concrete bucket 1.5 cum	Hour	12.00	6.00	---
14	Concrete hand mixer 45 / 30 ltr	Hour	11.00	4.00	---
15	Concrete mixer 300 / 200 ltr diesel	Hour	43.00	64.00	81.30
16	Concrete mixer 300 / 200 ltr (ele)	Hour	39.00	27.00	81.30
17	Concrete mixer 600 / 400 ltr diesel	Hour	87.00	128.00	81.30
18	Concrete mixer 600 / 400 ltr (ele)	Hour	79.00	54.00	81.30
19	Concrete paver 100 sqm / hr	Hour	290.00	19.00	156.00
20	Convey mucker	Hour	684.00	187.00	65.00
21	Core drilling machine	Hour	259.00	192.00	97.50
22	Diesel generating set 30 KVA	Hour	62.00	513.00	48.80
23	Diesel generating set 50 KVA	Hour	97.00	770.00	48.80
24	Diesel loco 45 hp	Hour	245.00	433.00	61.30
25	Dewatering pump 5 hp diesel	Hour	7.00	64.00	38.80
26	Dewatering pump 5 hp electric	Hour	3.00	27.00	29.10
27	Dewatering pump 10 hp diesel	Hour	12.00	128.00	38.80
28	Dewatering pump 10 hp electric	Hour	5.00	54.00	29.10
29	Dewatering pump 20 hp diesel	Hour	28.00	257.00	38.80
30	Dewatering pump 20 hp electric	Hour	11.00	107.00	29.10
31	Drifter	Hour	223.00	6.00	121.10
32	Drilling jumbo	Hour	338.00	35.00	65.40
33	Dumper 5.00 cum	Hour	502.00	323.00	78.50
34	Geophysical Ele.resistivity meter	Hour	64.00	---	---
35	Grouting pump	Hour	20.00	27.00	96.60
36	Guniting / sand blasting equipment	Hour	87.00	9.00	80.50

STATEMENT OF HIRE CHARGES OF MACHINERY (CONTD)

SI No	Description of machinery	Unit	Hire charge in `.	Fuel charge in `.	Crew Charge in `.
1	2	3	4	5	6
37	Ice plant with accessories 30 t / day	Hour	141.00	846.00	48.80
38	Jack hammer	Hour	15.00	6.00	121.10
39	Mobile crane 8 t	Hour	379.00	577.00	81.80
40	Mobile crane 25 t	Hour	3924.00	1604.00	78.50
41	Needle vibrator 40 mm dia. petrol	Hour	8.00	18.00	57.70
42	Needle vibrator 40 mm dia. electric	Hour	7.00	5.00	57.70
43	Needle vibrator 60 mm dia. petrol	Hour	9.00	27.00	57.70
44	Needle vibrator 60 mm dia. electric	Hour	8.00	8.00	57.70
45	Pile boring rig with accessories	Hour	1075.00	1155.00	83.60
46	Planing machine	Hour	90.00	81.00	79.20
47	Plate shearing machine	Hour	64.00	107.00	49.50
48	Pneumatic placer 0.5 cum	Hour	137.00	4.00	31.10
49	Pneumatic tamper	Hour	12.00	6.00	96.90
50	Pug cutting machine	Hour	17.00	3.00	---
51	Pusher leg	Hour	8.00	4.00	---
52	Road roller diesel 10 t	Hour	235.00	577.00	77.90
53	Shovel 0.50 cum 75 hp	Hour	747.00	385.00	83.60
54	Shovel 0.85 cum 110 hp	Hour	1235.00	706.00	83.60
55	Spinning machine	Hour	40.00	81.00	49.50
56	Stationary derrick crane	Hour	68.00	9.00	---
57	Tipper 5 cum	Hour	284.00	242.00	61.30
58	Tipping tub 1.5 cum	Hour	31.00	9.00	---
59	Tower crane 5 tonne	Hour	1024.00	140.00	66.90
60	Transformer 250 KVA	Month	3628.00	---	---
61	Truck 10 t	Hour	283.00	242.00	61.30
62	Upright drilling machine / Grinder	Hour	19.00	27.00	64.10
63	Ventilation fan 20 hp	Hour	6.00	107.00	10.00
64	Vibrating plate compactor (diesel)	Hour	56.00	64.00	96.90
65	Vibratory pad foot roller 8 t	Hour	1164.00	834.00	98.00
66	Waggon drill	Hour	223.00	9.00	96.90
67	Water tanker 8000 ltr	Hour	281.00	242.00	61.30
68	Welding transformer	Hour	12.00	65.00	---
69	Winch 35 hp electric	Hour	101.00	188.00	98.10

STATEMENT OF HIRE CHARGES OF MACHINERY (CONTD)

NOTES:

1. Hire charges include depreciation, interest, repair charges, miscellaneous charges, insurance and road tax wherever applicable.
2. Fuel charges include cost of diesel / petrol / electric power as applicable and oil / lubricants and other miscellaneous charges.
3. Crew charge includes wages of operator and helper on hourly basis.
For the purpose of working out wages of crew on hourly basis the daily wages are converted to yearly wages by multiplying the daily wages with (26 daysx12 months). The yearly wage is then divided by yearly usage of machinery in hours to get hourly wages of operating crew.

Yearly usage of machinery = Life of machinery in hours / Life of machinery in years

Example: Operating crew charges for Deisel Air compressor :

Operator compressor	`:	159.25 / Day
Helper compressor	`:	153.25 / Day
Life of Air compressor in hours	:	10000 hours
Life of Air compressor in years	:	8 years
Yearly usage of Air compressor	(10000 / 8)	: 1250 hours
Operator compressor per hour =	$159.25 \times 26 \times 12 / 1250 =$	`: 39.75
Helper compressor per hour =	$153.25 \times 26 \times 12 / 1250 =$	`: <u>38.25</u>
Total operating crew charges per hour		`: 78.00
	Rounded off to	`: 78.00

4. For batching plants 2 Operators and 2 Helpers are considered for Crew charges.
5. Hire / Fuel / Crew charges are exclusive of provisions towards small T & P, profit, overheads and hidden cost on operating crew. Profit shall be considered only on fuel and operating crew charges.

**CONVEYANCE CHARGES FOR MATERIALS BY HEAD LOAD
FOR THE YEAR : 2011-12**

SI No.	Total distance (Total lead includes initial lead)	Earth / Sand / Gravel / Murrum / Lime / Surki / Size stone / Cut stone / Rubble / Coarse aggregate ` / cum	Cement / Reinforc- ement & Structu- ral steel `/tonne	Shahbad / PCC & BS slabs / CC & Laterite blocks / Wood ` / cum
1	2	3	4	5
1	Total lead upto 50 m (Initial lead)	Cost included in item basic rates in SR		
2	Total lead upto 100 m	26.60	15.90	34.20
3	Total lead upto 150 m	53.20	31.80	68.50

NOTES:

- For total lead upto 150 m (including initial lead) lead charges by head load only shall be adopted irrespective of mode of conveyance.
- For total lead exceeding 150 m conveyance by mechanical means only shall be adopted irrespective of mode of conveyance.
- Loading and unloading charges are not payable for conveyance by head load.
- Unless otherwise specified lead charges for Earth / Sand / Gravel / Aggregates and stones are for loose volume and not for compacted or in-situ volume.
- The rates for lead charges by head load and upto 5 km by any mode are cumulative and inclusive of lead charges for preceding lead.

Example:

Lead charges for conveyance of Earth / Sand for total lead of 100 m shall be corresponding to lead charges 'Total lead upto 100 m ' in the statement of lead charges by head load.

Lead charges for Earth / Sand for total lead of 100 m ` : 26.60 / cum

**CONVEYANCE CHARGES FOR MATERIALS BY ANY MODE
FOR THE YEAR : 2011-12**

(Excluding loading and unloading charges)

SI No.	Distance	Earth / Sand / Murum / Gravel / Lime in ` / cum	Rubble / Size stone/ Cut stone/ Coarse aggregate in ` / cum	Cement / Steel / Pipes / AC sheet/ GI sheet/ RCC pole in ` / tonne	Shahbad / PCC / BS slabs / CC / Laterite blocks / Wood in ` / cum	Water in ` / 1000 ltr
1	2	3	4	5	6	7
1	Lead upto 1 km	38.00	52.70	41.00	102.40	31.70
2	Lead more than 1 km upto 2 km	46.90	61.50	46.50	115.30	37.20
3	Lead more than 2 km upto 3 km	55.50	70.10	51.90	128.00	42.60
4	Lead more than 3 km upto 4 km	63.60	78.30	57.00	140.00	47.60
5	Lead more than 4 km upto 5 km	71.70	86.30	62.00	151.80	52.60
6	Every km beyond 5 km upto 30 km	7.80	7.80	4.90	11.40	4.80
7	Every km beyond 30 km	7.30	7.30	4.60	10.80	4.60

NOTES:

- For total lead exceeding 150 m conveyance by mechanical means only shall be added irrespective of mode of conveyance.
- Unless otherwise specified lead charges for Earth / Sand / Gravel / Aggregates and stones are for loose volume and not for compacted or in-situ volume.
- The rates for lead charges upto 5 km by any mode are cumulative and inclusive of lead charges for preceding lead.

Example:

Lead charges for conveyance of Earth / Sand for total lead of 4 kms shall be corresponding to lead charges 'Beyond 3 km upto 4 km ' in the statement of lead charges by any mode.

Lead charges for Earth / Sand for total lead of 4 km : 63.60 / cum

**LOADING AND UNLOADING CHARGES FOR MATERIALS
FOR THE YEAR : 2011-12**

SI No.	Distance	Earth / Sand / Murum / Gravel / Lime in ` / cum	Rubble / Size stone/ Cut stone/ Coarse aggregate in ` / cum	Cement / Steel / Pipes / AC sheet/ GI sheet/ RCC pole in ` / tonne	Shahbad / PCC / BS slabs / CC / Laterite blocks / Wood in ` / cum	Water in ` / 1000 ltr
1	2	3	4	5	6	7
1	Loading	45.00	53.20	49.60	47.10	15.00
2	Unloading	9.30	26.60	49.60	47.10	Gravity

NOTES:

1. Loading and unloading charges are not payable for conveyance by head load.
2. Loading charges are not payable for conveyance by mechanical means for disposal of excavated materials beyond initial lead of 50 m wherever specified.
3. Loading and unloading charges are not payable for conveyance by mechanical means for disposal of excavated materials beyond initial lead of 1 km wherever specified.
4. The rates for unloading of materials except earth, sand, gravel, coarse aggregate, rubble, size stone and cut stone are inclusive of stacking.
5. Unloading of materials includes stacking wherever applicable.

**LIFT CHARGES FOR MATERIALS
FOR THE YEAR : 2011-12**

SI No.	Total lift (Total lift includes initial lift)	Earth / Sand /Gravel / Murrum / Lime / Surki / Size stone / Cut stone / Rubble / Coarse aggregate ` / cum	Cement / Reinforce ment steel Str steel ` / tonne	Shahbad / PCC / BS slab / CC block / Late- rite / wood ` / cum
1	2	3	4	5
1	Total lift upto 1.50 m (Initial lift)	Cost included in item basic rates in SR		
2	Total lift upto 3.00 m	4.70	3.40	6.30
3	Total lift upto 4.50 m	9.30	6.80	12.60
4	Total lift upto 6.00 m	14.00	10.20	18.80
5	Total lift upto 7.50 m	18.60	13.60	25.10

NOTES :

- The rates for lift charges are cumulative and inclusive of rates for preceding lift.
Example :
Lift charges for total lift of 6 m shall be corresponding to lift charges " Total lift upto 6.00 m " in the statement of lift charges.
Lift charges for Earth / Sand for total lift of 6 m ` : 14.00 / cum
- Lift charges are not payable where conveyance of materials is by mechanical means to final placing point.

**ROYALTY RATES ON MATERIALS
FOR THE YEAR : 2011-12**

Ref : Govt of Karnataka Notification No.: CI 56 MMN. 2006, Bangalore, dated 23 - 06 -2007.
(Only relevant portions of the Notification are listed in the following table)

SI No.	Name of minor mineral	Area of applicability	Rate in ` / Unit quantity
1	2	3	4
1	Murum	Entire state	10.00 / tonne
2	Ordinary building stones	Entire state	30.00 / tonne
3	Lime stone under title ' Shahabad stone '	Entire state	80.00 / 10 sqm
4	Ordinary sand	Entire state	30.00 / tonne

NOTES :

1. The recovery of royalty charges on materials listed above, wherever applicable, shall be regulated as per Note.10 under " General notes on Schedule of Rates.
2. Royalty charges as applicable to murum shall be considered for Earth / Soil also.
3. Royalty charges as applicable to ordinary building stones shall be considered for coarse aggregate also.
4. Royalty charges as applicable to ordinary sand shall be considered for fine aggregate.
5. Royalty charges as applicable to Shahabad stone shall be considered for Yaragunta / Cudappa stone slabs also.

WATER RESOURCES DEPARTMENT

DAM AND ALLIED WORKS SCHEDULE OF RATES FOR THE YEAR : 2011-12

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**NOTES ON SCHEDULE OF RATES
DAM AND ALLIED WORKS**

1. All notes under General Notes on Schedule of Rates and Notes on Lead, Lift, Loading and un-loading Charges are applicable to Dam and Allied Works also to the extent they are relevant.
2. Unless otherwise specified the basic rates are inclusive of all lifts.
3. Unless otherwise specified the basic rates are inclusive of standard finishing required for concrete surface.
4. The basic rates for concrete items include cost of cleaning / green cutting top surface of previous lift of concrete and providing cement mortar layer before placing concrete for next lift. The proportion of cement mortar shall be same as that of mortar portion in concrete.

5. For concrete, masonry and reinforcement steel items initial lead of 1km is considered in the basic rate.

Additional lead charges for cement and steel shall be worked out by deducting initial lead of 1 km from the total lead and loading and unloading charges shall be allowed in view of rehandling of cement and steel from site store / fabrication yard to work place.

Example :

Total lead for cement	: 100 km
Less Rehandling lead included in basic rate	: 1 km
Net lead for working out additional lead charges	: 99 km
Additional lead charges / tonne: First 5 kms	∴ 62.00
Next 25 kms (25 x 4.90)	∴ 122.50
Balance 69 kms (69 x 4.60)	∴ 317.40
Loading & unloading charges	∴ <u>99.20</u>
Total additional lead charges / tonne	∴ 601.10

Additional lead charges for sand, coarse aggregate, stones and stone chips shall be worked out for total lead involved and 1 km lead charges included in basic rate shall be deducted from the total lead charges. No loading and unloading charges shall be allowed since no rehandling lead is involved for these materials.

Example :

Total lead for sand from approved sand quarry	: 15 km
Initial lead included in the basic rate in the SR	: 1 km
Additional lead charges / cum : Lead charges for 5 km	∴ 71.70
Lead charges for next 10 km (10 x 7.80)	∴ <u>78.00</u>
Total lead charges for 15 km /cum	∴ 149.70
Less 1 km initial lead charges / cum	∴ <u>-38.00</u>
Net additional lead charges / cum	∴ 111.70

No loading and un-loading charges shall be added.

6. For earth / rockfill embankment works 1 km initial lead is considered in the basic rates.

As storing / stacking / re-handling of materials is not involved for these works the lead charges for additional lead shall be worked out for total lead including initial lead of 1 km and then the cost of first km lead shall be deducted. No loading and un-loading charges shall be added as the additional lead does not involve rehandling of materials.

Example :

Total lead for soil from approved borrow area	:	2 km
Initial lead included in the basic rate in the SR	:	1 km
Additional lead charges : Lead charges for 2 km	`:	46.90
Less Lead charges for 1 km	`:	<u>-38.00</u>
Additional lead charges / cum	`:	8.90

No loading and un-loading charges shall be added.

7. Cement content specified for cement concrete works in the item description is based on theoretical design mix computations and is exclusive of wastage and requirement for any incidentals. The actual cement content may vary based on trial mix studies. A suitable clause shall be included in tender for regulating payment for any upward or downward variation in cement content.
8. The quantities of materials including wastage, requirements for incidentals etc., for working out additional lead charges shall be as per the statement of requirement of materials under this section.
9. The basic rates are exclusive of cost of site clearing and river diversion arrangements such as coffer dams, bunds, diversion channels etc. Separate sub-estimates shall be prepared for all types of coffer dams, bunds, diversion channels etc.

**QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES
DAM AND ALLIED WORKS**

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Cement kg	Sand / FA cum	CA cum	Steel kg
9.a	Consolidation grouting	tonne	1010.00	---	---	---
9.b	Curtain grouting	tonne	1010.00	---	---	---
10	25 mm dia. dowel rod 3 m long	Each	3.00	---	---	11.85
11	25 mm dia. anchor rod 2.75 m long	Each	2.50	---	---	10.90
12	Reinforcement steel	tonne	---	---	---	1025.00
			Cement kg	Sand / FA cum	CA cum	Plums cum
13	M-15 CC using 80 mm down CA for PCC	cum	215.10	0.360	1.00	---
14	M-10 CC using 80 mm down CA for PCC	cum	194.90	0.384	1.00	---
15	M-20 CC using 40 mm down CA gallery	cum	306.00	0.414	0.92	---
16	M-15 CC using 40 mm down CA for PCC	cum	245.50	0.407	0.92	---
17	M-15 plum CC using 40 mm down CA	cum	215.30	0.347	0.78	0.24
18	M-10 CC using 40 mm down CA for PCC	cum	225.20	0.406	0.92	---
19	M-15 CC using 20 mm down CA	cum	295.90	0.460	0.79	---
20	M-20 CC using 20 mm down CA bridge	cum	336.30	0.460	0.81	---
21	Porous CC body drain	Rm	179.70	---	0.44	---
22.a	M-20 CC using 20 mm CA solid parapet	Rm	81.80	0.111	0.20	---
22.b	M-20 CC 20 mm CA ornamental parapet	Rm	71.40	0.087	0.17	---
23	M-25 CC 20 mm down CA wearing coat	cum	368.60	0.458	0.82	---
			Cement kg	Sand / FA cum	CA cum	Hume Pipe kg
26	Hume pipe with porous CC for weep hole	Rm	1.10	0.007	0.003	32.00
			Cement kg	Sand / FA cum	Stones cum	Steel kg
27	Spillway bridge expansion joint	Rm	---	--	--	24.35
28	UCR masonry in CM 1:3 propn.	cum	192.00	0.408	1.01	---
29	UCR masonry in CM 1:4 propn.	cum	145.40	0.409	1.01	---
30	CR face masonry in CM 1:3 propn	cum	179.80	0.380	1.06	---
31	CR face masonry in CM 1:4 propn	cum	136.40	0.380	1.06	---
32	Chisel drafted CR face masonry in CM1:3	cum	167.70	0.357	1.08	---
33	Chisel drafted CR face masonry in CM1:4	cum	127.30	0.357	1.08	---
34.a	Pointing in CM 1:2 propn.	sqm	4.55	0.007	---	---
34.b	Pointing in CM 1:3 propn.	sqm	3.33	0.007	---	---

QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES (contd)

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Cement kg	Sand / FA cum	Stones cum	Pipe / Steel kg
35	20 mm th plastering in CM 1:3	sqm	13.10	0.275	---	---
36	Guniting 25 mm thick in CM 1:3 propn	sqm	17.10	0.031	---	---
			Soil cum	Sand cum	CA cum	Stones cum
41	Impervious hearting embankment	cum	1.26	---	---	---
42	Cut-off trench filling	cum	1.26	---	---	---
43	Semi-pervious embankment	cum	1.26	---	---	---
44	Semi-pervious casing	cum	1.26	---	---	---
45	Homogeneous embankment	cum	1.26	---	---	---
46	Filling adjacent to structures	cum	1.26	---	---	---
47	Rockfill embankment	cum	---	---	---	1.02
48	Rock toe (stones from quarry)	cum	---	---	---	1.02
49	Rock toe (stones from dump yard)	cum	---	---	---	1.02
			Cement kg	Sand / FA cum	CA cum	Pipe / Steel kg
50	Open jointed hume pipe in rock-toe	Rm	---	---	---	80 / ---
51	RCC manhole in rock-toe	Each	1313.00	2.000	3.62	80 / 160
			Soil cum	Sand cum	CA cum	Stones cum
52	Cross filter drain	cum	---	0.485	0.54	---
53.a	Vertical / Inclined filter - Sand layer	cum	---	1.020	---	---
53.b	Vertical / Inclined filter - 10 mm CA layer	cum	---	---	1.02	---
53.c	Vertical / Inclined filter - 20 mm CA layer	cum	---	---	1.02	---
53.d	Vertical / Inclined filter - 40 mm CA layer	cum	---	---	1.02	---
53.e	Vertical / Inclined filter - 80 mm CA layer	cum	---	---	1.02	---
54	Filter below / behind rock toe	cum	---	0.240	0.78	---
55	Filter using filter fabric and 20 mm CA	sqm	---	---	0.41	---
56	Sand chimney filter drain	cum	---	1.050	---	---
57	Transition filter 900 mm thick	cum	---	0.340	0.68	---
58	600 mm revetment with 450 mm filter	sqm	---	0.153	0.31	0.70
59	600 mm revetment with 600 mm filter	sqm	---	0.204	0.41	0.70
60	600 mm riprap with 450 mm filter	sqm	---	0.153	0.31	0.70
61	750 mm riprap with 450 mm filter	sqm	---	0.153	0.31	0.88
62	900 mm riprap with 450 mm filter	sqm	---	0.153	0.31	1.05
63	Hariyala turfing	sqm	0.08	0.020	---	---
			(sods)			

NOTES:

1. The quantities of materials specified in the above table are for loose volume.
2. The quantity of cement for cement concrete items includes requirement of cement for any incidental works such as mortar layer at lift joints, repair of honey-comb patches etc.
3. The quantities of materials are inclusive of wastage as under:

Cement	1.00	percent
Sand / Fine aggregate	2.00	percent
Coarse aggregate / Stones / Stone chips	2.00	percent
Steel (Reinforcement & Structural)	2.50	percent

**AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES
DAM AND ALLIED WORKS**

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
13	M-15 CC using 80 mm down CA PCC	cum	---	17.30	48.00	---
14	M-10 CC using 80 mm down CA PCC	cum	---	18.45	48.00	---
15	M-20 CC using 40 mm down CA gallery	cum	---	19.85	44.15	---
16	M-15 CC using 40 mm down CA	cum	---	19.55	44.15	---
17	M-15 plum CC using 40 mm down CA	cum	---	16.65	37.45	11.50
18	M-10 CC using 40 mm down CA for PCC	cum	---	19.50	44.15	---
19	M-15 CC using 20 mm down CA for PCC	cum	---	22.10	37.90	---
20	M-20 CC using 20 mm down CA bridge	cum	---	22.10	38.90	---
21	Porous CC body drain	Rm	---	---	21.10	---
22.a.	M-20 CC using 20 mm CA solid parapet	Rm	---	5.35	9.60	---
22.b.	M-20 CC 20 mm CA ornamental parapet	Rm	---	4.20	8.15	---
23	M-25 CC 20 mm down CA wearing coat	cum	---	22.00	39.35	---
26	Hume pipe with porous CC for weep hole	Rm	---	0.35	0.15	---
28	UCR masonry in CM 1:3 propn.	cum	---	19.60	---	48.50
29	UCR masonry in CM 1:4 propn.	cum	---	19.65	---	48.50
30	CR face masonry in CM 1:3 propn	cum	---	18.25	---	50.90
31	CR face masonry in CM 1:4 propn	cum	---	18.25	---	50.90
32	Chisel drafted CR face masonry in CM1:3	cum	---	17.15	---	51.85
33	Chisel drafted CR face masonry in CM1:4	cum	---	17.15	---	51.85

AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES(contd)

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
34.a	Pointing in CM 1:2 propn.	sqm	---	0.35	---	---
34.b	Pointing in CM 1:3 propn.	sqm	---	0.35	---	---
35	20 mm th plastering in CM 1:3	sqm	---	13.20	---	---
36	Guniting 25 mm thick in CM 1:3 propn	sqm	---	1.50	---	---
41	Impervious hearting embankment	cum	16.00	---	---	---
42	Cut-off trench filling	cum	16.00	---	---	---
43	Semi-pervious embankment	cum	16.00	---	---	---
44	Semi-pervious casing	cum	16.00	---	---	---
45	Homogeneous embankment	cum	16.00	---	---	---
46	Filling adjacent to structures	cum	16.00	---	---	---
47	Rockfill embankment	cum	---	---	---	48.95
48	Rock toe (stones from quarry)	cum	---	---	---	48.95
49	Rock toe (stones from dump yard)	cum	---	---	---	48.95
51	RCC manhole in rock-toe	Each	---	96.00	173.75	---
52	Cross filter drain	cum	---	23.30	25.90	---
53.a	Vertical / Inclined filter - Sand layer	cum	---	48.95	---	---
53.b	Vertical / Inclined filter - 10 mm CA layer	---	---	---	48.95	---
53.c	Vertical / Inclined filter - 20 mm CA layer	---	---	---	48.95	---
53.d	Vertical / Inclined filter - 40 mm CA layer	---	---	---	48.95	---
53.e	Vertical / Inclined filter - 80 mm CA layer	---	---	---	48.95	---
54	Filter below / behind rock toe	cum	---	11.50	37.45	---
55	Filter using filter fabric and 20 mm CA	sqm	---	---	19.70	---
56	Sand chimney filter drain	cum	---	50.40	---	---
57	Transition filter 900 mm thick	cum	---	16.30	32.65	---
58	600 mm revetment with 450 mm filter	sqm	---	7.35	14.90	33.60
59	600 mm revetment with 600 mm filter	sqm	---	9.80	19.70	33.60
60	600 mm riprap with 450 mm filter	sqm	---	7.35	14.90	33.60
61	750 mm riprap with 450 mm filter	sqm	---	7.35	14.90	42.25
62	900 mm riprap with 450 mm filter	sqm	---	7.35	14.90	50.40
63	Hariyala turfing	sqm	---	0.95	---	---

NOTES:

1. In the Govt notification on royalty charges the rates for Earth / Sand / Building stone are on weight basis. For converting the rate per tonne to rate per cum for working-out the royalty charges for various work items following density values are assumed.

Sand / Fine aggregate (loose volume)	: 1.60 tonne per cum
Stones/stone chips/Coarse aggregates (loose volume) :	1.60 tonne per cum
Rockfill / Rock toe (fill volume)	: 1.80 tonne per cum
Soil (compacted to 95 percent density control)	: 1.60 tonne per cum

**DAM AND ALLIED WORKS
SCHEDULE OF RATES
FOR THE YEAR :2011-12**

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	EXCAVATION & FOUNDATION TREATMENT WORKS:		
1.	Excavation for foundation in all kinds of soil including boulders upto 0.60 m dia (0.113 cum) for dam, spillway, intake structure, surface power house and other appurtenant works and placing the excavated soil neatly in dump area or disposing off the same as directed etc., complete with initial lead upto 1 km and all lifts.	cum	64.00
2.	Excavation for foundation in soft rock with-out blasting including boulders upto 0.6 m dia. (0.113 cum) for dam, spillway, intake structure, surface power house and other appurtenant works and placing the excavated material neatly in dump area or disposing off the same as directed etc., complete with initial lead upto 1 km and all lifts.	cum	84.00
3.	Excavation for foundation in soft rock requiring blasting including boulders upto 0.6 m dia. (0.113 cum) for dam, spillway, intake structure, surface power house and other appurtenant works and placing the excavated material neatly in dump area or disposing off the same as directed etc., complete with initial lead upto 1 km and all lifts.	cum	144.00
4.a.	Excavation for foundation in hard rock of all toughness by blasting including boulders above 0.6 m dia.(0.113 cum) for dam, spillway, intake structure, surface power house and other appurtenant works minimising damage to rock beyond specified excavation line by adopting any one or combination of line drilling /pre-splitting / smooth blasting techniques and placing the excavated rock neatly in approved dump area as directed etc., complete with initial lead upto 1 km and all lifts.	cum	268.00
4.b.	Excavation for foundation in hard rock of all toughness including boulders above 0.6 m dia.(0.113 cum) by approved controlled blasting methods including control of vibration by use of delay detonators and control of fly rocks by muffling for dam, spillway, intake structure, surface power house and other appurtenant structures etc., and placing the excavated rock neatly in approved dump area as directed etc., complete with initial lead upto 1 km and all lifts.	cum	451.00
5.	Preparing foundation bed for masonry or concrete by removing all		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	loose material by wedging / chiselling and disposing off the same as directed and cleaning the surface with air and water jet etc., complete with initial lead upto 50 m and all lifts.	sqm	19.00
6.	Preparing foundation bed for cut-off trench filling in rock portion by removing all loose material by wedging / chiselling and disposing off the same as directed etc., complete with initial lead upto 50 m and all lifts.	sqm	13.00
7.	Drilling 50 mm dia. holes vertical or inclined upto 10 degrees to vertical in rock / masonry / concrete by percussion drilling using waggon drill or any other suitable equipment including cost of all materials, machinery, labour, redrilling through partially set grout wherever required etc., complete.		
	Upto 6 m from surface.	Rm	154.00
	Beyond 6 m upto 12 m from surface.	Rm	169.00
	Beyond 12 m upto 18 m from surface.	Rm	186.00
	Beyond 18 m upto 24 m from surface.	Rm	205.00
	Beyond 24 m upto 30 m from surface.	Rm	226.00
	Beyond 30 m upto 36 m from surface.	Rm	249.00
	Beyond 36 m upto 42 m from surface.	Rm	274.00
	Beyond 42 m upto 48 m from surface.	Rm	301.00
Note:	The item rate for drilling through rock / masonry / concrete includes redrilling through partially set grout, if any, in the portion of the hole drilled and grouted.		
8.	Flushing grout holes of all sizes with water and air jets alternatively for an average period of 30 minutes and observing water intake after flushing including cost of all materials, machinery, labour etc., complete.	Rm	33.00
9.a.	Consolidation grouting with neat cement grout of suitable consistency under specified pressure as directed in drilled holes by stage grouting method including cost of all materials, machinery, labour, redrilling if necessary etc., complete with initial lead upto 1 km and all lifts.	tonne	8041.00
9.b.	Curtain grouting with neat cement grout of suitable consistency under specified grout pressure as directed in drilled holes by stage grouting method including cost of all materials, machinery, labour, redrilling if necessary etc., complete with initial lead upto 1 km and all lifts.	tonne	8566.00
9.c.	Providing and fixing up-heaval gauge with all accessories as per		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	specifications excluding cost of drilling holes including cost of all other materials, machinery, labour, equipments etc.,complete.	Each	9826.00
10.	Providing and fixing 25 mm dia 3 m long cold twisted deformed steel dowel bars with one end driven into 38 mm dia 1.50 m deep hole drilled in bed rock and other end provided with L - bend for embedding in concrete / masonry of over flow / non-over flow blocks and other appurtenant works including cost of drilling and cleaning hole, filling hole with thick cement slurry, driving anchor rod, cost of all materials, labour, machinery etc., complete with initial lead upto 1 km and all lifts.	Each	776.00
11.	Providing and fixing 25 mm dia 2.75 m long ribbed steel anchor rods with one end split and driven firmly using steel wedge into 1.25 m deep 38 mm dia. hole drilled in bed rock and other end provided with L-bend for embedding in concrete / masonry for spillway and appurtenant works including drilling and cleaning hole, filling hole with thick cement slurry, driving anchor rod, cost of all materials, machinery, labour, steel wedge etc., complete with initial lead upto 1 km and all lifts.	Each	738.00
REINFORCEMENT & CEMENT CONCRETE WORKS :			
12.	Providing, fabricating and placing in position reinforcement steel for RCC structures including cleaning, straightening, cutting, bending, lapping / welding joints wherever required, tying with 1.25 mm dia. soft annealed steel wire, including cost of all materials, machinery, labour labour etc.,complete with initial lead upto 1 km and all lifts.	tonne	53005.00
13.	Providing and laying in-situ vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 80 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, scaffolding, cleaning, providing mortar layer for lift joints, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete for plain concrete works with initial lead upto 1 km and all lifts. (Cement content 210 kg / cum with use of super plasticiser)	cum	2766.00
14.	Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N / sq mm) grade cement concrete using 80 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, scaffolding, cleaning, providing mortar layer for lift joints, batching, mixing, placing in		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	position, levelling, vibrating, finishing, curing etc., complete for plain concrete works with initial lead upto 1 km and all lifts. (Cement content 190 kg / cum with use of super plasticiser)	cum	2643.00
15.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete for RCC works of gallery, sluice, spillway crest, spillway d / s face, energy dissipating structure, training walls, piers, abutments and such other locations with initial lead upto 1 km and all lifts. (Cement content : 300 kg / cum with use of super plasticiser).	cum	3939.00
16.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete for plain concrete works with initial lead upto 1 km and all lifts. (Cement content : 240 kg / cum with use of super plasticiser)	cum	3295.00
17.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates with placing and sinking plums of size 150 to 80 mm upto 15 percent for gravity type structures including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 1 km and all lifts. (Cement content : 204 kg / cum with use of plums and super plasticiser)	cum	3032.00
18.	Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete for plain concrete works with initial lead upto 1 km and all lifts. (Cement content : 220 kg / cum with use		

Item No.	Brief description of work	Unit	Basic Rate in ` :
1	2	3	4
	of super plasticiser)	cum	3141.00
19.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, scaffolding, centering, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete for plain concrete works with initial lead upto 1 km and all lifts. (Cement content : 290 kg / cum with use of super plasticiser)	cum	3673.00
20.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete for RCC works of spillway bridge, blackout concreting and such other similar structures with congested reinforcement areas with initial lead upto 1 km and all lifts. (Cement content : 330 kg / cum with use of super plasticiser).	cum	5976.00
21.	Providing and forming porous concrete body drains of size 685 x 685 mm with 230 mm diameter central hole using cement and 20 mm down approved, clean, hard, graded coarse aggregates in 1 : 3.50 proportion by volume including cost of all materials, machinery, labour, formwork, curing etc., complete with initial lead upto 1 km and all lifts.	Rm	1920.00
22.a	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, cleaning, scaffolding, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete for RCC solid parapet consisting of 350 x 200 mm kerb, 0.35 x 0.35 x 1.0 m pillars spaced approximately at 3.35 m c / c, 125 mm thick wall 800 mm height with 125 mm thick and 350 mm wide coping slab for wall and 125 mm thick 400 x 400 mm coping for pillars with top edges of kerb and coping chamferred / rounded as directed etc., complete (excluding cost of providing and placing reinforcement steel and gate) with initial lead upto 1 km and all lifts. (Cement content : 330 kg / cum with use of super plasticiser)	Rm	1670.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
22.b	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates including cost of all materials, machinery, labour, formwork, centering, cleaning, scaffolding, batching, mixing, placing in position, levelling, vibrating, finishing,curing etc.,complete for RCC ornamental parapet consisting of 350 x 200 mm kerb, 0.35 x 0.35 x 1.0 m pillars spaced approximately at 3.5 m apart, 200 x 150 mm posts 800 mm height approximately 300 mm c / c with 125 mm thick and 350 mm wide coping slab for posts 400 x 400 x 125 cm coping slab for pillars with top edges of kerb and coping chamferred or rounded as directed etc., complete (excluding cost of providing and placing reinforcement steel and gate) with initial lead upto 1 km and all lifts. (Cement content 330 kg / cum with use of super plasticizer)	Rm	1741.00
23.	Providing and laying insitu M- 25 (28 days cube compressive strength not less than 25 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for wearing coat including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position in alternate panels, levelling, compacting, finishing, curing, packing joints with asphalt mortar etc., complete with initial lead upto 1 km and all lifts. (Cement content : 360 kg / cum with use of super plasticiser)	cum	4033.00
24.	Pre-cooling to control placement temperature of cement concrete in the range of 18 to 21 °C at the concrete placement point by inundation of coarse aggregates by circulating normal water and using flaked ice and chilled water for mixing concrete including cost of all materials,machinery, labour etc., complete with all leads and lifts.	cum	79.00
25.	Conveying and fixing elastomeric bearings for spillway bridge including cleaning and preparing surface, mixing and applying adhesive, fixing bearing in correct position, including cost of all materials (except bearings), machinery, labour etc., complete with all leads and lifts.	Each	211.00
26.	Providing and constructing 150 mm dia hume pipe weep holes for concrete / masonry walls including providing 200 x 200 x 200 mm size porous concrete block made of cement and 20 mm down coarse aggregate in 1 : 4 proportion including 100 mm thick sand backing at the junction of wall and soil back fill, cost of all materials, machinery, labour etc., complete with lead upto 1 km and all lifts.	Rm	250.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
27.	Providing and forming expansion joint for spillway bridge consisting of 75 x 75 x 6 mm angles 2 numbers provided with 250 mm long 12 mm dia. anchors fixed to both flanges at 150 mm c / c and 140 x 6 mm plate welded on top of one of the angle including cost of all materials, labour, machinery, providing and fixing 38 mm thick joint filler board matching the thickness of wearing coat, painting etc., complete with lead upto 1 km and all lifts.	Rm	1621.00
MASONRY & GUNITING WORKS :			
28.	Providing and constructing un-coursed rubble stone masonry using approved stones in cement mortar 1 : 3 proportion including cost of all materials, machinery, labour, scaffolding, cleaning, packing mortar, wedging stone chips, curing etc., complete with initial lead upto 1 km and all lifts.	cum	2252.00
29.	Providing and constructing un-coursed rubble stone masonry using approved stones in cement mortar 1 : 4 proportion including cost of all materials, machinery, labour, scaffolding, cleaning, packing mortar, wedging stone chips, curing etc., complete with initial lead upto 1 km and all lifts.	cum	2034.00
30.	Providing and constructing coursed rubble face stone masonry using approved rubble stones in cement mortar 1 : 3 proportion including cost of all materials, machinery, labour, scaffolding, ramps, cleaning, packing mortar, wedging stone chips, curing etc., complete with initial lead upto 1 km and all lifts.	cum	2408.00
31.	Providing and constructing coursed rubble face stone masonry using approved rubble stones in cement mortar 1 : 4 proportion including cost of all materials, machinery, labour, scaffolding, ramps, cleaning, packing mortar, wedging stone chips, curing etc., complete with initial lead upto 1 km and all lifts.	cum	2206.00
32.	Providing and constructing chisel drafted and hammer dressed face stone masonry using approved stones in cement mortar 1 : 3 proportion including cost of all materials, machinery, labour, scaffolding, ramps, cleaning, packing mortar, wedging stone chips, curing etc., complete with initial lead upto 1 km and all lifts.	cum	2463.00
33.	Providing and constructing chisel drafted and hammer dressed face stone masonry using approved stones in cement mortar 1 : 4		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	proportion including cost of all materials, machinery, labour, scaffolding, ramps, cleaning, packing mortar, wedging stone chips, curing etc., complete with initial lead upto 1 km and all lifts.	cum	2271.00
34.a	Providing 50 mm deep cement mortar pointing to coursed rubble face stone masonry in CM 1 : 2 proportion by volume including raking and cleaning joints, pressing mortar into joints, cost of all materials, labour, scaffolding, finishing, curing etc., complete with initial lead upto 1 km and all lifts.	sqm	73.00
Note:	If waterproofing compound is added to cement mortar add	sqm	4.50
34.b	Providing 50 mm deep cement mortar pointing to coursed rubble face stone masonry in CM 1 : 3 proportion by volume including raking and cleaning joints, pressing mortar into joints, cost of all materials, labour, scaffolding, finishing, curing etc., complete with initial lead upto 1 km and all lifts.	sqm	67.00
Note:	If waterproofing compound is added to cement mortar add	sqm	3.50
35.	Providing average 20 mm thick cement mortar plastering to stone masonry block joint in CM 1 : 3 proportion by volume including raking and cleaning joints for 50 mm depth, pressing mortar into joints, cost of all materials, labour, finishing surface, curing etc., complete with initial lead upto 1 km and all lifts.	sqm	142.00
36.	Providing 25 mm thick guniting to rock or masonry surface in cement mortar 1 : 3 proportion by weight including cost of all materials, machinery, labour, rakingout and cleaning joints, scaffolding wherever required, curing and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	sqm	348.50
	CONTRACTION JOINT WORKS:		
37.	Providing and constructing contraction joints by fixing 16 SWG 600 mm wide annealed copper sheets in two lines with 8 mm dia. steel dowel rods on either side at one metre interval, forming 125 x 125 mm size groove in between copper strips for filling asphalt including fixing 15 mm dia two legged G.I pipe with U-bend at bottom for circulation of steam at intervals and forming 150 mm dia formed drain behind water seals including cost of all materials, machinery, labour, filling asphalt, circulation of steam through pipes etc., complete with all leads and lifts.	Rm	11032.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
38.	Providing and constructing contraction joints by fixing 310 mm wide central bulb type approved quality PVC water stop in two lines with 8 mm dia. steel dowel rods on either side at 1 m interval, forming 125 x 125 mm size groove in between two water stops, providing and fixing 15 mm dia. two legged G.I pipe with U-bend at bottom for circulation of steam at interval, forming 150 mm dia formed drain behind water seals including filling groove with asphalt, circulation of steam at intervals, cost of all materials, machinery, labour, vulcanizing joints etc., complete with all leads and lifts.	Rm	1513.00
39.	Providing and constructing contraction joints by fixing 16 SWG 600 mm wide annealed copper sheets in single line with 8 mm dia steel dowel rods on either side at 1 metre interval including cost of all materials, machinery, labour, jointing etc., complete with all leads and lifts.	Rm	5038.00
40.	Providing and constructing contraction joints by fixing 230 mm wide central bulb type PVC water strip in single line supported by 10 mm dia. steel dowel rods on either side at 1 metre interval including cost of all materials, machinery, labour, vulcanizing joints etc., complete with all leads and lifts.	Rm	337.00
EARTH / ROCKFILL EMBANKMENT WORKS :			
41.	Providing hearting embankment using selected impervious soil from approved borrow areas in layers of 250 to 300 mm before compaction including cost of all materials, machinery, labour, all other operations such as excavation, sorting out, transportation, spreading in layer of specified thickness, breaking clods, sectioning, watering, compacting to density control of not less than 95 percent using power roller etc., complete with initial lead upto 1 km and all lifts.	cum	111.00
42.	Providing cut-off trench filling using selected impervious soil from approved borrow areas in layers of 250 to 300 mm before compaction including cost of all materials, machinery, labour, all other operations such as excavation, sorting out, transportation, spreading in layers of specified thickness, breaking clods, sectioning, watering, compacting to density control of not less than 95 percent using power roller etc., complete with initial lead upto 1 km and all lifts.	cum	118.00
43.	Providing casing embankment using semi-pervious soil from approved borrow areas in layers of 250 to 300 mm before compaction		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	including cost of all materials, machinery, labour, all other operations such as excavation, sorting out, transportation, spreading soil to specified thickness, breaking clods, sectioning, watering, compacting to density control of not less than 95 percent using power roller etc., complete with initial lead upto 1 km and all lifts.	cum	120.00
44.	Providing casing embankment using semi-pervious soil available from excavation in layers of 250 to 300 mm before compaction including cost of all materials, machinery, labour, all other operations such as re-excavation, sorting out, transportation, spreading soil to specified thickness, breaking clods, sectioning, watering, compacting to density control of not less than 95 percent using power roller etc., complete with initial lead upto 1 km and all lifts.	cum	104.00
45.	Providing homogeneous embankment using soil from approved borrow area in layers of 250 to 300 mm before compaction including cost of all materials, machinery,labour, all operations such as excavation, sorting out, transportation, spreading soil in layer of specified thickness, breaking clods, sectioning, watering, compacting to density control of not less than 95 percent using power roller etc., complete with initial lead upto 1 km and all lifts.	cum	111.00
46.	Providing impervious filling adjacent to masonry / concrete structure and filling trial pits with soil from approved borrow area in layers of 100 to 150 mm and compacting each layer to density control of not less than 95 percent using pneumatic tampers or by vibratory earth rammers including cost of all materials, machinery, labour, picking previous layer, spreading soil in layer, breaking clods, watering etc., complete with initial lead upto 1 km and all lifts.	cum	139.00
47.	Providing and constructing rockfill embankment with 300 mm down graded stones and quarry spalls from approved source including cost of all materials, machinery, labour, spreading stones and spalls in layers, hand packing, wedging, finishing the surface to required slopes etc., complete with initial lead upto 1 km and all lifts.	cum	370.00
48.	Providing and constructing dry rubble rock-toe using rubble and stone chips from approved source including cost of all materials, machinery, labour, hand packing rubble and stone chips, finishing top and sides to required slopes etc. complete with initial lead upto 1 km and all lifts.	cum	400.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
49.	Providing and constructing dry rubble rock-toe with rubble and stone chips from dump yard including cost of all materials, machinery, labour, hand packing rubble and stone chips, finishing top and sides to required slopes etc., complete with initial lead upto 1 km and all lifts.	cum	357.00
50.	Providing and laying 300 mm diameter open jointed hume pipes with collars in rock-toe for drainage including cost of all materials, machinery, labour etc., complete with lead upto 1 km and all lifts.	Rm	448.00
51.	Providing and constructing 1.20 m internal diameter and average 3 m height RCC manhole with 600 mm dia. top cover in M-15 grade cement concrete using 20 mm down graded, clean, hard coarse aggregate, 200 mm thick for bed / sides / top slab / 1.5 m long cut-off wall and 75 mm thick for cover including providing 12 mm dia reinforcement bars at 300 mm c / c bothways for bed / sides / cut-off wall / top slab / rungs and 8 mm dia bars at 150 mm c / c bothways for cover, excavation for foundation, providing 300 mm dia. hume pipe outlet, cost of all materials, machinery, labour, formwork, scaffolding, batching, mixing, laying, vibrating, finishing, curing etc., complete with lead upto 1 km and all lifts.	Each	33850.00
FILTER & PITCHING WORKS :			
52.	Providing and constructing longitudinal / cross graded filter drains using sand and 80 to 20 mm and 20 mm down graded aggregates satisfying specified filter criteria in layers as per specifications including cost of all materials, machinery, labour, laying to required slopes, compaction etc., complete with initial lead upto 50 m and all lifts.	cum	527.00
53.	Providing and constructing vertical / inclined graded filter media consisting of sand and coarse aggregate layers of specified thickness using approved materials satisfying specified filter criteria as per specifications including cost of all materials, machinery, labour, laying to required slopes, compaction etc., complete with initial lead upto 50 m and all lifts.		
a.	Sand layer.	cum	299.00
b.	10 mm down graded coarse aggregate layer	cum	1054.00
c.	20 mm down graded coarse aggregate layer	cum	891.00
d.	40-10 mm graded coarse aggregate layer	cum	665.00
e.	80-20 mm graded coarse aggregate layer	cum	464.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
54.	Providing and constructing graded filter media below and behind rock-toe consisting of 200 mm thick sand, 250 mm thick 20 - 4.75 mm and 400 mm thick 80 - 20 mm size graded coarse aggregates satisfying filter criteria as per specifications including cost of all materials, machinery, labour, laying to required slope, compaction etc., complete with initial lead upto 50 m and all lifts.	cum	542.00
55.	Providing and laying filter media consisting of two layers of 250 gsm poly-propeline non-woven filter fabric and 400 mm thick 20 mm down graded coarse aggregate in between for vertical / inclined / horizontal filter blanket for embankment including cost of all materials, machinery, labour etc., complete with lead upto 50 m for aggregate and all leads for fabric and all lifts.	sqm	867.00
56.	Providing and constructing 450 mm thick chimney filter using clean approved sand satisfying filter criteria including cost of all materials, machinery, labour, compacting etc., complete with initial lead upto 50 m and all lifts.	cum	298.00
57.	Providing and constructing 900 mm thick transition cum filter media behind rockfill using approved sand and 80-20 mm and 20 mm down graded aggregates satisfying the filter criteria in layers of 300 mm thickness each as per specifications including cost of all materials, machinery, labour, laying each layer to required slope, compaction etc., complete with initial lead upto 50 m and all lifts.	cum	556.00
58.	Providing and constructing 600 mm thick hand packed rough stone revetment with 650 to 750 mm long through stones at 1.50 m c / c over backing of 450 mm thick graded filter media consisting of sand, 10 mm and 40 mm size approved graded aggregates laid in layers of 150 mm thick each including cost of all materials, machinery, labour, laying to required slopes, wedging with chips, finishing etc. complete with initial lead upto 50 m and all lifts.	sqm	542.00
59.	Providing and constructing 600 mm thick hand packed rough stone revetment with 650 to 750 mm long through stones at 1.50 m c / c over a backing of 600 mm thick graded filter media consisting of sand, 10 mm and 40 mm size approved graded aggregates laid in layers of 200 mm thick each including cost of all materials, machinery, labour, laying to required slopes, wedging with chips, finishing etc., complete with initial lead upto 50 m and all lifts.	sqm	642.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
60.	Providing and constructing 600 mm thick hand packed rough stone riprap over a backing of 450 mm thick graded filter media consisting of sand, 10 mm and 40 mm size graded approved aggregates laid in layers of 150 mm thick each including cost of all materials, machinery, labour, laying to required slopes, wedging with stone chips etc., complete with initial lead upto 50 m and all lifts.	sqm	517.00
61.	Providing and constructing 750 mm thick hand packed rough stone riprap over a backing of 450 mm thick graded filter media consisting of sand, 10 mm and 40 mm size graded approved aggregates laid in layers of 150 mm thick each including cost of all materials, machinery, labour, laying to required slopes, wedging with stone chips etc., complete with initial lead upto 50 m and all lifts.	sqm	569.00
62.	Providing and constructing 900 mm thick hand packed rough stone riprap over a backing of 450 mm thick graded filter media consisting of sand, 10 mm and 40 mm size graded approved aggregates laid in layers of 150 mm thick each including cost of all materials, machinery, labour, laying to required slopes, wedging with stone chips etc., complete with initial lead upto 50 m and all lifts.	sqm	626.00
63.	Providing and laying Hariyala or other approved quality turfing sods for the slopes of earthen embankments over 20 mm thick sand backing including cost of all materials, machinery, labour including preparing surface, spreading sand including tamping, watering for 15 days etc., complete with initial lead upto 1 km and all lifts.	sqm	64.00

WATER RESOURCES DEPARTMENT

CANAL AND ALLIED WORKS SCHEDULE OF RATES FOR THE YEAR : 2011-12

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**NOTES ON SCHEDULE OF RATES
CANAL AND ALLIED WORKS**

1. All notes under General Notes on Schedule of Rates and Notes on Lead, Lift, Loading and un-loading charges are applicable to Canal and Allied Works also to the extent they are relevant.
2. Unless otherwise specified the basic rates are inclusive of all lifts.
3. For earth / rockfill embankment works 1 km initial lead is considered in the basic rates. As no storing/stacking and re-handling of materials is involved for these works the lead charges for additional lead shall be worked out for total lead including initial lead of 1 km and then the cost of first km lead shall be deducted. No loading and un-loading charges shall be added as the additional lead does not involve rehandling of materials.
Example :

Total lead for soil from approved borrow area	: 2 km
Initial lead included in the basic rate in the SR	: 1 km
Additional lead charges : Lead charges for 2 km	: 46.90
Less Lead charges for 1 km	: <u>-38.00</u>
Additional lead charges	: 8.90

 No loading and un-loading charges shall be added.
4. Cement content specified for cement concrete works in the item description is based on theoretical design mix computations and is exclusive of wastage and requirement for any incidentals. The actual cement content may vary based on trial mix studies. A suitable clause shall be included in tender for regulating payment for any upward or downward variation in cement content.
5. A weightage of 25 percent over the rates in the SR is permissible for all items of works involved in the modernization of canals and which are to be carried out during the canal closure period 3 - 4 months and less. In the estimates for modernization, the items of work shall appear based on the rate in SR without the permissible weightage. Below the respective items, the weightage permissible for the item is to be included. Further, the payment of weightage is permissible only when the contractor completes at least 90 percent of the work entrusted. Failing which the contractor foregoes the advantage of weightage. Payment of RA bills shall be made at rates excluding the weightage. It is only in the last RA bill / final bill, payment for weightage is to be released subject to above condition.
6. The quantities of materials including wastage, requirements for incidentals etc., for working out additional lead charges shall be as per the statement of requirement of materials under this section.

**QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES
CANAL AND ALLIED WORKS**

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Steel kg	Soil cum	Sand cum	Stones cum
Using soil from Borrow area :						
7	Impervious hearting (Borrow area soil)	cum	---	1.26	---	---
8	Semi-pervious casing (Borrow area soil)	cum	---	1.26	---	---
9	Homogeneous embankment(Borrow area)	cum	---	1.26	---	---
Using soil from Dump area :						
10	Impervious hearting (Dump area soil)	cum	---	1.26	---	---
11	Semi-pervious casing (Dump area soil)	cum	---	1.26	---	---
Using soil from Canal excavation :						
12	Impervious hearting (Canal excavation)	cum	---	1.26	---	---
13	Semi-pervious casing (Canal excavation)	cum	---	1.26	---	---
14	Embankment for field channel	cum	---	1.26	---	---
			Steel kg	Soil cum	Sand cum	Stones cum
15	Rubble and sand filling	cum	---	---	0.410	1.02
16	Rubble and murum filling	cum	---	0.41	---	1.02
17	250 mm thick Sand blanket	sqm	---	---	0.255	---
			Steel kg	Stone/chips cum	Sand cum	CA cum
18	Rock-toe	cum	---	1.170	---	---
19	Longitudinal & cross drains	cum	---	---	0.783	0.236
20	Inclined filter	cum	---	---	0.612	0.408
21	Filter behind & below rock-toe	cum	---	---	0.340	0.679
22.a	Filter using filter fabric 200 gsm	sqm	---	---	---	0.205
22.b	Filter using filter fabric 250 gsm	sqm	---	---	---	0.205
			Steel kg	Soil cum	Sand cum	Stones cum
23	Rockfill casing (stone from quarry)	cum	---	---	---	1.15
24	Rockfill casing (dump yard stones)	cum	---	---	---	1.15
25	CNS lining 95 % density (borrow area)	cum	---	1.26	---	---
26	CNS lining 95 % density (excavation)	cum	---	1.26	---	---
27	200x200x750 mm Canal bed level stone	Each	---	---	---	0.03
28	Reinforcement steel	kg	1.025	---	---	---

QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES (contd)

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Slab cum	Cement cum	Sand cum	CA cum
29.a	80 mm th. M-15 CC 20 mm CA by paver	sqm	---	23.55	0.039	0.069
29.b	100 mm th. M-15 CC 20 mm CA by paver	sqm	---	29.16	0.048	0.086
30.a	80 mm th. M-20 CC 20 mm CA by paver	sqm	---	28.69	0.039	0.069
30.b	100 mm th. M-20 CC 20 mm CA by paver	sqm	---	35.52	0.048	0.086
32.a	M-15 CC (20 mm CA) for side lining	cum	---	277.70	0.459	0.815
32.b	M-20 CC (20 mm CA) for side lining	cum	---	338.30	0.459	0.815
33	M-15 CC (40 mm CA) for bed lining	cum	---	247.40	0.408	0.921
34	M-15 CC (20 mm CA) for bed lining	cum	---	277.70	0.459	0.815
35	M-20 CC (40 mm CA) for bed lining	cum	---	277.70	0.408	0.918
36	M-20 CC (20 mm CA) for bed lining	cum	---	338.30	0.459	0.818
43	Filter around relief pipe	Each	---	---	0.034	0.016
44	Fixing Shahbad slab for lining in CM 1:3	sqm	0.030	1.00	0.002	---
45	Fixing PCC slab for lining in CM 1:3	sqm	0.050	2.33	0.005	---
46	Fixing PCC lug slab in CM 1:3	Rm	0.017	0.60	0.001	---
48	Notes:Providing 75 mm sand backing	sqm	---	---	0.077	---
51	M-15 PCC slab 550 x 550 x 55 mm	Each	---	5.54	0.009	0.013
52	M-15 PCC slab 550 x 300 x 55 mm	Each	---	2.96	0.004	0.007
53	M-15 PCC slab 450 x 300 x 30 mm	Each	---	1.95	0.002	0.003
54	M-15 PCC slab 450 x 150 x 30 mm	Each	---	1.03	0.001	0.001
55	M-15 PCC slab 400 x 400 x 30 mm	Each	---	2.24	0.002	0.003
56	M-15 PCC slab 400 x 150 x 30 mm	Each	---	0.96	0.001	0.001
			Murum cum	Cement kg	Sand cum	Stones cum
57	UCR in CM 1:5 (quarry stone)	cum	---	115.20	0.410	1.17
58	UCR in CM 1:5 (excavated stone)	cum	---	115.20	0.410	1.17
59	250 mm thick UCR stone pitching	sqm	---	---	---	0.29
Note:	If 150 mm thick murum bed provided		0.18	---	---	---
60	300 mm thick UCR stone pitching	sqm	---	---	---	0.35
Note:	If 150 mm thick murum bed provided		0.18	---	---	---
61	450 mm thick UCR stone pitching	sqm	---	---	---	0.50
Note:	If 150 mm thick murum bed provided		0.18	---	---	---
62	300 mm thick UCR pitching in CM 1:5	sqm	---	30.23	0.107	0.35
Note:	If 150 mm thick murum bed provided		0.18	---	---	---
63	300 mm thick Khandki stone pitching	sqm	---	---	---	0.35
Note:	If 150 mm thick murum bed provided		0.18	---	---	---
64	450 mm thick Khandki stone pitching	sqm	---	---	---	0.50
Note:	If 150 mm thick murum bed provided		0.18	---	---	---

QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES (contd)

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Murum cum	Cement kg	Sand cum	Stones cum
65	300 mm thick Khandki pitching in CM1:5	sqm	---	29.16	0.099	0.35
Note:	If 150 mm thick murum bed provided		0.18	---	---	---
66	450 mm thick Khandki pitching in CM1:5	sqm	---	40.70	0.142	0.50
Note:	If 150 mm thick murum bed provided		0.18	---	---	---
67	Hariyala turfing	sqm	sod 0.10	---	0.020	---

Notes:

- The quantities of materials specified in the above table are for loose volume.
- The quantity of cement for cement concrete items includes requirement of cement for any incidental works such as mortar layer at lift joints, repair of honeycomb patch etc.
- The quantities of materials are inclusive of wastage as under:

Cement	1.00 percent.
Sand / Fine aggregate	2.00 percent.
Coarse aggregate	2.00 percent.
Stones / Stone chips	2.00 percent.
Steel (Reinforcement / Structural)	2.50 percent.

**AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES
CANAL AND ALLIED WORKS**

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
	Using soil from Borrow area :					
7	Impervious hearting 95 % density	cum	16.00	---	---	---
8	Semi-pervious casing 95 % density	cum	16.00	---	---	---
9	Homogeneous embankment 95%density	cum	16.00	---	---	---
	Using soil from Dump area :					
10	Impervious hearting 95 % density	cum	16.00	---	---	---
11	Semi-pervious casing 95 % density	cum	16.00	---	---	---
	Using soil from Canal excavation :					
12	Impervious hearting 95 % density	cum	16.00	---	---	---
13	Semi-pervious casing 95 % density	cum	16.00	---	---	---

AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES (contd)

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
14	Embankment for field channel	cum	16.00	---	---	---
15	Rubble and sand filling	cum	---	19.70	---	48.95
16	Rubble and murum filling	cum	6.55	---	---	48.95
17	250 mm thick Sand blanket	sqm	---	12.25	---	---
18	Rock-toe	cum	---	---	---	56.15
19	Longitudinal & cross drains	cum	---	37.60	11.35	---
20	Inclined filter	cum	---	29.40	19.60	---
21	Filter behind & below rock-toe	cum	---	16.30	32.60	---
22.a	Filter using filter fabric 200 gsm	sqm	---	---	9.85	---
22.b	Filter using filter fabric 250 gsm	sqm	---	---	9.85	---
23	Rockfill casing (stone from quarry)	cum	---	---	---	55.20
24	Rockfill casing (dump yard stones)	cum	---	---	---	55.20
25	CNS lining 95 % density(borrow area)	cum	16.00	---	---	---
26	CNS lining 95 % density(excavation)	cum	16.00	---	---	---
27	200x200x750 mm Canal bed level stone	Each	---	---	---	1.45
29.a	80 mm th. M-15 CC 20 mm CA by paver	sqm	---	1.85	3.30	---
29.b	100 mm th. M-15 CC 20 mm CA by paver	sqm	---	2.30	4.15	---
30.a	80 mm th. M-20 CC 20 mm CA by paver	sqm	---	1.85	3.30	---
30.b	100 mm th. M-20 CC 20 mm CA by paver	sqm	---	2.30	4.15	---
32.a	M-15 CC (20 mm CA) for side lining	cum	---	22.05	39.10	---
32.b	M-20 CC (20 mm CA) for side lining	cum	---	22.05	39.10	---
33	M-15 CC (40 mm CA) for bed lining	cum	---	19.60	44.20	---
34	M-15 CC (20 mm CA) for bed lining	cum	---	22.05	39.10	---
35	M-20 CC (40 mm CA) for bed lining	cum	---	19.60	44.05	---
36	M-20 CC (20 mm CA) for bed lining	cum	---	22.05	39.25	---
43	Filter around relief pipe	Each	---	1.65	0.75	---
44	Fixing Shahbad slab for lining in CM 1:3	sqm	---	0.10	---	---
45	Fixing PCC slab for lining in CM 1:3	sqm	---	0.25	---	---
46	Fixing PCC lug slab in CM 1:3	Rm	---	0.06	---	---
48	Notes: Providing 75 mm sand backing	sqm	---	3.70	---	---
51	M-15 PCC slab 550x550x55 mm	Each	---	0.45	0.60	---
52	M-15 PCC slab 550x300x55 mm	Each	---	0.19	0.35	---
53	M-15 PCC slab 450x300x30 mm	Each	---	0.10	0.14	---
54	M-15 PCC slab 450x150x30 mm	Each	---	0.04	0.07	---
55	M-15 PCC slab 400x400x30 mm	Each	---	0.10	0.16	---
56	M-15 PCC slab 400x150x30 mm	Each	---	0.04	0.06	---
57	UCR in CM 1:5 (quarry stone)	cum	---	19.70	---	56.15
58	UCR in CM 1:5 (excavated stone)	cum	---	19.70	---	56.15

AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES (contd)

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
59	250 mm thick Stone pitching	sqm	---	---	---	13.90
Note:	If 150 mm thick murum bed provided		2.90	---	---	---
60	300 mm thick Stone pitching	sqm	---	---	---	16.80
Note:	If 150 mm thick murum bed provided		2.90	---	---	---
61	450 mm thick Stone pitching	sqm	---	---	---	24.00
Note:	If 150 mm thick murum bed provided		2.90	---	---	---
62	300 mm thick Stone pitching in CM 1:5	sqm	---	5.15	---	16.80
Note:	If 150 mm thick murum bed provided		2.90	---	---	---
63	300 mm thick Khandki stone pitching	sqm	---	---	---	16.80
Note:	If 150 mm thick murum bed provided		2.90	---	---	---
64	450 mm thick Khandki stone pitching	sqm	---	---	---	24.00
Note:	If 150 mm th murum bed provided		2.90	---	---	---
65	300 mm thick Khandki pitching in CM1:5	sqm	---	4.75	---	16.80
Note:	If 150 mm thick murum bed provided		2.90	---	---	---
66	450 mm thick Khandki pitching in CM1:5	sqm	---	6.80	---	24.00
Note:	If 150 mm thick murum bed provided		2.90	---	---	---
67	Grass turfing	sqm	---	0.95	---	---

Notes:

- In the Govt notification on royalty charges the rates for Earth / Sand / Building stone are on weight basis. For converting the rate per tonne to rate per cum for working-out the royalty charges for various work items following density values are assumed.
 Sand / Fine aggregate (loose volume) : 1.60 tonne per cum
 Stones/stone chips/Coarse aggregates (loose volume) : 1.60 tonne per cum
 Rockfill / Rock toe (fill volume) : 1.80 tonne per cum
 Soil (compacted to 95 percent density control) : 1.60 tonne per cum

**CANAL AND ALLIED WORKS
SCHEDULE OF RATES
FOR THE YEAR :2011-12**

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	EXCAVATION WORKS :		
1.	Excavation in all kinds of soil including boulders upto 0.6 m diameter (0.113 cum) for canal , seating of embankment, filter drains / catch water drains etc., including dressing bed and sides to required level and profile, cost of all materials, machinery, labour, placing the excavated soil neatly in dump area or for formation of service road/embankment as directed etc. complete with initial lead upto 1 km and depth of cut upto 18 m.	cum	59.00
Note:	For depth of cut exceeding 18 m from ground level increase the basic rate by 5 percent for the quantity of excavation beyond 18 m depth.		
2.	Excavation in all kinds of soil including boulders upto 0.6 m diameter (0.113 cum) field channels , seating of embankment for field channels etc., including dressing of bed and sides to required profile, cost of all materials, machinery, labour, placing the excavated stuff for formation of service road / embankment as directed etc., complete with lead upto 10 m and lift upto 2 m.	cum	33.00
3.	Excavation in soft rock without blasting including boulders above 0.3 m upto 0.6 m dia. for canals , seating of embankment, filter drain / catch water drains etc., including dressing of bed and sides to required level and profile, cost of all materials, machinery, labour, placing the excavated soft rock neatly in dump area or for formation of service road as directed etc., complete with initial lead upto 1 km and depth of cut upto 18 m.	cum	81.00
Note:	For depth of cut exceeding 18 m from ground level increase the basic rate by 5 percent for the quantity of excavation beyond 18 m depth.		
4.	Excavation in soft rock without blasting including boulders above 0.3 m upto 0.6 m dia. for field channels , seating of embankment for field channels etc., including dressing of bed and sides to required profile, cost of all materials, machinery, labour, placing the excavated stuff for formation of service road as directed etc., complete with lead upto 10 m and lift upto 2 m.	cum	53.00
5.	Excavation in soft rock requiring blasting including boulders above 0.6 m upto 1.2 m dia. for canals , seating of embankment, filter drain /		

Item No.	Brief description of work	Unit	Basic Rate in ` :
1	2	3	4
	<p>catch water drains etc., including dressing bed and sides to required level and profile, cost of all materials, machinery, labour, placing the excavated rock in dump area or for formation of service road as directed etc., complete with initial lead upto 1 km and depth of cut upto 18 m.</p> <p>Note: For depth of cut exceeding 18 m from ground level increase the basic rate by 5 percent for the quantity of excavation beyond 18 m depth.</p>	cum	157.00
	<p>6.a. Excavation in hard rock of all toughness by blasting including boulders above 0.6 m dia. (0.113 cum) for canals, cut-off trench of embankment, filter / catch water drains etc., including levelling the bed and minimising damage to side slopes of canal in water prism area by adopting any one or combination of line drilling / pre-splitting / smooth blasting techniques including cost of all materials, machinery, labour and placing excavated rock neatly in approved dump area as directed etc., complete with initial lead upto 1 km and depth of cut upto 18 m.</p> <p>Note: For depth of cut exceeding 18 m from ground level increase the basic rate by 5 percent for the quantity of excavation beyond 18 m depth.</p>	cum	319.00
	<p>6.b. Excavation in hard rock of all toughness including boulders above 0.6 m dia. (0.113 cum) by approved controlled blasting methods including control of vibrations by use of delay detonators and control of fly-rock by muffling for canal, cut-off trench of embankment, filter / catch water drains and other appurtenant structures adopting only jack hammer holes and minimising damage to side slopes of canal in water prism area by adopting any one or combination of line drilling / pre-splitting / smooth blasting techniques including cost of all materials, machinery, labour placing excavated rock neatly in approved dump area as directed etc., complete with initial lead upto 1 km and depth of cut upto 18 m.</p> <p>Note: For depth of cut exceeding 18 m from ground level increase the basic rate by 5 percent for the quantity of excavation beyond 18 m depth.</p>	cum	491.00
	EMBANKMENT WORKS USING BORROW AREA SOIL :		
	<p>7. Providing impervious hearting embankment with selected soil from approved borrow areas in layers of 250 to 300 mm before compaction including cost of all materials, machinery, labour, all operations such as excavation, sorting out, transporting, spreading in layer of specified thickness, breaking clods, sectioning, watering, compacting each layer to density control of not less than 95 percent or as stipulated by power roller etc., complete with initial lead upto 1 km and all lifts.</p>	cum	113.00

Item No.	Brief description of work	Unit	Basic Rate in ` :
1	2	3	4
8.	Providing semi-pervious / pervious casing embankment with soil from approved borrow areas in layers of 250 to 300 mm before compaction including cost of all materials, machinery, labour, all operations such as excavation, sorting out, transporting, spreading in layer of specified thickness, breaking clods, sectioning, watering, compacting to density control of not less than 95 percent or as stipulated by power roller etc., complete with initial lead upto 1 km and all lifts.	cum	129.00
9.	Providing hearting / casing embankment with homogeneous soil from approved borrow areas in layers of 250 to 300 mm before compaction including cost of all materials, machinery, labour, all operations such as excavation, sorting out, transporting, spreading in layer of specified thickness, breaking clods, sectioning, watering, compacting each layer to density control of not less than 95 percent or as stipulated by power roller etc., complete with initial lead upto 1 km and all lifts.	cum	119.00
EMBANKMENT WORKS USING DUMP AREA SOIL :			
10.	Providing impervious hearting embankment with soil from approved dump areas in layers of 250 to 300 mm before compaction including cost of all materials, machinery, labour, all other operations such as re-excavation, sorting out, transporting, spreading soil in layer of specified thickness, breaking clods, sectioning, watering, compacting each layer to density control of not less than 95 percent or as stipulated by power roller etc., complete with initial lead upto 1 km and all lifts.	cum	107.00
11.	Providing semipervious /pervious casing embankment using soil from approved dump area in layers of 250 to 300 mm before compaction including cost of all materials, labour, machinery, all operations such as re-excavation, sorting out, transporting, spreading in layer of specified thickness, breaking clods, sectioning, watering, compacting each layer to density control of not less than 95 percent or as stipulated by power roller etc., complete with initial lead upto 1 km and all lifts.	cum	109.00
EMBANKMENT WORKS USING EXCAVATED SOIL :			
12.	Providing impervious hearting embankment with soil collected in embankment area in heaps as part of disposal of excavated soil from canal including cost of all materials, machinery, labour, all operations such as sorting out, spreading in layer of 250 to 300 mm thickness before compaction, breaking clods, sectioning, watering and compacting each layer to density control of not less than 95 percent or as stipulated by power roller etc., complete with lead upto 1 km for water.	cum	53.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
13.	Providing semi-pervious / pervious casing embankment with soil collected in embankment area in heaps as part of disposal of excavated soil from canal including cost of all materials, machinery, labour, all operations such as sorting-out, spreading soil in layer of 250 to 300 mm before compaction, breaking clods, sectioning, watering and compacting eachlayer to density control of not less than 95 percent or as stipulated by power roller etc., complete with lead upto 1 km for water.	cum	53.00
14.	Providing compacted embankment for field irrigation channels with gravely soil from approved borrow area including sorting out, spreading in layers of 150 mm thickness, breaking clods, watering, compacting, dressing sides to required slopes etc., complete with lead upto 50 m and all lifts.	cum	130.00
FOUNDATION FILLING WORKS :			
15.	Providing rubble and sand filling in layers of 250 to 300 mm including cost of all materials, machinery, labour, watering, ramming etc., complete with initial lead upto 50 m and all lifts.	cum	431.00
16.	Providing rubble and murum filling in layers of 250 to 300 mm including cost of all materials, machinery, labour, watering, ramming etc., complete with initial lead upto 50 m and all lifts.	cum	371.00
17.	Providing and laying 250 mm thick sand blanket below embankment including cost of all materials, machinery, labour, spreading to specified thickness etc., complete with initial lead upto 50 m and all lifts.	sqm	67.00
18.	Providing and constructing dry rubble rock-toe using rubble and stone chips from approved source including cost of all materials, machinery, labour, hand packing rubble and stone chips, finishing top and sides to required slopes etc., complete with initial lead upto 50 m and all lifts.	cum	343.00
19.	Providing and constructing longitudinal and cross graded filter drains using sand and 20 mm down graded aggregates satisfying specified filter creteria in layers as per specifications including cost of all materials, machinery, labour, laying to required slopes, compaction etc., complete with initial lead upto 50 m and all lifts.	cum	434.00
20.	Providing and constructing 500 mm thick vertical or inclined graded filter media consisting of 150 mm thick sand layers and 200 mm thick		

CANAL AND ALLIED WORKS

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	20 mm down coarse aggregate layer using approved materials satisfying specified filter criteria as per specifications including cost of all materials, machinery, labour, laying to required slope, compaction etc., complete with initial lead upto 50 m and all lifts.	cum	532.00
21.	Providing and constructing graded filter media below and behind rock-toe consisting of 200 mm thick sand, 150 mm thick 20 mm down and 150 mm thick 40 mm down size graded coarse aggregates satisfying filter criteria behind rock-toe and 50 mm thick sand, 200 mm thick 20 mm down coarse aggregate and 650 mm thick 40 mm down size coarse aggregate satisfying filter criteria below rock-toe as per specifications including cost of all materials, machinery, labour, laying to required slope, compaction etc., complete with initial lead upto 50 m and all lifts.	cum	602.00
22.	Providing and laying filter media consisting of 2 layers of poly-propeline nonwoven filter fabric and 200 mm thick 20 mm down graded coarse aggregate for embankment including cost of all materials, machinery, labour, forming toe drain etc., complete with lead upto 50 m for aggregate and all leads for fabric and all lifts.		
a.	using 200 gsm filter fabric.	sqm	584.00
b.	using 250 gsm filter fabric.	sqm	665.00
	ROCK FILL WORKS :		
23.	Providing and constructing rockfill casing to canal embankment with graded stones and spalls from approved quarry including cost of all materials, machinery, labour, spreading stones and spalls in layers, hand packing, wedging, finishing surface to required slopes etc., complete with initial lead upto 50 m and all lifts.	cum	334.00
24.	Providing and constructing rockfill casing to canal embankment with graded stones and spalls available in dump yard including cost of all materials, machinery, labour, spreading stones and spalls in layers, hand packing, wedging, finishing surface to required slopes etc., complete with initial lead upto 50 m and all lifts.	cum	245.00
Note:	Stones / spalls in dump yard will be issued at specified issued rate.		
	CANAL LINING WORKS :		
25.	Providing cohesive non-swelling (CNS) soil lining to canals using soil from approved borrow area including spreading soil in layers of thickness not more than 150 mm, breaking clods, watering, compacting		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	to density control of not less than 95 percent or as stipulated, dressing to required profile etc., complete with initial lead upto 1 km and all lifts.	cum	160.00
26.	Providing cohesive non-swelling (CNS) soil lining to canals using soil collected in heaps along the edge of canal requiring CNS soil lining as part of the disposal of excavated soil from canal excavation in CNS soil reach including spreading in layers of thickness not more than 150 mm, breaking clods, watering, compacting to density control of not less than 95 percent or as stipulated, dressing to required profile etc., complete with lead upto upto 50 m and all lifts.	cum	86.00
27.	Providing and fixing 200 x 200 x 750 mm size top surface neatly dressed canal bed level stone including cost of all materials, labour, excavation, fixing in position to correct level etc., complete with lead upto 50 m and all lifts.	Each	48.00
28.	Providing, fabricating and placing in position reinforcement steel bars for RCC works including cleaning, straightening, cutting, bending, hooking, lapping, welding wherever required, tying with 1.25 mm dia. soft annealed steel wire, including cost of all materials, machinery, labour etc., complete with initial lead upto 50 and all lifts.	kg	52.00
29.a.	Providing and laying 80 mm thick in-situ M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete with 20 mm down size approved, clean, hard, graded aggregates for canal lining using vibratory cylinder type mechanical paver including cost of all materials, machinery, labour, cleaning, batching, mixing, placing in position, finishing, forming contraction joints, fixing PVC joint sealing strips, curing, shifting of paver from one side to other side of canal etc., complete with initial lead upto 1 km and all lifts. (Cement content: 23.30 kg / sqm with use of super plasticiser)	sqm	405.00
29.b.	Providing and laying 100 mm thick in-situ M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete with 20 mm down size approved, clean, hard, graded aggregates for canal lining using vibratory cylinder type mechanical paver including cost of all materials, machinery, labour, cleaning, batching, mixing, placing in position, finishing, forming contraction joints, fixing PVC joint sealing strips, curing, shifting of paver from one side to other side of canal etc., complete with initial lead upto 1 km and		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	all lifts. (Cement content: 28.90 kg / sqm with use of super plasticiser)	sqm	487.00
30.a.	Providing and laying 80 mm thick in-situ M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete with 20 mm down size approved, clean, hard, graded aggregates for canal lining using vibratory cylinder type mechanical paver including cost of all materials, machinery, labour, cleaning, batching, mixing, placing in position, finishing, forming contraction joints, fixing PVC joint sealing strips, curing, shifting of paver from one side to other side of canal etc., complete with initial lead upto 1 km and all lifts. (Cement content: 28.40 kg / sqm with use of super plasticiser)	sqm	440.00
30.b.	Providing and laying 100 mm thick in-situ M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete with 20 mm down size approved, clean, hard, graded aggregates for canal lining using vibratory cylinder type mechanical paver including cost of all materials, machinery, labour, cleaning, batching, mixing, placing in position, finishing, forming contraction joints, fixing PVC joint sealing strips, curing, shifting of paver from one side to other side of canal etc., complete with initial lead upto 1 km and all lifts. (Cement content: 35.20 kg / sqm with use of super plasticiser)	sqm	526.00
31.	Dismantling, shifting and re-erecting mechanical concrete paver and DG set with accessories across canal CD work or other locations wherever shifting and re-erecting is necessary including aligning paver correctly for continuing further canal lining work, cost of all materials, machinery, labour etc., complete with all leads and lifts.	Each shifting	4660.00
Note:	The rate under this item shall not be considered for local shifting of paver from one side to other side of canal. The cost of local shifting is included in concrete lining rates under items 29.a, 29.b, 30.a and 30.b.		
32.a.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded coarse aggregates for side lining of canal including finishing the junction of bed and sides to required curveture, cost of all materials, machinery, labour, formwork including supports, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content: 270 kg / cum with use of super plasticiser)	cum	4070.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
32.b.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded coarse aggregates for side lining of canal including finishing the junction of bed and sides to required curveture, cost of all materials, machinery, labour, formwork including supports, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content: 330 kg / cum with use of super plasticiser)	cum	4491.00
33.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded coarse aggregates for bed lining of canal including cost of all materials, machinery, labour, formwork including supports, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead 50 m and all lifts. (Cement content: 240 kg / cum with use of super plasticiser)	cum	3051.00
34.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded coarse aggregates for bed lining of canal including cost of all materials, machinery, labour, formwork including supports, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead 50 m and all lifts. (Cement content: 270 kg / cum with use of super plasticiser)	cum	3332.00
35.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded coarse aggregates for bed lining of canal including cost of all materials, machinery, labour, formwork including supports, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead 50 m and all lifts. (Cement content: 270 kg / cum with use of super plasticiser)	cum	3296.00
36.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded coarse aggregates for		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	bed lining of canal including cost of all materials, machinery, labour, formwork including supports, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead 50 m and all lifts. (Cement content: 330 kg / cum with use of super plasticiser)	cum	3696.00
37.	Providing and fixing 50 mm dia perforated GI pressure relief pipes 125 mm long with one end closed with perforated GI plate and other end provided with alluminium lid hinged to pipe including cost of all materials, labour, drilling 8 mm dia holes etc., complete with all leads and lifts.	Each	99.00
38.	Providing and fixing 50 mm dia perforated GI pressure relief pipes 225 mm long with one end closed with perforated GI plate and other end provided with alluminium lid hinged to pipe including cost of all materials, labour, drilling 8 mm dia holes etc., complete with all leads and lifts.	Each	133.00
39.	Providing and fixing 50 mm dia perforated GI pressure relief pipes 300 mm long with one end closed with perforated GI plate and other end provided with alluminium lid hinged to pipe including cost of all materials, labour, drilling 8 mm dia holes etc., complete with all leads and lifts.	Each	164.00
40.	Providing and fixing 50 mm dia perforated GI pressure relief pipes 450 mm long with one end closed with perforated GI plate and other end provided with alluminium lid hinged to pipe including cost of all materials, labour, drilling 8 mm dia holes etc., complete with all leads and lifts.	Each	214.00
41.	Providing and fixing 50 mm dia perforated GI pressure relief pipes 750 mm long with one end closed with perforated GI plate and other end provided with alluminium lid hinged to pipe including cost of all materials, labour, drilling 8 mm dia holes etc., complete with all leads and lifts.	Each	311.00
42.	Drilling 1.00 m deep 32 mm dia pressure relief hole below pressure relief pipe for bed / side lining of canal laid on rock including cost of all materials, machinery, labour etc., complete with all leads and lifts.	Each	189.00
43.	Providing and forming 350x 350 x 400 mm deep filter drain consisting of 75 mm thick 10 mm down coarse aggregate around pressure relief pipe and 75 mm thick sand around coarse aggregate filter including cost of all materials, labour, excavation of pit etc., complete		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	with lead upto 50 m and all lifts.	Each	26.00
44.	Fixing 25 to 40 mm thick Shahabad / Talikota / other similar stone slabs with pointing and finishing joints neatly in CM 1:3 proportion for canal / field channel lining including cost of all materials, labour, cutting slabs to required size, mixing mortar, packing and finishing joints, curing etc., complete with lead upto 50 m and all lifts.	sqm	47.00
45.	Fixing PCC slabs of various sizes in CM 1 : 3 proportion to the side slopes of canal including preparing bed, flush pointing joints in CM 1 : 3 proportion, cost of all materials (excluding PCC slabs), labour, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	45.00
46.	Fixing PCC lug slabs of various sizes in CM 1 : 3 proportion for supporting PCC slab lining including necessary excavation, refilling, flush pointing joints in CM 1 : 3 propn, cost of all materials (excluding PCC lug slabs), labour, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Rm	24.00
47.	Fixing 300 mm height pre-cast drops for field channels as directed including excavation, etc., complete with all leads and lifts.	Each	87.00
48.	Providing and fixing LDPE sheet for bed and sides of canal including cost of all materials, labour, laying, joining etc., complete with all leads and lifts.		
	a. Using 500 micron thick LDPE sheet.	sqm	127.00
	b. Using 750 micron thick LDPE sheet.	sqm	198.00
	c. Using 1000 micron thick LDPE sheet.	sqm	236.00
Note:	If the surface on which the LDPE sheet is to be laid is too rough and undulating provide 75 mm thick sand backing to LDPE sheet. For providing 75 mm thick unscreened sand backing add	sqm	22.00
49.	Providing and fixing 20 mm thick 100 mm depth tarfelt expansion joint filler boards for cement concrete lining of canal including cost of all materials, labour etc., complete with all leads and lifts.	Rm	73.00
50.	Providing and fixing 20 mm thick 150 mm depth tarfelt expansion joint filler boards for cement concrete lining of canal including cost of all materials, labour etc., complete with all leads and lifts.	Rm	108.00
51.	Manufacturing 550 x 550 x 55 mm size PCC lining slabs in M-15		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	grade (28 days cube compressive strength not less than 15 N / sq mm) cement concrete using 20 mm down graded coarse aggregate including cost of all materials, machinery, labour, batching, mixing, laying, compacting, formwork, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 270 kg / cum with use of super plasticiser)	Each	66.00
52.	Manufacturing 550 x 300 x 55 mm size PCC lug slabs in M-15 grade (28 days cube compressive strength not less than 15 N / sq mm) cement concrete using 20 mm down graded coarse aggregate including cost of all materials, machinery, labour, batching, mixing, laying, compacting, formwork, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 270 kg / cum with use of super plasticiser)	Each	44.00
53.	Manufacturing 450 x 300 x 30 mm size PCC lining slabs in M-15 grade (28 days cube compressive strength not less than 15 N / sq mm) cement concrete using 10 mm down graded coarse aggregate including cost of all materials, machinery, labour, batching, mixing, laying, compacting, formwork, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 360 kg / cum with use of super plasticiser)	Each	25.00
54.	Manufacturing 450 x 150 x 30 mm size PCC lug slabs in M-15 grade (28 days cube compressive strength not less than 15 N / sq mm) cement concrete using 10 mm down graded coarse aggregate including cost of all materials, machinery, labour, batching, mixing, laying, compacting, formwork, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (cement content : 360 kg / cum with use of super plasticiser)	Each	18.00
55.	Manufacturing 400 x 400 x 30 mm size PCC lining slabs in M-15 grade (28 days cube compressive strength not less than 15 N / sq mm) cement concrete using 10 mm down graded coarse aggregate including cost of all materials, machinery, labour, batching, mixing, laying, compacting, formwork, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (cement content : 360 kg / cum with use of super plasticiser)	Each	28.00
56.	Manufacturing 400 x 150 x 30 mm size PCC lug slabs in M-15 grade (28 days cube compressive strength not less than 15 N / sq mm)		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	cement concrete using 10 mm down graded coarse aggregate including cost of all materials, machinery, labour, formwork, batching, mixing, laying, compacting, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (cement content : 360 kg / cum with use of super plasticiser)	Each	17.00
	MASONRY AND PITCHING WORKS :		
57.	Providing and constructing uncoursed rubble stone masonry in CM 1: 5 proportion for canal side lining using stones and chips from approved quarry including cost of all materials, labour, machinery, forming weep holes at specified interval, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	cum	1444.00
58.	Providing and laying uncoursed rubble stone masonry in CM 1: 5 proportion for canal side lining using stones and chips from canal excavation including cost of all materials, labour, machinery, forming weep holes at specified interval, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	cum	1386.00
Note:	Stones and chips from dump area will be issued at specified issue rate.		
59.	Providing and constructing 250mm thick dry rubble stone pitching with pin headers at 2 per sqm including cost of all materials, labour, hand packing, finishing etc., complete with initial lead upto 50 m and all lifts.	sqm	113.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00
60.	Providing and constructing 300mm thick dry rubble stone pitching with pin headers at 2 per sqm including cost of all materials, labour, hand packing, finishing etc., complete with initial lead upto 50 m and all lifts.	sqm	126.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00
61.	Providing and constructing 450mm thick dry rubble stone pitching with pin headers at 2 per sqm including cost of all materials, labour, hand packing, finishing etc., complete with initial lead upto 50 m and all lifts.	sqm	178.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00
62.	Providing and constructing 300 mm thick rubble stone pitching set in CM 1: 5 proportion with pin headers at 2 per sqm in including cost of all materials, labour, packing chips and mortar, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	355.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
63.	Providing and constructing 300 mm thick dry size stone pitching using 200 to 250 mm size stones with pin headers at 2 per sqm including cost of all materials, labour, hand packing, finishing etc., complete with initial lead upto 50 m and all lifts.	sqm	162.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00
64.	Providing and constructing 450 mm thick dry size stone pitching using 250 to 300 mm size stones with pin headers at 2 per sqm including cost of all materials, labour, hand packing, finishing etc., complete with initial lead upto 50 m and all lifts.	sqm	195.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00
65.	Providing and constructing 300 mm thick size stone pitching using 200 to 250 mm size stones with pin headers at 2 per sqm set in CM 1 : 5 proportion with pointing joints in CM 1 : 3 proportion including cost of all materials, labour, packing stone chips and mortar, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	377.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00
66.	Providing and constructing 450 mm thick size stone pitching using 250 to 300 mm size stones with pin headers at 2 per sqm set in CM 1 : 5 proportion with pointing joints in CM 1 : 3 proportion including cost of all materials, labour, packing stone chips and mortar, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	490.00
Note:	If 150 mm thick murum bed is to be provided below pitching add	sqm	22.00
67.	Providing 100 mm thick approved type grass turfing to the side slopes of canal including cost of all materials, labour, watering for minimum 15 days etc., complete with lead upto 50 m and all lifts.	sqm	56.00

WATER RESOURCES DEPARTMENT

CANAL CROSS DRAINAGE WORKS SCHEDULE OF RATES FOR THE YEAR : 2011-12

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**NOTES ON SCHEDULE OF RATES
CANAL CROSS DRAINAGE WORKS**

1. All notes under General Notes on Schedule of Rates and Notes on Lead, Lift, Loading and un-loading Charges are applicable to Canal Cross Drainage Works also to the extent they are relevant.
2. Unless otherwise specified the basic rates are inclusive of all lifts.
3. Unless otherwise specified the basic rates are inclusive of standard finishing required for concrete surface.
4. The basic rates for concrete items include cleaning the top surface of previous lift and providing cement mortar layer before placing the concrete for next lift. The proportion of cement mortar shall be same as that of mortar portion in concrete.
5. Cement content specified for cement concrete works in the item description is based on theoretical design mix computations and is exclusive of wastage and requirement for any incidentals. The actual cement content may vary based on trial mix studies. A suitable Clause shall be included in tender for regulating payment for any upward or downward variation in cement content.
6. Minimum grade of concrete for piers / abutments of major cross drainage works shall shall be M-20.
7. The quantities of materials including wastage, requirements for any incidentals etc., for working out additional lead charges shall be as per the statement of requirement of materials under this section.
8. The basic rates are exclusive of cost of site clearance and river / nala diversion works such as coffer dams, bunds, diversion channels etc. Separate item rate or lump-sum provisions, wherever required, may be included in the estimate for these works.

**QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES
CANAL CROSS DRAINAGE WORKS**

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Steel kg	Cement kg	Sand / FA cum	CA cum
5	25 mm dia. anchor rod	Each	9.740	0.51	---	---
6	Providing & fixing reinforcement steel	kg	1.025	---	---	---
7	Foundation well cutting edge	tonne	1025.000	---	---	---
8	M-15 (40 mm CA) for foundation filling	cum	---	245.40	0.410	0.920
9	M-15 (80 mm CA) for foundation filling	cum	---	215.15	0.356	1.000
10	M-10 (40 mm CA) for foundation filling	cum	---	225.20	0.407	0.915
11	M-10 (80 mm CA) for foundation filling	cum	---	194.90	0.356	1.000
12	M-20 (40 mm CA) for foundation filling	cum	---	275.70	0.410	0.918
13	M-20 (40 mm CA) for sub-structure	cum	---	308.00	0.407	0.915
14	M-20 (20 mm CA) for sub-structure	cum	---	338.30	0.459	0.815
15	M-15 (20 mm CA) for sub-structure	cum	---	277.70	0.459	0.815
16	M-10 (20 mm CA) for sub-structure	cum	---	257.50	0.459	0.815
17	M-20 (20 mm CA) for well kerb	cum	---	333.30	0.459	0.815
18	M-20 (40 mm CA) for well steining	cum	---	305.00	0.407	0.915
19	M-15 (20 mm CA) for well bottom plug	cum	---	353.50	0.459	0.815
20	M-15 (40 mm CA) for well top plug	cum	---	242.40	0.408	0.920
21	M-20 (20 mm CA) for well cap	cum	---	338.30	0.459	0.815
22.a	M-15 (80 mm CA) for piers	cum	---	217.10	0.356	1.000
22.b	M-15 (80 mm CA) for abutments	cum	---	217.10	0.356	1.000
23.a	M-20 (40 mm CA) for piers	cum	---	308.00	0.407	0.915
23.b	M-20 (40 mm CA) for abutments	cum	---	308.00	0.407	0.915
24.a	M-10 (40 mm CA) for piers	cum	---	227.20	0.407	0.915
24.b	M-10 (40 mm CA) for abutments	cum	---	227.20	0.407	0.915
25	M-20 (40 mm CA) for cantilever walls	cum	---	308.00	0.407	0.915
			Stone cum	Cement kg	Sand / FA cum	CA cum
26.a	M-15 (40 mm CA) for piers	cum	---	247.00	0.408	0.920
26.b	M-15 (40 mm CA) for abutment	cum	---	247.00	0.408	0.920
26.c	M-15 (40 mm CA & plums) for piers	cum	0.215	216.10	0.346	0.780
26.d	M-15 (40 mm CA & plums) for abutment	cum	0.215	216.10	0.346	0.780
27	M-15 (40 mm CA) for cast in-situ pipes	cum	---	247.40	0.408	0.920
28	M-15 (80 mm CA) for cast in-situ pipes	cum	---	217.10	0.355	1.000
29	M-20 (20 mm CA) for deck slab / kerb	cum	---	338.30	0.459	0.815
30.a	M-20 (20 mm CA) for columns	cum	---	338.30	0.459	0.815
30.b	M-20 (20 mm CA) for beams	cum	---	338.30	0.459	0.815
31	M-20 (20 mm CA) for wearing coat	cum	---	338.30	0.459	0.815

QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES (contd)

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Stone cum	Cement kg	Sand / FA cum	CA cum
32.a	M-20 (20 mm CA) for ground level trough	cum	---	338.30	0.459	0.815
32.b	M-20 (20 mm CA) for aqueduct trough	cum	---	338.30	0.459	0.815
34	Filling foundation well with sand	cum	---	---	1.050	---
35	UCR masonry in CM 1:4 for sub-structure	cum	1.020	144.50	0.410	---
36	UCR masonry in CM 1:4 super structure	cum	1.020	144.50	0.410	---
37	CR 2nd sort masonry in CM 1:4 propn	cum	1.020	134.40	0.355	---
38	CR 1st sort masonry in CM 1:4 propn	cum	1.020	134.40	0.355	---
39	Pointing masonry in CM 1:2 propn	sqm	---	3.88	0.006	---
40	Pointing masonry in CM 1:3 propn	sqm	---	2.98	0.007	---
41	12 mm th. Plastering in CM 1:3 propn	sqm	---	6.14	0.013	---
42	12 mm th. Plastering in CM 1:4 propn	sqm	---	4.80	0.013	---
43	20 mm th. Plastering in CM 1:3 propn	sqm	---	10.20	0.022	---
44	20 mm th. Plastering in CM 1:4 propn	sqm	---	8.00	0.023	---
			BS Slab cum	Cement kg	Sand / FA cum	CA cum
45.a	Roughly dressed BS slab coping in CM	sqm	0.105	7.50	0.002	---
45.b	One line dressed BS slab coping in CM	sqm	0.105	7.50	0.002	---
45.c	Two line dressed BS slab coping in CM	sqm	0.105	7.50	0.002	---
			Steel kg	Cement kg	Sand / FA cum	CA cum
46	M-15 CC coping (20 mm down CA)	cum	---	277.70	0.459	0.815
47	Railing	Rm	1.56	3.50	0.003	0.006
48.a	Jointing hume pipe 300 mm dia	Joint	---	10.10	0.010	---
48.b	Jointing hume pipe 450 mm dia	Joint	---	17.50	0.022	---
48.c	Jointing hume pipe 600 mm dia	Joint	---	24.80	0.026	---
48.d	Jointing hume pipe 700 mm dia	Joint	---	32.50	0.032	---
48.e	Jointing hume pipe 800 mm dia	Joint	---	40.00	0.040	---
48.f	Jointing hume pipe 900 mm dia	Joint	---	45.00	0.046	---
48.g	Jointing hume pipe 1000 mm dia	Joint	---	50.00	0.051	---
48.h	Jointing hume pipe 1100 mm dia	Joint	---	57.60	0.061	---
48.i	Jointing hume pipe 1200 mm dia	Joint	---	67.70	0.071	---
			Stone cum	Soil cum	Sand / FA cum	CA cum
49	Rubble and sand filling for foundation	cum	1.020	---	0.408	---
50	CNS soil filling around pipes	cum	---	1.20	---	---

QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES (contd)

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Stone cum	Soil cum	Sand / FA cum	CA cum
51	CNS soil filling above pipes	cum	---	1.20	---	---
			Stone cum	Cement kg	Sand / FA cum	CA cum
52	Providing & fixing km stone in M-10 CC	Each	0.100	24.00	0.040	0.090
53	Providing & fixing hm stone in M-10 CC	Each	0.010	24.00	0.040	0.090
54.a	Providing 900 mm \varnothing bored pile M-20 CC	Rm	---	246.70	0.295	0.523
54.b	Providing 1000 mm \varnothing bored pile M-20 CC	Rm	---	304.50	0.364	0.646
54.c	Providing 1100 mm \varnothing bored pile M-20 CC	Rm	---	368.50	0.440	0.781
54.d	Providing 1200 mm \varnothing bored pile M-20 CC	Rm	---	438.50	0.524	0.930
54.e	Providing 1300 mm \varnothing bored pile M-20 CC	Rm	---	514.60	0.615	1.091
54.f	Providing 1400 mm \varnothing bored pile M-20 CC	Rm	---	597.00	0.713	1.265
54.g	Providing 1500 mm \varnothing bored pile M-20 CC	Rm	---	685.00	0.819	1.453

Notes:

- The quantities of materials specified in the above table are for loose volume.
- The quantity of cement for cement concrete items includes requirement of cement for any incidental works such as mortar layer at lift joints, repair of honey-combs etc.
- The quantities of materials are inclusive of wastage as under:

Cement	1.00 percent.
Sand / Fine aggregate	2.00 percent.
Coarse aggregate	2.00 percent.
Stones / Stone chips	2.00 percent.
Steel (Reinforcement & Structural)	2.50 percent.

**AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES
CANAL CROSS DRAINAGE WORKS**

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
8	M-15 (40 mm CA) for foundation filling	cum	---	19.70	44.15	---
9	M-15 (80 mm CA) for foundation filling	cum	---	17.10	48.00	---
10	M-10 (40 mm CA) for foundation filling	cum	---	19.55	43.90	---
16	M-10 (80 mm CA) for foundation filling	cum	---	17.10	48.00	---

AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES (contd)

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
12	M-20 (40 mm CA) for foundation filling	cum	---	19.70	44.05	---
13	M-20 (40 mm CA) for sub-structure	cum	---	19.55	43.90	---
14	M-20 (20 mm CA) for sub-structure	cum	---	22.05	39.10	---
15	M-15 (20 mm CA) for sub-structure	cum	---	22.05	39.10	---
16	M-10 (20 mm CA) for sub-structure	cum	---	22.05	39.10	---
17	M-20 (20 mm CA) for well kerb	cum	---	22.05	39.10	---
18	M-20 (40 mm CA) for well steining	cum	---	19.55	43.90	---
19	M-15 (20 mm CA) for well bottom plug	cum	---	22.05	39.10	---
20	M-15 (40 mm CA) for well top plug	cum	---	19.60	44.15	---
21	M-20 (20 mm CA) for well cap	cum	---	22.05	39.10	---
22.a	M-15 (80 mm CA) for piers	cum	---	17.10	48.00	---
22.b	M-15 (80 mm CA) for abutments	cum	---	17.10	48.00	---
23.a	M-20 (40 mm CA) for piers	cum	---	19.55	43.90	---
23.b	M-20 (40 mm CA) for abutments	cum	---	19.55	43.90	---
24.a	M-10 (40 mm CA) for piers	cum	---	19.55	43.90	---
24.b	M-10 (40 mm CA) for abutments	cum	---	19.55	43.90	---
25	M-20 (40 mm CA) for cantilever walls	cum	---	19.55	43.90	---
26.a	M-15 (40 mm CA) for piers	cum	---	19.60	44.15	---
26.b	M-15 (40 mm CA) for abutment	cum	---	19.60	44.15	---
26.c	M-15 (40 mm CA & plums) for piers	cum	---	16.60	37.45	10.30
26.d	M-15 (40 mm CA & plums) for abutment	cum	---	16.60	37.45	10.30
27	M-15 (40 mm CA) for cast in-situ pipes	cum	---	19.60	44.15	---
28	M-15 (80 mm CA) for cast in-situ pipes	cum	---	17.05	48.00	---
29	M-20 (20 mm CA) for deck slab / kerb	cum	---	22.05	39.10	---
30.a	M-20 (20 mm CA) for columns	cum	---	22.05	39.10	---
30.b	M-20 (20 mm CA) for beams	cum	---	22.05	39.10	---
31	M-20 (20 mm CA) for wearing coat	cum	---	22.05	39.10	---
32.a	M-20 (20 mm CA) for ground level trough	cum	---	22.05	39.10	---
32.b	M-20 (20 mm CA) for aqueduct trough	cum	---	22.05	39.10	---
34	Filling foundation well with sand	cum	---	50.40	---	48.95
35	UCR masonry in CM 1:4 for sub-structure	cum	---	19.70	---	48.95
36	UCR masonry in CM 1:4 super structure	cum	---	19.70	---	48.95
37	CR 2nd sort masonry in CM 1:4 propn	cum	---	17.05	---	48.95
38	CR 1st sort masonry in CM 1:4 propn	cum	---	17.05	---	---
39	Pointing masonry in CM 1:2	sqm	---	0.30	---	---
40	Pointing masonry in CM 1:3	sqm	---	0.35	---	---
41	12 mm th. Plastering in CM 1:3	sqm	---	0.60	---	---
42	12 mm th. Plastering in CM 1:4	sqm	---	0.60	---	---

AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES (contd)

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
43	20 mm th. Plastering in CM 1:3	sqm	---	1.05	---	---
44	20 mm th. Plastering in CM 1:4	sqm	---	1.10	---	---
45.a	10 cm th. BS slab coping in CM 1:6	sqm	---	0.10	---	5.05
45.b	10 cm th. BS slab coping in CM 1:6	sqm	---	0.10	---	5.05
45.c	10 cm th. BS slab coping in CM 1:6	sqm	---	0.10	---	5.05
46	M-15 CC coping (20 mm down CA)	cum	---	22.05	39.10	---
47	Railing	Rm	---	0.15	0.30	---
48.a	Jointing hume pipe 300 mm dia	Joint	---	0.50	---	---
48.b	Jointing hume pipe 450 mm dia	Joint	---	1.05	---	---
48.c	Jointing hume pipe 600 mm dia	Joint	---	1.25	---	---
48.d	Jointing hume pipe 700 mm dia	Joint	---	1.55	---	---
48.e	Jointing hume pipe 800 mm dia	Joint	---	1.90	---	---
48.f	Jointing hume pipe 900 mm dia	Joint	---	2.20	---	---
48.g	Jointing hume pipe 1000 mm dia	Joint	---	2.45	---	---
48.h	Jointing hume pipe 1100 mm dia	Joint	---	2.95	---	---
48.l	Jointing hume pipe 1200 mm dia	Joint	---	3.40	---	---
49	Rubble and sand filling	cum	---	19.60	---	48.95
50	CNS soil filling around pipes	cum	16.00	---	---	---
51	CNS soil filling above pipes	cum	16.00	---	---	---
52	Providing & fixing km stone in M-10 CC	Each	---	1.90	4.30	4.80
53	Providing & fixing hm stone in M-10 CC	Each	---	1.90	4.30	0.50
54.a	Providing 900 mm ϕ bored pile M-20 CC	Rm	---	14.15	25.10	---
54.b	Providing 1000 mm ϕ bored pile M-20 CC	Rm	---	17.45	31.00	---
54.c	Providing 1100 mm ϕ bored pile M-20 CC	Rm	---	21.10	37.50	---
54.d	Providing 1200 mm ϕ bored pile M-20 CC	Rm	---	25.15	44.65	---
54.e	Providing 1300 mm ϕ bored pile M-20 CC	Rm	---	29.50	52.35	---
54.f	Providing 1400 mm ϕ bored pile M-20 CC	Rm	---	34.20	60.70	---
54.g	Providing 1500 mm ϕ bored pile M-20 CC	Rm	---	39.30	69.75	---

Notes:

- In the Govt notification on royalty charges the rates for Earth / Sand / Building stone are on weight basis. For converting the rate per tonne to rate per cum for working-out the royalty charges for various work items following density values are assumed.
 Sand / Fine aggregate (loose volume) : 1.60 tonne per cum
 Stones / stone chips / Coarse aggregates (loose volume) : 1.60 tonne per cum
 Rockfill / Rock toe (fill volume) : 1.80 tonne per cum
 Soil (compacted to 95 percent density control) : 1.60 tonne per cum

**CANAL CROSS DRAINAGE WORKS
SCHEDULE OF RATES
FOR THE YEAR :2011-12**

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	EXCAVATION & FOUNDATION TREATMENT WORKS :		
1.	Excavation in all kinds of soil including boulders upto 0.6 m diameter (0.113 cum) for foundations of canal cross drainage and other appurtenant structures and placing excavated stuff neatly in specified dump area or disposing off the same as directed etc., complete with initial lead upto 50 m and initial lift upto 1.5 m.	cum	86.00
2.	Excavation in soft rock without blasting including boulders upto 0.6 m dia. (0.113 cum) for foundations of canal cross drainage and other appurtenant structures and placing the excavated stuff neatly in specified dump area or disposing off the same as directed etc., complete with initial lead upto 50 m and initial lift upto 1.5 m.	cum	114.00
3.	Excavation in soft rock requiring blasting including boulders upto 0.6 m dia. (0.113 cum) for foundations of canal cross drainage and other appurtenant structures and placing the excavated stuff neatly in specified dump area or disposing off the same as directed etc., complete with initial lead upto 50 m and initial lift upto 1.5 m.	cum	161.00
4.a.	Excavation in hard rock of all toughness by blasting including boulders above 0.6 m dia. (0.113 cum) for foundations of canal cross drainage and other appurtenant structures deploying jack hammer for dilling holes and placing the excavated rock neatly in specified dump area or stack yard as directed etc., complete with initial lead upto 50 m and initial lift upto 1.5 m.	cum	339.00
4.b.	Excavation in hard rock of all toughness including boulders above 0.6 m dia. (0.113 cum) by approved controlled blasting methods including control of vibration by use of delay detonators and control of fly-rock by muffling for foundations of canal cross drainage and other appurtenant structures etc., using only jack hammers for drilling and minimising damage to rock beyond excavation line by adopting any one or combination of line drilling / pre-splitting / smooth blasting techniques and placing the excavated rock neatly in approved dump area as directed etc., complete with initial lead upto 50 m and initial lift upto 1.5 m.	cum	463.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
5.	Providing and fixing 25 mm dia 2.50 m long cold twisted deformed steel anchor rods with 1.25 m length driven into 38 mm dia hole drilled in bed rock and remaining length embedded in concrete / masonry including cost of all materials, machinery, labour, drilling and cleaning hole, driving anchor rod, grouting hole with thick cement slurry etc., complete with initial lead upto 50 m and all lifts.	Each	705.00
STEEL AND CEMENT CONCRETE WORKS :			
6.	Providing, fabricating and placing in position reinforcement steel bars for RCC works including cleaning, straightening, cutting, bending, hooking, lapping, welding wherever required, tying with 1.25 mm dia soft annealed steel wire, including cost of all materials, machinery, labour etc., complete with initial lead upto 50 and all lifts.	kg	53.00
7.	Providing, fabricating and fixing in position structural steel cutting edge consisting of 100 x 100 x 10 mm angle and 250 x 12 mm plate for sinking foundation wells including cost of all materials, machinery, labour, bending, welding, providing anchors etc., complete with initial lead upto 50 m and all lifts.	kg	67.00
8.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for foundation filling including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and depth of foundation upto 1.5 m from surface (Cement content: 240 kg / cum with use of super plasticiser)	cum	3111.00
Note:	For every 1.5 m additional depth below 1.5 m from surface add	cum	13.50
9.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 80 mm down size approved, clean, hard, graded aggregates for foundation filling including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and depth of foundation upto 1.5 m from surface. (Cement content: 210 kg / cum with use of super plasticiser)	cum	2907.00
Note:	For every 1.5 m additional depth below 1.5 m from surface add	cum	13.50

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
10.	Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for foundation filling including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and depth of foundation upto 1.5 m from surface. (Cement content: 220 kg / cum with use of super plasticiser)	cum	2992.00
Note:	For every 1.5 m additional depth below 1.5 m from surface add	cum	13.50
11.	Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N / sq mm) grade cement concrete using 80 mm down size approved, clean, hard, graded aggregates for foundation filling including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and depth of foundation upto 1.5 m from surface. (Cement content : 190 kg / cum with use of super plasticiser)	cum	2796.00
Note:	For every 1.5 m additional depth below 1.5 m from surface add	cum	13.50
12.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for foundation filling including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and depth of foundation upto 1.5 m from surface. (Cement content: 270 kg / cum with use of super plasticiser)	cum	3293.00
Note:	For every 1.5 m additional depth below 1.5 m from surface add	cum	13.50
13.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for sub-structure works including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 300 kg / cum with use of super plasticiser)	cum	3893.00
Note:	For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
14.	Providing and laying insitu vibrated M-20 (28 days cube compressive		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for sub-structure works including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 330 kg / cum with use of super plasticiser)	cum	4142.00
Note:	For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
15.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for sub-structure works including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 270 kg / cum with use of super plasticiser)	cum	3810.00
Note:	For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
16.	Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N /sq mm) vibrated cement concrete using 20 mm down size approved, clean, hard, graded aggregates for sub-structure works including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 250 kg / cum with use of super plasticiser)	cum	3646.00
Note:	For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
17.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for well kerb including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 330 kg / cum with use of super plasticiser)	cum	4900.00
Note:	If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		
18.	Providing and laying insitu vibrated M-20 (28 days cube compressive		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for well steining including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 300 kg / cum with use of super plasticiser)</p>	cum	4248.00
Note:	If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		
19.	<p>Providing and laying insitu M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for well bottom plug by tremie or skip box method including cost of all materials, machinery, labour, batching, mixing, placing in position as per detailed specifications etc., complete with initial lead upto 50 m and all lifts. (Cement content : 350 kg / cum with use of super plasticiser)</p>	cum	3590.00
20.	<p>Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for well top plug including cost of all materials, machinery, labour, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 240 kg / cum with use of super plasticiser)</p>	cum	2786.00
Note:	If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		
21.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for well cap including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 330 kg / cum with use of super plasticiser)</p>	cum	3749.00
Note:	If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		
22.a	<p>Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 80 mm down size approved, clean, hard, graded aggregates for piers</p>		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 210 kg /cum with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	<p>cum cum</p>	<p>3536.00 27.00</p>
22.b	<p>Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 80 mm down size approved, clean, hard, graded aggregates for abutments including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 210 kg /cum with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	<p>cum cum</p>	<p>3422.00 27.00</p>
23.a	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for piers including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 300 kg /cum with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	<p>cum cum</p>	<p>4367.00 27.00</p>
23.b	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for abutments including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and</p>		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>lift upto 1.5 m from surface. (Cement content : 300 kg /cum with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	cum cum	4234.00 27.00
24.a	<p>Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for piers including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 220 kg /cum with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	cum cum	3620.00 27.00
24.b	<p>Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for abutments including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 220 kg /cum with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	cum cum	3506.00 27.00
25.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for cantiliver / counterfort retaining walls including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 300 kg / cum with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water</p>	cum cum	4228.00 27.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	also at 500 litres per cum of concrete.		
26.a	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for piers including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 240 kg / cum of plum concrete with use of super plasticiser)	cum	3867.00
Note:	1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.	cum	27.00
26.b	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for gravity type retaining walls / abutments etc., including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. Cement content: 240 kg / cum of plum CC with use of super plasticiser)	cum	3774.00
Note:	1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.	cum	27.00
26.c	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates with placing and sinking plums of size 150 to 80 mm upto 15 percent for piers including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 210 kg / cum of plum concrete with use of super plasticiser)	cum	3458.00
Note:	1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.	cum	27.00
26.d	Providing and laying insitu vibrated M-15 (28 days cube compressive		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates with placing and sinking plums of size 150 to 80 mm upto 15 percent for gravity type retaining walls / abutments etc., including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. Cement content:210 kg / cum of plum CC with use of super plasticiser)</p> <p>Note: 1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	<p>cum cum</p>	<p>3360.00 27.00</p>
	<p>27. Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for cast in-situ pipes including cost of all materials, machinery, labour, cleaning, formwork, scaffolding, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 240 kg / cum with use of super plasticiser)</p> <p>Note: If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	<p>cum</p>	<p>3396.00</p>
	<p>28. Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 80 mm down size approved, clean, hard, graded aggregates for cast in-situ pipes including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 210 kg / cum with use of super plasticiser)</p> <p>Note: If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.</p>	<p>cum</p>	<p>3168.00</p>
	<p>29. Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for deck slab and kerb including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface.(Cement content : 330 kg / cum</p>		

Item No.	Brief description of work	Unit	Basic Rate in ` :
1	2	3	4
	with use of super plasticiser)	cum	5665.00
Note:	1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.	cum	27.00
30.a	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for columns including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 330 kg / cum with use of super plasticiser).	cum	5488.00
Note:	1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.	cum	27.00
30.b	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for beams and slabs including cost of all materials, labour, machinery, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface. (Cement content : 330 kg / cum with use of super plasticiser)	cum	5786.00
Note:	1. For every 1.5 m additional lift beyond 1.5 m from surface add 2. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.	cum	27.00
31.	Providing and laying insitu M- 20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for wearing coat including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position in alternate panels, levelling, compacting, finishing, curing, packing joints with asphalt mortar etc., complete with initial lead upto 50 m and all lifts. (Cement content : 330 kg / cum with use of super plasticiser)	cum	3577.00
Note:	If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
32.a	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for RCC troughs resting on ground including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and all lifts. (Cement content : 330 kg / cum with use of super plasticiser).	cum	4728.00
Note:	If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		
32.b	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for RCC trough for aqueducts including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m and scaffolding height upto 4.5 m from surface. (Cement content : 330 kg / cum with use of super plasticiser)	cum	5704.00
Note:	1. For every 1.5 m increase in height of scaffolding beyond 4.5 m from surface add	cum	238.00
	2. For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
	3. If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		
	FOUNDATION WELL SINKING WORKS :		
33.	Sinking 4.50 m diameter RCC wells vertically for foundation of piers and abutments in all kinds of soil and soft rock by kent-ledge or other approved method as directed including cost of all materials, machinery, labour, disposal of excavated material etc., complete with lead upto 50 m for disposal of excavated material.		
	Upto 3 m depth from surface	Rm	11029.00
	Beyond 3 m upto 6 m from surface	Rm	15440.00
	Beyond 6 m upto 9 m from surface	Rm	19852.00
	Beyond 9 m upto 12 m from surface	Rm	24263.00
	Beyond 12 m upto 15 m from surface	Rm	28674.00
	Beyond 15 m upto 18 m from surface	Rm	33087.00
	Beyond 18 m upto 21 m from surface	Rm	37498.00
	Beyond 21 m upto 24 m from surface	Rm	41909.00
	Beyond 24 m upto 27 m from surface	Rm	46321.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	Beyond 27 m upto 30 m from surface	Rm	50732.00
Note:	For every 0.25 m increase in dia.of well increase basic rate by 12 percent.		
34.	Filling foundation wells with sand in layers of 250 to 300 mm and compacting by watering, ramming as directed including cost of all materials, machinery, labour etc., complete with initial lead upto 50 m and all lifts.	cum	303.00
	MASONRY WORKS :		
35.	Providing and constructing un-coursed rubble stone masonry with approved stones in cement mortar 1 : 4 proportion for sub-structure portions of return walls/ abutments etc., including cost of all materials, machinery, labour, scaffolding, cleaning, packing cement mortar, wedging stone chips, curing etc., complete with initial lead upto 50 m and depth of foundation upto 1.5 m from surface.	cum	1648.00
Note:	For every 1.5 m additional depth below 1.5 m from surface add	cum	13.50
36.	Providing and constructing un-coursed rubble stone masonry with approved stones in cement mortar 1 : 4 proportion for super-structure portions of return walls / abutments including cost of all materials, machinery, labour, scaffolding, cleaning, packing cement mortar, wedging stone chips, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface.	cum	1712.00
Note:	For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
37.	Providing and constructing coursed rubble masonry second sort in cement mortar 1 : 4 proportion with stones from approved source including cost of all materials, machinery, labour, scaffolding, ramps, cleaning, packing mortar, wedging stone chips, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface.	cum	1800.00
Note:	For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
38.	Providing and constructing coursed rubble stone masonry first sort in cement mortar 1 : 4 proportion with stones from approved source including cost of all materials, labour, machinery, scaffolding, ramps, cleaning, packing mortar, wedging stone chips, finishing, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m from surface.	cum	1864.00
Note:	For every 1.5 m additional lift beyond 1.5 m from surface add	cum	27.00
39.	Providing cement mortar pointing to coursed rubble face stone masonry		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	in CM 1 : 2 proportion by volume including raking and cleaning joints for 50 mm depth, pressing cement mortar into joints, cost of all materials, labour, scaffolding, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	67.00
40.	Providing cement mortar pointing to coursed rubble face stone masonry in CM 1 : 3 proportion by volume including raking and cleaning joints for 50 mm depth, pressing cement mortar into joints, cost of all materials, labour, scaffolding, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	63.00
41.	Providing 12 mm thick plastering in cement mortar 1 : 3 proportion by volume including cost of all materials, machinery, labour, scaffolding, cleaning joints, smooth finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	102.00
42.	Providing 12 mm thick plastering in cement mortar 1 : 4 proportion by volume including cost of all materials, machinery, labour, scaffolding, cleaning joints, smooth finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	94.00
43.	Providing 20 mm thick plastering in two layers in cement mortar 1 : 3 proportion by volume including cost of all materials, machinery, labour, scaffolding, cleaning joints, smooth finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	147.00
44.	Providing 20 mm thick plastering in two layers in cement mortar 1 : 4 proportion by volume including cost of all materials, machinery, labour, scaffolding, cleaning joints, smooth finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	135.00
	COPING & RAILING WORKS :		
45.a.	Providing and fixing 100 mm thick roughly dressed burnt stone slabs for coping set in cement mortar 1 : 6 proportion by volume with pointing to joints in cement mortar 1 : 3 proportion by volume including cost of all materials, machinery, labour, finishing, curing, etc., complete with initial lead upto 50 m and all lifts.	sqm	398.00
45.b.	Providing and fixing 100 mm thick one line dressed burnt stone slab for coping set in cement mortar 1 : 6 proportion by volume with pointing to joints in cement mortar 1 : 3 proportion by volume including cost of		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	all materials, machinery, labour, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	461.00
45.c.	Providing and fixing 100 mm thick two line dressed burnt stone slabs for coping set in cement mortar 1 : 6 proportion by volume with pointing to joints in cement mortar 1 : 3 proportion by volume including cost of all materials, machinery, labour, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	544.00
46.	Providing and laying insitu M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 20 mm down size approved clean, hard, graded aggregates for coping slab including cost of all materials, machinery, labour, formwork, cleaning surface, batching, mixing, placing in position, levelling, compacting, finishing, curing etc., complete with initial lead upto 50 m and initial lift upto 1.5 m. (Cement content : 270 kg / cum with super plasticiser)	cum	4448.00
47.	Providing and constructing protective railing consisting of cast in-situ railing posts of size 150 x 150 mm at bottom, 100 x 100 mm at top and 750 mm height at 2 m centre to centre in M-20 grade concrete using 20 mm down size graded aggregates and with each post reinforced by 4 Nos. of 8 mm dia main bars embedded in kerb concrete for a depth of 400 mm and 5 Nos. of 6 mm dia. stirrups including fixing 3 rows of 40 mm dia. GI pipes with one coat of red oxide primer and two coats of synthetic enamel paint, cost of all materials, machinery, labour, ormwork, finishing, curing etc., complete with lead upto 50 m and all lifts.	Rm	1050.00
HUME PIPE LAYING & JOINTING WORKS :			
48.a.	Laying and jointing 300 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	186.00
48.b.	Laying and jointing 450 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	234.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
48.c.	Laying and jointing 600 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	312.00
48.d.	Laying and jointing 700 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	359.00
48.e.	Laying and jointing 800 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	438.00
48.f.	Laying and jointing 900 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	470.00
48.g.	Laying and jointing 1000 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	521.00
48.h.	Laying and jointing 1100 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	569.00
48.i.	Laying and jointing 1200 mm dia. NP- 2 class or IRC standard hume pipes in cement mortar 1 : 2 proportion by volume including cost of all materials (excluding pipes and collars), machinery, labour, aligning, packing joints with hemp, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Joint	672.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	BACK FILLING & OTHER WORKS :		
49.	Providing rubble / boulder and sand filling behind abutment and return walls in layers including cost of all materials, machinery, labour, watering, ramming etc., complete with initial lead upto 50 m and initial lift upto 1.5 m.	cum	462.00
50.	Providing and filling murrum / gravely soil (CNS soil) for foundation or around pipes including cost of all materials, machinery, labour, breaking clods, spreading in layers of 100 to 150 mm, watering, compaction by earth masters to achieve density control of not less than 90 percent etc., complete with lead upto 50 m and all lifts.	cum	229.00
51.	Providing and filling murum / gravely soil (CNS soil) for foundation or above pipes including cost of all materials, machinery, labour, breaking clods, spreading in layers of 100 to 150 mm, watering, compaction by power roller to achieve density control of not less than 95 percent etc., complete with lead upto 50 m and all lifts.	cum	149.00
52.	Providing and fixing one line dressed 1110 x 350 x 250 mm thick IRC standard kilometre stone in cement concrete M-10 grade with 40 mm down size aggregates including excavating pit of size 750 x 450 x 400 mm and embedding the stone by 300 mm in concrete, providing 2 coats synthetic enamel paint of approved quality and colour to exposed surfaces and lettering as directed, cost of all materials, labour, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Each	957.00
53.	Providing and fixing one line dressed 650 x 150 x 100 mm thick IRC standard hectometre stone in cement concrete M-10 grade with 40 mm down size aggregates including excavating pit of size 500 x 450 x 400 mm, embedding the stone by 300 mm in concrete, providing 2 coats synthetic enamel paint of approved quality and colour to exposed surfaces and lettering as directed, cost of all materials, labour, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	Each	630.00
54.	Providing and constructing M-20 (28 days cube compressive strength not less than 20 N/ sqmm) grade cement concrete cast in-situ bored piles (excluding cost of providing and placing in position reinforcement steel) using 20 mm down size approved clean, hard, graded aggregates for foundation including cost of all materials, machinery, labour, cleaning, batching, mixing, placing concrete in position using tremie system etc., complete with lead upto 50 m and all lifts. (Cement content : 380 kg /		

ADDITIONAL ITEM

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	cum with use of super plasticiser)		
a.	Bored pile 900 mm diameter	Rm	12565.00
b.	Bored pile 1000 mm diameter	Rm	15512.00
c.	Bored pile 1100 mm diameter	Rm	18770.00
d.	Bored pile 1200 mm diameter	Rm	22338.00
e.	Bored pile 1300 mm diameter	Rm	26216.00
f.	Bored pile 1400 mm diameter	Rm	30404.00
g.	Bored pile 1500 mm diameter	Rm	34903.00
Note :	If water is to be brought from other place add lead charges for water also at 500 litres per cum of concrete.		

WATER RESOURCES DEPARTMENT

TUNNEL AND ALLIED WORKS SCHEDULE OF RATES FOR THE YEAR : 2011-12

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**NOTES ON SCHEDULE OF RATES
TUNNEL AND ALLIED WORKS**

1. All notes under General Notes on Schedule of Rates and Notes on Lead, Lift, Loading and un-loading charges are applicable to Tunnel and Allied Works also to the extent they are relevant.
2. The basic rates are inclusive additional costs for working inside tunnel by way of additional hidden cost on labour.
3. The basic rates are inclusive of scaling loose rock, removal of under-cuts, cleaning bed, lighting and ventilation inside tunnel .
4. Unless otherwise specified the basic rates are inclusive of all lifts.
5. Unless otherwise specified the basic rates are inclusive of standard finishing required for concrete surface.
6. For excavation and concrete lining works of approach / exit channels the basic rates as provided under sections ' Canal and allied works ' and ' Canal cross drainage works" shall be adopted.
7. For intake structure, tunnel portals, retaining walls, pitching works etc., the rates as provided under ' Dam and allied works ' shall be adopted.
8. The lead charges, wherever applicable, for all materials under various items shall be considered only between quarry / source of supply and batching plant / fabrication site. Further conveyance of concrete / fabricated parts / other materials upto final placing site inside tunnel is included in the basic rates upto 1 km.
9. Cement content specified for cement concrete works in the item description is based on theoretical design mix computations and is exclusive of wastage and requirement for any incidentals. The actual cement content may vary based on trial mix studies. Suitable Clause shall be included in tender for regulating payment for any upword or downword variation in cement content.
10. The quantities of materials including wastage, requirements for any incidentals etc., for working out additional lead charges shall be as per the statement of requirement of materials under this section.

**QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES
TUNNEL AND ALLIED WORKS**

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Steel kg	Cement kg	Sand / FA cum	CA cum
8	25 mm th. Guniting in CM 1:3 propn	sqm	---	16.80	0.030	---
9	25 mm dia rock bolt using wedge	Rm	7.75	---	---	---
10	25 mm dia rock bolt using capsule	Rm	7.45	---	---	---
11	Permanent steel supports	tonne	1025.00	---	---	---
12	Temperary steel supports	tonne	1025.00	---	---	---
14	UCR masonry in CM 1:6 propn	cum	Stone cum	Cement kg	Sand / FA cum	CA cum
			0.975	96.00	0.410	---
15	Reinforcement steel	tonne	Steel kg	Cement kg	Sand / FA cum	CA cum
			1025.00	---	---	---
16	M-10 CC using 40 mm down CA	cum	---	222.00	0.410	0.920
17	M-20 CC using 40 mm down CA	cum	---	274.00	0.450	0.900
18	M-20 CC using 40 mm down CA	cum	---	304.00	0.450	0.900
20	Cement grouting	tonne	---	1010.00	---	---

Notes:

1. The quantities of materials specified in the above table are for loose volume.
2. The quantity of cement for cement concrete items includes requirement of cement for any incidental works such as repair of honey-comb patches etc.
3. The quantities of materials are inclusive of wastage as under:

Cement	1.00 percent.
Sand / Fine aggregate	2.00 percent.
Coarse aggregate	2.00 percent.
Stones / Stone chips	2.00 percent.
Steel (Reinforcement & Structural)	2.50 percent.

**AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES
TUNNEL AND ALLIED WORKS**

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
8	25 mm th. Guniting in CM 1:3 propn	sqm	---	1.45	---	---
14	UCR masonry in CM 1:6 propn	cum	---	19.70	---	46.80
16	M-10 CC using 40 mm down CA	cum	---	19.70	44.15	---
17	M-20 CC using 40 mm down CA	cum	---	21.60	43.20	---
18	M-20 CC using 40 mm down CA	cum	---	21.60	43.20	---

Notes:

1. In the Govt notification on royalty charges the rates for Earth / Sand / Building stone are on weight basis. For converting the rate per tonne to rate per cum for working-out the royalty charges for various work items following density values are assumed.
 Sand / Fine aggregate (loose volume) : 1.60 tonne per cum
 Stones/stone chips/Coarse aggregates (loose volume) : 1.60 tonne per cum

**TUNNEL AND ALLIED WORKS
SCHEDULE OF RATES
FOR THE YEAR :2011-12**

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	EXCAVATION WORKS :		
1.	Excavation for adit by tunnelling methods in all types of rock including cost of all materials, machinery, labour, scaling excavated surface, ventilation, lighting, drainage, removing and hauling excavated muck outside adit upto specified dump area and all other ancillary operations etc., complete with initial lead upto 500 m and all lifts.	cum	1343.00
2.	Excavation for vertical / inclined shaft in all types of soft / hard rock including cost of all materials, machinery, labour, shoring, strutting, scaling excavated surface, ventilation, lighting, drainage, removing and hauling excavated muck outside shaft upto specified dump area and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	cum	1415.00
3.	Excavation for tunnel by tunnelling methods in rock not requiring supports including cost of all materials, machinery, labour, scaling excavated surface, removing under-cuts, ventilation, lighting, drainage, removing and hauling excavated muck outside tunnel upto specified dump area and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	cum	1406.00
Note:	Where mucking is to be carried out through vertical / inclined shaft using winch and mucking tub increase the basic rate per cum by 8.00 percent.		
4.	Excavation for tunnel by tunnelling methods including excavation for supports in all types of soil / rock strata requiring supports including cost of all materials, machinery, labour, scaling excavated surface, ventilation, lighting, drainage, removing and hauling excavated muck outside tunnel upto specified dump area and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	cum	1474.00
Note:	Where mucking is to be carried out through vertical / inclined shaft using winch and mucking tub increase the basic rate per cum by 8.00 percent.		
5.	Excavation for tunnel by heading and benching method of tunnelling including excavation for supports in all types of soil / rock strata requiring supports for roof portion before benching including cost of all materials, machinery, labour, scaling excavated surface, ventilation,		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	lighting, drainage, removing and hauling excavated muck outside tunnel upto specified dump area and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	cum	1539.00
Note:	Where mucking is to be carried out through vertical / inclined shaft using winch and mucking tub increase the basic rate per cum by 8.00 percent.		
6.	Removing and hauling muck overfallen due to natural causes such as geological faults etc., out of tunnel including breaking any large rock fragments by blasting if necessary and disposing off the same in specified dump area or as directed including cost of all materials, machinery, labour, ventilation, drainage, lighting and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	cum	267.00
	DEWATERING & GUNITING WORKS :		
7.	Dewatering tunnel by pumping out water collected by natural drainage inside tunnel including providing sump wherever necessary, cost of all materials, machinery, labour, drainage, ventilation, lighting and all other ancillary operations etc., complete.	kwhr	18.00
8.	Providing 25 mm thick guniting to sides and arch of tunnel in cement mortar 1 : 3 proportion by weight including cost of all materials, labour, machinery, ventilation, lighting, drainage and all other ancillary operations etc., complete with lead upto 1 km and all lifts.	sqm	414.00
	TEMPERARY & PERMANENT SUPPORTS :		
9.	Providing and fixing 25 mm diameter steel rock bolts with mechanical / wedge type anchorage including drilling 35 mm dia holes, providing 150 mm long 20 mm thick steel tapered wedge, 10 mm thick 200 x 200 mm plate washer and nuts, tightening bolt by torque wrench, cost of all materials, machinery, labour, ventilation, lighting, drainage and all other ancillary operations etc., complete with lead upto 1 km and all lifts.	Rm	842.00
10.	Providing and fixing 25 mm diameter steel rock bolts with resin bond cement capsule anchorage including drilling 35 mm dia holes, inserting grout capsule, driving bolt, fixing 10 mm thick plate washers and nuts and tightening the same by torque wrench after hardening of cement grout, cost of all materials, machinery, labour, ventilation, lighting, drainage and other ancillary operations etc., complete with lead upto 1 km and all lifts.	Rm	854.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
11.	Providing, fabricating and fixing in position permanent structural steel supports as per details including cost of all materials, machinery, labour, cutting, bending, welding, grinding, ventilation, lighting, drainage and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	tonne	77400.00
12.	Providing, fabricating and fixing in position temperary structural steel supports as per details and dismantling the same before concreting including cost of all materials, machinery, labour, cutting, bending, welding, grinding, ventilation, lighting, drainage and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	tonne	16300.00
13.	Providing and fixing hard variety cut jungle wood for lagging / blocking locations in tunnel wherever required including cost of all materials, machinery, labour, fixing in position, ventilation, lighting, drainage etc., complete with all leads and lifts.	cum	29280.00
MASONRY WORKS :			
14.	Providing and constructing un-coursed rubble stone masonry using approved stones from tunnel excavated muck in cement mortar 1 : 6 proportion for backfilling over cuts / slips on tunnel sides due to geological faults etc., including cost of all materials, machinery, labour, cleaning, scaffolding, packing mortar, wedging stone chips, curing, ventilation, lighting, drainage etc., complete with lead upto 1 km and all lifts.	cum	1680.00
REINFORCEMENT & CONCRETE WORKS :			
15.	Providing, fabricating and placing in position reinforcement steel for tunnel RCC works including cleaning, straightening, cutting, bending, hooking, lapping / welding joints wherever required, tying with 1.25 mm diameter soft annealed steel wire, including cost of all materials, labour, machinery, ventilation, lighting, drainage etc., complete with lead upto 1 km and all lifts.	tonne	57870.00
16.	Providing and laying insitu vibrated M-10 (28 days cube compressive strength not less than 10 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregate crushed from tunnel excavated muck for filling and levelling over cuts in bed due to geological faults etc., including cost of all materials, labour, machinery, cleaning bed, batching, mixing, conveying and laying,		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	levelling, compacting, finishing, curing, ventilation, lighting, drainage etc., complete with lead upto 1 km and all lifts. (Cement content: 220 kg / cum with use of super plasticiser)	cum	3701.00
17.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sqmm) grade cement concrete using 40 mm and down size approved clean, hard, graded aggregate crushed from tunnel excavated muck for kerb and bed lining including cost of all materials, machinery, labour, formwork, batching, mixing, conveying upto placing point in agitator car, placing in position, levelling, vibrating, finishing, curing, ventilation, lighting, drainage and all other ancillary operations etc., complete with lead upto 1 km and all lifts. (Cement content : 270 kg / cum with use of super plasticiser)	cum	4304.00
18.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sqmm) grade cement concrete using 40 mm and down size approved clean, hard, graded aggregate crushed from tunnel excavated muck for sides and arch lining including cost of all materials, machinery, labour, formwork, batching, mixing, conveying upto placing point in agitator car, placing in position, levelling, vibrating, finishing, curing, ventilation, lighting, drainage and all other ancillary operations etc., complete with lead upto 1 km and all lifts. (Cement content 300 kg / cum with use of super plasticiser).	cum	4952.00
DRILLING & GROUTING WORKS :			
19.	Drilling 35 mm diameter grout holes in concrete / rock by percussion drilling using jack hammer or stooper drills as directed to specified depth for consolidation / contact grouting including cost of all materials, machinery, labour, cleaning holes, ventilation, lighting, drainage and all other ancillary operations etc., complete.	Rm	273.00
20.	Grouting cement slurry in grout holes under specified pressure for consolidation / contact grouting including cost of all materials, labour, machinery, redrilling wherever necessary, ventilation, lighting, drainage and other ancillary operations etc., complete with lead upto 1 km and all lifts.	tonne	8703.00
21.	Drilling 75 mm diameter drainage holes vertical or inclined in rock / concrete in tunnel by percussion drilling using waggon drill or other suitable drilling equipment including cost of all materials, machinery, labour, ventilation, lighting, drainage etc., complete.	Rm	288.00

WATER RESOURCES DEPARTMENT

GATE / HOIST AND ALLIED WORKS SCHEDULE OF RATES FOR THE YEAR : 2011-12

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**NOTES ON SCHEDULE OF RATES
GATE / HOIST AND ALLIED WORKS**

1. All notes under General Notes on Schedule of Rates and Notes on Lead, Lift, Loading and un-loading charges are applicable to Gate / Hoist and Allied Works also to the extent they are relevant.
2. All materials / bought out components for embedded parts, gates, hoists and allied works shall conform to relevant Indian standards / technical specifications and approved drawings.
3. The basic rates are inclusive of preparation of designs / drawings / bill of materials etc., as per specifications and other technical data including revisions.
4. The basic rates are inclusive of cost of all materials, machinery, labour, fabrication, erection, commissioning and testing of gates, hoists and other related components as per technical specifications.
5. The basic rates are inclusive of taxes, duties, levies and all other incidental charges except sales tax on works contract. Separate provision shall be made in the estimate towards Sales tax on Works contract at the rate prevailing at the time of preparation of estimate.
6. The basic rates are inclusive of rehandling at fabrication and erection sites.
7. Unless otherwise specified the basic rates are inclusive of standard finish required for all the fabricated and bought out gate and hoist components.
8. The basic rates are inclusive of preparatory works such as rectification of damages, repairing shop painting, cleaning, positioning and anchoring first stage embedments, cleaning surface for field painting etc.
9. The basic rates are exclusive of cost of river diversion arrangements, dewatering, desilting etc.
10. Unless otherwise specified, the basic rates for all items are on per tonne basis. The rate per set or per number shall be worked out on the basis of rate per tonne and the tonnage computed as per detailed designs or as per empirical formulae furnished in the " Note " under each item.
11. Minimum dry film thickness for zinc rich epoxy primer paint and coal tar epoxy paint shall be 40 microns per coat and 100 microns per coat respectively.

GATE / HOIST AND ALLIED WORKS
SCHEDULE OF RATES
FOR THE YEAR :2011-12

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	GATES AND HOISTS FOR DAM :		
1.	Design, fabrication, supply, erection and commissioning of embedded parts consisting of sill beam, wall plates, anchors, anchor girders, yoke girders, tie flats, trunnion supports, rope and pulley supports etc., with all accessories for spillway radial gates including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	112500.00
Note:	Wt of 1 set embedded parts in tonnes = $0.0177 \times (L^2 \times H \times h)^{0.673}$ Where (L) is length in m = Clear distance between piers. (H) is height of radial gate in m = FRL - Sill level + 0.15 m (h) is head of water above sill of gate in m = FRL - Sill level		
2.	Design, fabrication, supply, erection, testing and commissioning of radial gate consisting of skin plate, stiffeners, horizontal girders, sector arms, trunnion assemblies, tie beam, pulley supports, bracings, rubber seals, clamps etc., with all accessories for spillway including cost of all materials, machinery, labour, cutting, bending, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	139000.00
Note:	Weight of 1 spillway gate in tonnes = $0.0710 \times (L^2 \times H \times h)^{0.673}$ Where (L) is length in m = Clear distance between piers. (H) is height of radial gate in m = FRL - Sill level + 0.15 m (h) is head of water above sill of gate in m = FRL - Sill level		
3.	Design, fabrication, supply, erection, testing and commissioning of electrically operated rope drum hoist of adequate capacity consisting of base frames, rope drums, connecting shaft, gear system, brake system, electric motor, wire ropes, gate position indicator, manual operation arrangement etc., with all accessories for spillway radial gate including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, greasing, providing hand railing and approach staircase with gate to hoist platform, applying two coats		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>of zinc chromate red oxide primer and three coats of approved synthetic enamel paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Hoist capacity in t including 25 % reserve capacity = 1.5 x Weight of gate (Hoist capacity shall be rounded off to next 10 tonne) Weight of hoist with all accessories : 175 kg per tonne capacity of hoist.</p>	tonne capacity	34300.00
4.	<p>Design, fabrication, supply, erection and commissioning of 1 metre wide catwalk connecting spillway piers / abutments at trunnion platform level including cost of all materials, machinery, labour, cutting, aligning, welding, anchoring, finishing, cleaning, applying one coat of zinc rich epoxy primer and two coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Weight of catwalk : 300 kg per metre length of catwalk.</p>	Rm	22200.00
5.	<p>Design, fabrication, supply, erection and commissioning of embedded parts consisting of sill beam, slide tracks, seal seats, guide rails etc., with all accessories for spillway stop log gate elements including cost of all materials, machinery, labour, cutting, welding, aligning, anchoring, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of 1 set embedded parts in tonnes = $0.0025 \times (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers + 0.65 m. (H) is total height of stoplog gate in m = FRL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FRL - Sill level</p>	tonne	174500.00
6.	<p>Design, fabrication, supply, erection, testing and commissioning of vertical lift sliding type all interchangeable (except bottom element) stoplog gate elements consisting of skin plate, horizontal and vertical girders, stiffeners, lifting pins, bronze padded slide blocks, guide shoes, rubber seals, clamps, dogging sets etc., with all accessories for spillway including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Total wt of 1 set stoplog elements in t = $0.0553 \times (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers + 0.65 m. (H) is total height of stoplog gate in m = FRL - Sill level + 0.20 m</p>	tonne	100800.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>(h) is head of water above sill of gate in m = FRL - Sill level</p> <p>7. Design, fabrication, supply, erection, testing and commissioning of automatic lifting beam with all accessories for handling, lowering and lifting of spillway stop log gate elements including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and two coats of cold applied coal tar epoxy paint etc., complete as per specifications and drawings with all leads and lifts.</p> <p>Note: Weight of lifting beam in tonnes = $0.02212 \times (L^2 \times H \times h)^{0.716} / n$ Where (L) is length = Clear distance between piers + 0.65 m. (H) is total height of stoplog gate in m = FRL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FRL - Sill level (n) is number of gate elements in 1 set</p> <p>8. Design, fabrication, supply, erection, testing and commissioning of adequate capacity Class - II type moving gantry crane consisting of rail mounted gantry frame, top platform with hand railing, long / cross travel arrangements, rope drums, gear systems, electric motors, electromagnetic brake system, cabin, control panel, wire rope, ladder, motorised cable reeling drum etc., with all accessories for operating spillway stop log gate elements and river sluice / canal sluice emergency gates including cost of all materials, machinery, labour, cutting, bending, aligning, anchoring, welding, finishing, cleaning, applying two coats of zinc chromate red oxide primer and three coats of approved synthetic enamel paint etc., complete with all leads and lifts.</p> <p>Note: Capacity of gantry crane in tonnes including 25 % reserve capacity = $2.5 \times (\text{Weight of 1 set of stoplog gate} / \text{Number of elements})$. (Hoist capacity shall be rounded off to next 5 tonne) Weight of moving gantry crane : 1.25 tonne per tonne capacity of gantry.</p> <p>9. Design, fabrication, supply, erection and commissioning of rail track using 45 kg / m standard rails on spillway bridge for movement of gantry crane for handling and operating spillway stoplog gate elements / river sluice / canal sluice emergency gate including cost of all materials, machinery, labour, aligning, anchoring, welding, cleaning etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Weight of gantry track including fixtures : 100 to 105 kg / Rm of track. (Weight per metre includes rails with fixtures on both sides)</p>	<p>tonne</p> <p>tonne capacity</p> <p>Rm</p>	<p>112700.00</p> <p>184400.00</p> <p>7000.00</p>

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
10.	Design, fabrication, supply, erection and commissioning of embedded parts (without groove liner) consisting of sill beam, wheel tracks, seal seats, guide rails, breast wall liner (upto one vent height plus 1 m above the roof of vent) etc., with all accessories for river / canal sluice service gate including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	132900.00
Note:	Wt of 1 set embedded parts in tonnes = $0.0444 \times (L^2 \times H \times h)^{0.659}$ Weight of breast wall lining : 250 kg / sqm of breast wall Where (L) is length = Clear vent opening in m + 0.70 m. (H) is height of gate in m = Clear vent height in m + 0.30 m (h) is head of water above sill of gate in m = FRL - Sill level		
11.	Design, fabrication, supply, erection and commissioning of embedded parts (with groove liner upto breast wall level) consisting of sill beam, wheel tracks, seal seats, guide rails, breast wall liner (upto one vent height plus 1 m above the roof of vent) etc., with all accessories for river / canal sluice service gate including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	110500.00
Note:	Wt of 1 set embedded parts in tonnes = $0.0444 \times (L^2 \times H \times h)^{0.659}$ Weight of breast wall lining : 250 kg / sqm of breast wall Weight of groove liner : 200 kg / sqm of groove lining Where (L) is length = Clear vent opening in m + 0.70 m. (H) is height of gate in m = Clear vent height in m + 0.30 m (h) is head of water above sill of gate in m = FRL - Sill level		
12.	Design, fabrication, supply, erection and commissioning of vent liner using 20 mm thick plates with stiffeners and anchors for river sluice / canal sluice vents including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete with all leads and lifts.	sqm	17800.00
Note:	Weight of vent liner including stiffeners / anchors : 200 kg / sqm area.		
13.	Design, fabrication, supply, erection, testing and commissioning of fixed		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>wheel type vertical lift service gate consisting of skin plate, vertical and horizontal girders, wheels, stiffeners, lifting brackets, guide rollers, ballast blocks, teflon claded rubber seals etc., with all accessories for river sluice /canal sluice vent including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of 1 gate in tonnes (including ballast) = $0.0888 (L^2 \times H \times h)^{0.659}$ Where (L) is length = Clear vent opening in m + 0.70 m. (H) is height of gate in m = Clear vent height in m + 0.30 m (h) is head of water above sill of gate in m = FRL - Sill level</p>	tonne	96100.00
14.	<p>Design, fabrication, supply, erection, testing and commissioning of adequate capacity rope drum hoist consisting of hoist platform, rope drum, gear system, electric motor, electro-magnetic brake system, hand operation assembly, control panel, wire rope, pulleys, ladder etc., with all accessories for operating river sluice / canal sluice service gate including cost of all materials, machinery, labour, cutting, bending, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc chromate primer and three coats of approved synthetic enamel paint etc., complete with all leads and lifts.</p> <p>Note: Capacity of hoist in tonnes including 25 % reserve capacity = 2.5 x Weight of gate including ballast. (Hoist capacity shall be rounded off to next 5 tonne) Weight of hoist with all accessories : 250 kg per tonne capacity of hoist</p>	tonne capacity	42600.00
15.	<p>Design, fabrication, supply, erection and commissioning of embedded parts (without groove liners) consisting of sill beam, wheel tracks, seal seats, guide rails, breast wall liner upto 1m height above the roof of vent etc., with all accessories for river / canal sluice emergency gate including cost of all materials, machinery, labour, cutting, aligning, welding, anchoring, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of 1 set embedded parts in tonnes = $0.0444 \times (L^2 \times H \times h)^{0.659}$ Weight of breast wall lining : 250 kg per sqm of breast wall Where (L) is length = Clear vent opening in m + 0.70 m. (H) is height of gate in m = Clear vent height in m + 0.30 m</p>	tonne	142200.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>(h) is head of water above sill of gate in m = FRL - Sill level</p> <p>16. Design, fabrication, supply, erection and commissioning of embedded parts (with groove liner) consisting of sill beam, wheel tracks, seal seats, guide rails, breast wall liner (upto 1 m above the roof of vent), groove liner upto breast wall level etc., with all accessories for river / canal sluice emergency gate including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of 1 set embedded parts in tonnes = $0.0600 \times (L^2 \times H \times h)^{0.659}$ Weight of breast wall lining : 250 kg / sqm of breast wall Weight of groove liner : 200 kg / sqm of groove lining Where (L) is length = Clear vent opening in m + 0.70 m. (H) is height of gate in m = Clear vent height in m + 0.30 m (h) is head of water above sill of gate in m = FRL - Sill level</p> <p>17. Design, fabrication, supply, erection, testing and commissioning of fixed wheel type vertical lift emergency gate consisting of skin plate, horizontal and vertical girders, wheels, stiffeners, lifting brackets, guide rollers, ballast blocks, teflon claded rubber seals etc.,with all accessories for river sluice / canal sluice vent including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of 1 gate in tonnes (including ballast) = $0.0888 (L^2 \times H \times h)^{0.659}$ Where (L) is length = Clear vent opening in m + 0.70 m. (H) is height of gate in m = Clear vent height in m + 0.30 m (h) is head of water above sill of gate in m = FRL - Sill level</p> <p>18. Design, fabrication, supply, erection, testing and commissioning of automatic lifting beam with all accessories for handling, lowering and lifting of river sluice / canal sluice emergency gate including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and two coats of cold applied coal tar epoxy paint etc., complete as per specifications and drawings with all leads and lifts.</p>	<p>tonne</p> <p>tonne</p> <p>tonne</p>	<p>113100.00</p> <p>95900.00</p> <p>145000.00</p>

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>Note: Weight of lifting beam in tonnes = $0.0090 \times (L^2 \times H \times h)^{0.659}$ Where (L) is length = Clear vent opening in m + 0.70 m. (H) is height of gate in m = Clear vent height in m + 0.30 m (h) is head of water above sill of gate in m = FRL - Sill level</p> <p>GATES AND HOISTS FOR BARRAGE :</p> <p>19. Design, fabrication, supply, erection and commissioning of embedded parts consisting of sill beam, wheel tracks, seal seats, guide rails etc., with all accessories for vertical lift barrage gate including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of 1 set of embedded parts in tonnes = $0.0055 (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 1 m. (H) is total height of gate in m = FRL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FRL - Sill level</p> <p>20. Design, fabrication, supply, erection, testing and commissioning of fixed wheel type vertical lift gate consisting of skin plate, vertical and horizontal girders, wheels, stiffeners, lifting brackets, guide shoes, rubber seals etc., with all accessories for barrage including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Weight of 1 gate in tonnes = $0.0335 (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 1 m. (H) is total height of gate in m = FRL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FRL - Sill level</p> <p>21. Design, fabrication, supply, erection and commissioning of structural steel hoist bridge consisting of columns, beams, bracings, stiffeners, ties, chequered plate covering, hand railing, ladder etc., with all other accessories for supporting rope drum hoist for operating barrage gates including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying two coats of zinc chromate red oxide primer and three coats of synthetic enamel paint etc., complete with all leads and lifts.</p>	<p>tonne</p> <p>tonne</p> <p>tonne</p>	<p>175200.00</p> <p>106100.00</p> <p>91100.00</p>

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
<p>Note: Columns with bracings/anchors/stiffeners: 400 kg per metre height. Beams with cross beams / stiffeners : 400 kg per metre span Railing / Chequered plate / Ladder etc : 10 % of wt columns / beams Weight proposed includes all columns / beams for 1 hoist.</p> <p>22. Design, fabrication, supply, erection, testing and commissioning of adequate capacity rope drum hoist consisting of hoist platform, rope drum, pulleys, gear system, electric motor, electro-magnetic brake system, manual operation assembly, position indicator, control panel, wire rope etc., with all accessories for operating vertical lift roller gates for barrage including cost of all materials, machinery, labour, cutting, bending, aligning, anchoring, welding, finishing, cleaning, applying two coats of zinc chromate red oxide primer and three coats of approved synthetic enamel paint etc., complete with all leads and lifts.</p> <p>Note: Capacity of hoist in t including 25 % reserve capacity =1.5 x Wt of gate. (Hoist capacity shall be rounded off to next 10 tonne) Weight of hoist with all accessories : 100 kg per tonne capacity of hoist</p>	<p>AUTOMATIC OUTFLOW REGULATING GATE FOR BARRAGE / ESCAPE:</p> <p>23. Design, fabrication, supply, erection and commissioning of embedded parts consisting of sill beam, wall plates, first stage anchors, anchor girders, anchor bars, trunnion supports etc., with all accessories for outflow regulating automatic gates for barrage / escape including cost of all all materials, labour, machinery, cutting, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer four coats of cold applied coal tar epoxy paint coats of cold applied and coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Weight of 1 set embedded parts in tonnes = $0.046 \times (L^2 \times H \times h)^{0.673}$ Where (L) is length = Clear distance between piers in m. (H) is height of gate in m = FSL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FSL - Sill level</p>	<p>tonne capacity</p> <p>tonne</p>	<p>33600.00</p> <p>137400.00</p>
<p>24. Design, fabrication, supply, erection, testing and commissioning of automatic outflow regulating gate and fulcrum assembly consisting of skin plate, stiffeners, horizontal girders, trunnion assemblies, gate bracket, base plate, rolling surface assembly, link brackets, link assembly, rubber seals, seal clamps etc., with all accessories for barrage / escape including cost of all materials, machinery, labour,</p>			

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>cutting, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of gate & fulcrum assembly in tonnes = $0.1325 \times (L^2 \times H \times h)^{0.673}$ Where (L) is length = Clear distance between piers in m. (H) is height of gate in m = FSL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FSL - Sill level</p>	tonne	112000.00
25.	<p>Design, fabrication, supply, erection, testing and commissioning of hoisting cum damping system consisting of low level horizontal lever link, low level long actuating lever, high level vertical lever link, high level short actuating lever, high level hoisting bracket, axle for lever system, friction shoes, support box for shoes, track assembly, ratchet pawl, support structure, bracket plate etc., with all accessories for outflow regulating automatic gate including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Weight of hoisting cum damping system in tonnes $= 0.0695 \times (L^2 \times H \times h)^{0.673}$ Where (L) is length = Clear distance between piers in m. (H) is height of gate in m = FSL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FSL - Sill level</p>	tonne	149600.00
GATES AND HOISTS FOR CANAL REGULATORS :			
26.	<p>Design, fabrication, supply, erection and commissioning of embedded parts consisting of sill beam, wall plates, first stage anchors, anchor girders, anchor bars, trunnion supports etc., with all accessories for canal regulator radial gates including cost of all materials, labour, machinery, cutting, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Weight of 1 set embedded parts in tonnes = $0.092 \times (L^2 \times H \times h)^{0.673}$ Where (L) is length = Clear distance between piers in m. (H) is height of gate in m = FSL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FSL - Sill level</p>	tonne	111100.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
<p>27.</p> <p>Note:</p> <p>28.</p> <p>Note:</p> <p>29.</p> <p>Note:</p>	<p>Design, fabrication, supply, erection, testing and commissioning of radial gate consisting of skin plate, stiffeners, horizontal girders, sector arms, trunnion assemblies, tie beam, pulley supports, bracings, rubber seals, seal clamps etc., with all accessories for canal regulator including cost of all materials, machinery, labour, cutting, bending, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Weight of 1 radial gate in tonnes = $0.1685 \times (L^2 \times H \times h)^{0.673}$ Where (L) is length = Clear distance between piers in m. (H) is height of gate in m = FSL - Sill level + 0.20 m (h) is head of water above sill of gate in m = FSL - Sill level</p> <p>Design, fabrication, supply, erection, testing and commissioning of adequate capacity electrically operated rope drum hoist consisting of hoist platform, rope drum, gear system, electric motor, electro- magnetic brake system, control panel, wire rope, ladder etc., with all accessories for operating canal regulator radial gate including cost of all materials, machinery, labour, cutting, bending, aligning, anchoring, welding, finishing, cleaning, applying two coats of zinc chromate red oxide primer and three coats of approved synthetic enamel paint etc., complete with all leads and lifts.</p> <p>Capacity of hoist in t including 25 % reserve capacity = $2.00 \times Wt$ of gate. (Hoist capacity shall be rounded off to next 5 tonne) Weight of hoist with all accessories: 300 kg per tonne capacity of hoist</p> <p>Design, fabrication, supply, erection, testing and commissioning of adequate capacity manually operated rope drum hoist consisting of hoist platform, rope drum, gear system, brake system, wire rope, ladder etc., with all accessories for operating canal regulator radial gate including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying two coats of zinc chromate red oxide primer and three coats of approved synthetic enamel paint etc., complete with all leads and lifts.</p> <p>Capacity of hoist in t including 25 % reserve capacity = $2.00 \times Wt$ of gate. (Hoist capacity shall be rounded off to next 5 tonne) Weight of hoist with all accessories: 275 kg per tonne capacity of hoist</p>	<p>tonne</p> <p>tonne capacity</p> <p>tonne capacity</p>	<p>112700.00</p> <p>49200.00</p> <p>44800.00</p>

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
<p>30.</p> <p>Note:</p>	<p>Design, fabrication, supply, erection and commissioning of embedded parts (with top seal seat) consisting of sill beam, wheel tracks, seal tracks, guide rails, groove lining upto top etc., with all accessories for vertical lift roller gate for canal escape / regulator including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complets as per specifications and approved drawings with all leads and lifts.</p> <p>Wt of 1 set of embedded parts in tonnes = $0.1332 \times (L^2 \times H \times h)^{0.659}$ Where (L) is length = Clear vent width in m + 0.50 m. (H) is height of gate in m = Clear vent height in m + 0.20 m (h) is head of water above sill of gate in m = FSL - Sill level</p>	<p>tonne</p>	<p>119200.00</p>
<p>31.</p> <p>Note:</p>	<p>Design, fabrication, supply, erection, testing and commissioning of fixed wheel type vertical lift gate (with top seal) consisting of skin plate, horizontal and vertical girders, wheels, guide rollers, rubber seals etc., seals etc., with all accessories for canal escape / regulator vent including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Weight of 1 gate in tonnes = $0.0888 (L^2 \times H \times h)^{0.659}$ Where (L) is length = Clear vent width in m + 0.50 m. (H) is height of gate in m = Clear vent height in m + 0.20 m (h) is head of water above sill of gate in m = FSL - Sill level</p>	<p>tonne</p>	<p>117500.00</p>
<p>32.</p> <p>Note:</p>	<p>Design, fabrication, supply, erection, testing and commissioning of adequate capacity screw type hoist consisting of supporting structure, platform, ladder etc., with all accessories for operating canal escape / regulator gate including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying two coats of zinc chromate red oxide primer and three coats of approved synthetic enamel paint etc., complete with all leads and lifts.</p> <p>Capacity of hoist in t including 25 % reserve capacity = $2.50 \times \text{Wt of gate.}$ (Hoist capacity shall be rounded off to next 1 tonne) Weight of hoist with all accessories: 300 kg per tonne capacity of hoist</p>	<p>tonne capacity</p>	<p>31200.00</p>
<p>33.</p>	<p>Design, fabrication, supply, erection and commissioning of embedded parts consisting of sill beam, wheel tracks, seal tracks, guide rails, gate</p>		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	groove liners etc., with all accessories for canal escape / regulator stoplog gate including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	116200.00
Note: Wt of 1 set of embedded parts in tonnes = $0.0665 \times (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 0.50 m. (H) is total height of stoplog gate in m = FSL - Sill level + 0.30 m (h) is head of water above sill of gate in m = FSL - Sill level			
34.	Design, fabrication, supply, erection, testing and commissioning of sliding type interchangeable stoplog gate elements consisting of skin plate, horizontal and vertical girders, slide blocks, stiffeners, guide shoes, rubber seals etc., with all accessories for canal regulator vent including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coats of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	108100.00
Note: Wt of 1 set of stoplog elements in tonnes = $0.0995 (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 0.50 m. (H) is total height of stoplog gate in m = FSL - Sill level + 0.30 m (h) is head of water above sill of gate in m = FSL - Sill level			
TRASH RACKS FOR PUMP HOUSE INTAKE:			
35.	Design, fabrication, supply, erection and commissioning of embedded parts consisting of liners for trash rack grooves (coarse and fine screens) with all accessories for pump house intake structure including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	113200.00
Note: Wt of 1 set of embedded parts in tonnes = 100 to 125 kg / m height			
36.	Design, fabrication, supply, erection and commissioning of trash racks consisting of a number of structural steel panels of suitable height with vertical trash bars at wider interval and weld mesh frame for pump house intake structure including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	<p>coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of trash rack panels for 1 vent in tonnes = $0.0375 \times (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 0.20 m. (H) is total height of trash rack panels in m (h) is head of water above sill of trash rack in m = FSL - Sill level</p>	tonne	92200.00

WATER RESOURCES DEPARTMENT

PRILIMINARY AND MAINTENANCE WORKS SCHEDULE OF RATES FOR THE YEAR : 2011-12

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**NOTES ON SCHEDULE OF RATES
PRELIMINARY AND MAINTENANCE WORKS**

1. All notes under General Notes on Schedule of Rates and Notes on Lead, Lift, Loading and un-loading charges are applicable to Preliminary and Maintenance Works also to the extent they are relevant.
2. The area where jungle growth is thin or the area where the jungle growth is thick with noticeable vacant spots but not large enough to exclude them from measurements shall be classified as thin jungle.
3. The area where the jungle growth is thick without noticeable vacant spots shall be classified as thick jungle.
4. Areas of large vacant spots and areas occupied by structures shall be excluded from measurement for jungle clearance works.
5. In case of jauliflora clearance girth means spread of the bush.
6. Unless otherwise specified the basic rates are inclusive of all lifts.
7. Unless otherwise specified the basic rates are inclusive of standard finishing required for concrete surface.
8. For embankment in breached section 1 km initial lead is considered in the basic rates. As no storing / stacking and re-handling of materials is involved for these works lead charges for additional lead shall be worked out for total lead including initial lead of 1 km and then the cost of first km lead shall be deducted. No loading and un-loading charges shall be added as the additional lead does not involve re-handling of materials.
Example :

Total lead for soil from approved borrow area	: 2 km
Initial lead included in the basic rate in the SR	: 1 km
Additional lead charges : Lead charges for 2 km	: 46.90
Less Lead charges for 1 km	: <u>-38.00</u>
Additional lead charges / cum	: 8.90
Quantity of soil required as per statement of requirement of material	1.20 cum
Additional lead charges to be added to basic rate	: 10.70

 No loading and un-loading charges shall be added.
9. The quantities of materials including wastage, requirements for any incidentals etc., for working out additional lead charges shall be as per the statement of requirement of materials under this section.

**QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES
PRELIMINARY & MAINTENANCE WORKS**

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Murum cum	Cement kg	Sand / FA cum	Stone cum
12	200x200x750 mm boundary stone fixing	Each	0.06	---	---	0.030
			Stone cum	Cement kg	Sand / FA cum	CA cum
13	Temperary BM in CC 1:4:8	Each	0.030	9.10	0.025	0.050
14	Permanent BM in CC 1:3:6 with UCR wall	Each	0.320	262.00	0.600	1.000
16	Reconstruction of revetment	sqm	---	---	0.153	---
17	Reconstruction of rock-toe	cum	---	---	0.098	---
18	Resetting Shahbad slabs in CM 1:3	sqm	---	1.00	0.002	---
			Soil cum	Cement kg	Sand / FA cum	CA cum
22	Impervious hearting with borrow area soil	cum	1.20	---	---	---
23	Semipervious casing with borrow area soil	cum	1.20	---	---	---
24	Impervious hearting using dump area soil	cum	1.20	---	---	---
25	Semipervious casing using dumparea soil	cum	1.20	---	---	---
30	Cleaning gates by sand blasting	sqm	---	---	0.300	---
39	40 mm th shotcreting in CC 1:2:2 propn	sqm	---	25.50	0.031	0.032

Notes:

- The quantities of materials specified in the above table are for loose volume.
- The quantity of cement for cement concrete items includes requirement of cement for any incidental works such as mortar layer at lift joints, repair of honeycombs etc.
- The quantities of materials are inclusive of wastage as under:

Cement	1.00 percent.
Sand / Fine aggregate	2.00 percent.
Coarse aggregate	2.00 percent.
Stones / Stone chips	2.00 percent.

**AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES
PRELIMINARY & MAINTENANCE WORKS**

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
12	200x200x750 mm boundary stone fixing	Each	0.75	---	---	1.45
13	Temporary BM in CC 1:4:8	Each	---	1.20	2.40	1.45
14	Permanent BM in CC 1:3:6 with UCR wall	Each	---	28.80	48.00	15.35
16	Reconstruction of revetment	sqm	---	7.35	---	---
17	Reconstruction of rock-toe	cum	---	4.70	---	---
18	Resetting Shahbad slabs in CM 1:3	sqm	---	0.10	---	---
22	Impervious hearting with borrow area soil	cum	16.00	---	---	---
23	Semipervious casing with borrow area soil	cum	16.00	---	---	---
24	Impervious hearting using dump area soil	cum	16.00	---	---	---
25	Semipervious casing with dump area soil	cum	16.00	---	---	---
30	Cleaning gates by sand blasting	sqm	---	14.40	---	---
39	40 mm th shotcreting in CC 1:2:2 propn	sqm	---	1.50	1.55	---

Notes:

- In the Govt notification on royalty charges the rates for Earth / Sand / Building stone are on weight basis. For converting the rate per tonne to rate per cum for working-out the royalty charges for various work items following density values are assumed.
 Sand / Fine aggregate (loose volume) : 1.60 tonne per cum
 Stones/stone chips/Coarse aggregates (loose volume) : 1.60 tonne per cum
 Soil (compacted to 95 percent density control) : 1.60 tonne per cum

**PRELIMINARY AND MAINTENANCE WORKS
SCHEDULE OF RATES
FOR THE YEAR :2011-12**

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	JUNGLE CLEARANCE :		
1.a.	Clearing thin jungle growth (more than 50 percent open space) including bushes upto 300 mm / parthenium and other weeds including burning or disposing off the same as directed etc., complete.	sqm	0.65
1.b.	Clearing thick jungle growth (less than 50 percent open space) including bushes upto 300 mm / parthenium and other weeds including burning or disposing off the same as directed etc., complete.	sqm	1.05
2.a.	Removing stumps, tree roots, roots of bamboo clusters etc., upto 1.5 m girth including excavation, stacking materials neatly and levelling the surface etc., complete with initial lead upto 50 m and all lifts.	Each	24.00
2.b.	Removing stumps, tree roots, roots of bamboo cluster etc., with girth above 1.50 m and upto 3.00 m including excavation, stacking the materials neatly and levelling the area etc., complete with initial lead upto 50 m and all lifts.	Each	53.00
2.c.	Removing stumps, tree roots, roots of bamboo clusters etc., with girth above 3.00 m and upto 5.00 m including excavation, stacking the materials neatly and levelling the area etc., complete with initial lead upto 50 m and all lifts.	Each	170.00
Note:	For every 0.5 m increase in girth beyond 5 m add	Each	27.00
3.	Cutting and stacking bamboos excluding removing stumps and roots etc., complete with initial lead upto 50 m and all lifts.	Each	7.00
4.a.	Cutting and removing jauliflora bushes upto 1.50 m girth excluding removal of stumps and including burning or disposing off the materials with initial lead upto 50 m and all lifts.	Each	6.50
4.b.	Cutting and removing jauliflora bushes above 1.50 m upto 3.00 m girth excluding removal of stumps and including burning or disposing off the materials with initial lead upto 50 m and all lifts.	Each	13.50
5.a.	Cutting trees above 0.30 m and upto 0.60 m girth excluding removal of stumps and including stacking the materials neatly as directed with		

PRELIMINARY AND MAINTENANCE WORKS

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	initial lead upto 50 m and all lifts.	Each	45.00
5.b.	Cutting trees above 0.60 m and upto 1.20 m girth excluding removal of stumps and including stacking the materials neatly as directed with initial lead upto 50 m and all lifts.	Each	156.00
5.c.	Cutting trees above 1.20 m and upto 1.80 m girth excluding removal of stumps and including stacking the materials neatly as directed with initial lead upto 50 m and all lifts.	Each	312.00
5.d.	Cutting trees above 1.80 m and upto 2.40 m girth excluding removal of stumps and including stacking the materials neatly as directed with initial lead upto 50 m and all lifts.	Each	625.00
5.e.	Cutting trees above 2.40 m and upto 3.00 m girth excluding removal of stumps and including stacking the materials neatly as directed with initial lead upto 50 m and all lifts.	Each	1011.00
Note:	For every 0.5 m increase in girth of tree beyond 3 m add	Each	355.00
6.	Cutting and burning or disposing off Apu / Jundu from marshy areas as directed with initial lead upto 50 m and all lifts.	sqm	2.45
	PRELIMINARY WORKS :		
7.	Earthwork excavation for trial pits/ borrow pits and other investigation works in all kinds of soil including boulders upto 30 cm diameter and disposing off excavated soil as directed with lead upto 10 m and lift upto 1.50 m.	cum	104.00
Note:	For excavation beyond 1.50 m depth for every 1.5 m depth add	cum	5.50
8.	Earthwork excavation for trial pits/ borrow pits and other investigation works in soft rock including disposing off the excavated stuff as directed with lead upto 10 m and lift upto 1.50 m.	cum	154.00
Note:	For excavation beyond 1.50 m depth add for every 1.50 m depth	cum	6.00
9.	Conducting geophysical investigation studies by electrical resistivity method in stages of 5 m or as directed for sub-surface details such as depth of formations, shear zones, classification of strata, depth of water table etc., including cost of all materials, equipments, labour, analysing and reporting details of studies conducted etc., complete excluding cost of transportation arrangements.	stage	133.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
10.	Drilling 80 mm dia hole through over-burden using casing shoe bit vertical or inclined upto 10 degrees to vertical as directed including cost of all materials, machinery, labour, water charges, reaming, collection of wash samples at suitable intervals, logging and labelling, supplying honne wood core box, fixing casing pipes etc., complete for depth upto 30 m from surface. (excluding cost of casing pipes)	Rm	849.00
Note:	i) For drilling through over-burden beyond 30 m from surface increase the rate per Rm by 10 percent. ii) For providing HDPE or light black MS casing pipe add the cost of pipe per Rm.		
11.a	Drilling 76 mm dia (NX) core hole in hard rock using diamond core bit vertical / inclined upto 10 degree to vertical as directed including cost cost of all materials, machinery, labour, water charges, collection of core samples, logging and labelling samples, supplying honne wood core box including cement grouting and redrilling in case of collapse of sides etc., complete for depth upto 30 m from surface. (excluding cost of cement for grouting)	Rm	4561.00
Note:	i) For drilling in hard rock beyond 30 m upto 60 m from surface increase the rate per Rm by 25 percent. ii) For drilling in hard rock beyond 60 m upto 90 m from surface increase the rate per Rm by 40 percent.		
11.b	Drilling 47 mm (BX) dia core hole in hard rock using diamond core bit vertical / inclined upto 10 degree to vertical as directed including cost of all materials, machinery, labour, water charges, collection of core samples, logging, labelling samples, supplying honne wood core box including cement grouting and redrilling in case of collapse of sides etc., complete for depth upto 30 m from surface. (excluding cost of cement for grouting)	Rm	4344.00
Note:	i) For drilling in hard rock beyond 30 m upto 60 m from surface increase the rate per Rm by 25 percent. ii) For drilling in hard rock beyond 60 m upto 90 m from surface increase the rate per Rm by 40 percent.		
12.	Providing and fixing 200 x 200 x 750 mm roughly dressed boundary / demarcation / chainage / arrow stones including cost of all materials, labour, engraving marks, fixing in position, murum filling etc., complete with lead upto 50 m and all lifts.	Each	75.00

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
13.	Providing and fixing 200 x 200 x 750 cm size temporary bench mark stone in CC 1 : 4 : 8 using 40 mm down size graded coarse aggregate including cost of all materials, labour, dressing top surface, engraving BM data etc., complete with lead upto 50 m and all lifts.	Each	266.00
Note:	For providing 300 mm thick compacted murum bed in B.C soil area including additional excavation for thickness of murum bedding add.	Each	5.00
14.	Providing and fixing 200 x 200 x 750 mm size permanent bench mark stone in CC 1 :3 : 6 block of size 900 x 900 x 1200 mm using 40 mm down size graded coarse aggregate and providing 350 mm thick 300 mm high UCR masonry in CM 1 : 5 proportion protective wall around the BM stone, including cost of all materials, labour, dressing top surface of stone, engraving BM data on top surface, excavation, finishing, curing etc., complete with lead upto 50 m and all lifts.	Each	3908.00
MAINTENANCE WORKS :			
15.	Removing dry stone rock- toe / rivetment and filter layers below rock-toe / rivetment including stacking all materials separately as directed with initial lead upto 50 m and all lifts.	cum	94.00
16.	Re-constructing 600 mm thick hand packed rough stone revetment with through stones at 1.50 m c/c over a backing of 450 mm thick graded filter media consisting of sand, 10 mm and 40 mm size graded aggregates satisfying filter criteria laid in layers of 150 mm thick each using sand from approved quarry and stones and filter aggregates obtained from revetment removed for re-construction including cost of all machinery, labour, laying filter and stones to specified slopes, wedging with chips, finishing etc. complete with initial lead upto 50 m and all lifts.	sqm	109.00
17.	Re-constructing dry rubble rock-toe including filter media below / behind rock-toe consisting of sand 20 mm and 80 mm size graded aggregates satisfying filter criteria laid in layers of 150 mm thick each using sand from approved quarry and stones and filter aggregates obtained from rock-toe removed for re-construction including cost of all machinery, labour, laying filter and stones to specified slopes, wedging with chips, finishing etc., complete with initial lead upto 50 m and all lifts.	cum	129.00
18.	Removing and resetting disturbed Yarguntla / Shahabad / Talikot / PCC		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	or other types of slab lining set in CM 1 : 3 including flush cement mortar pointing in CM 1 : 3 with lead upto 50 m and all lifts.	sqm	31.00
19.	Removing and resetting disturbed dry rubble / size stone pitching 250 to 450 mm thick including packing, wedging, finishing etc., complete with all leads and lifts.	sqm	26.00
20.	Removing and refixing disturbed chainage/ demarcation/ hectometre / guard stones including excavation, back filling etc., complete with all leads and lifts.	Each	32.00
21.	Removing and refixing disturbed km stone / sign board / hecto-metre stone etc., including excavation, back filling with available stuff after refixing, forming base platform of size 900 x 900 x 75 mm including watering, ramming etc complete with all leads and lifts.	Each	72.00
22.	Providing impervious hearting for breached / damaged portion of embankment with soil from approved borrow areas in layers of 100 to 150 mm before compaction including cost of all materials, machinery, labour, all operations such as collection of soil, sorting out, spreading soil to specified thickness, breaking clods, sectioning, watering, compacting each layer to achieve density control of not less than 95 percent or as stipulated by rolling or by using pneumatic / vibrating plate compactors etc., complete with initial lead upto 1 km and all lifts.	cum	132.00
23.	Providing pervious / semi-pervious casing for breached / damaged portion of embankment with soil from approved borrow areas in layers of 100 to 150 mm before compaction including cost of all materials, machinery, labour, all operations such as collection of soil, sorting out, spreading soil to specified thickness, breaking clods, sectioning, watering, compacting each layer to density control of not less than 95 percent or as stipulated by rolling or by using pneumatic / vibrating plate compactors etc., complete with initial lead upto 1 km and all lifts.	cum	147.00
24.	Providing impervious hearting for breached / damaged portion of embankment with soil from approved dump areas in layers of 100 to 150 mm before compaction including cost of all materials, machinery, labour, all operations such as collection of soil, sorting out, spreading soil to specified thickness, breaking clods, sectioning, watering, compacting each layer to density control of not less than 95 percent or as stipulated by rolling or by using pneumatic / vibrating plate compactors		

PRELIMINARY AND MAINTENANCE WORKS

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	etc., complete with initial lead upto 1 km and all lifts.	cum	131.00
25.	Providing pervious / semi-pervious casing for breached / damaged portion of embankment with soil from approved dump areas in layers of 100 to 150 mm before compaction including cost of all materials,labour, machinery, all operations such as collection of soil,sorting out, spreading soil to specified thickness, breaking clods, sectioning, watering, compacting each layer to density control of not less than 95 percent or as stipulated by rolling or by using pneumatic / vibrating plate compactors etc., complete with initial lead upto 1 km and all lifts.	cum	138.00
26.	Repairing rain cuts / resectioning canal slopes to required lines and grades as directed using available canal side soil including dressing, breaking clods, packing, tamping etc., complete with all leads and lifts.	sqm	1.70
27.	Cleaning drainage gallery, adits, instrumentation galleries etc., by scrubbing / brushing including chiselling and removing leached lime deposit and disposing off all the waste material out side adits in specified location etc., complete with all leads and lifts.	Rm	21.00
28.	Cleaning dam parapet inner face and top using oxalic acid and water by scrubbing / brushing and washing to remove all surface coatings etc., complete .	Rm	20.00
29.	Cleaning gates / hoists / embedded parts for re-painting by removing rust, old paint, grease etc., by using wire brush , scrubber, rust remover and applying a coat of rust inhibitive compound etc., complete.	sqm	34.00
30.	Cleaning gates / hoists / embedded parts to expose fresh metal surface for repainting by sand blasting method as per specifications including cost of all materials, labour, machinery, scaffolding, applying a coat of rust inhibitive etc., complete with initial lead for sand upto 1 km and all lifts.	sqm	197.00
31.	Providing two coats of painting to hoist supporting structures / hoists / moving gantry cranes / railings etc., with zinc chromate / alluminium primer paint of approved quality including removing rust, cleaning surface, cost of all materials, labour, scaffolding etc., complete with all leads and all lifts.	sqm	61.00
32.	Providing two coats of painting 100 micron dry film thickness each coat		

PRELIMINARY AND MAINTENANCE WORKS

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	to embedded parts / gates with cold applied coal tar epoxy paint of approved quality including removing rust, cleaning surface, cost of all materials, labour, scaffolding etc., complete with all leads and all lifts.	sqm	134.00
33.	Providing two coats of painting to hoist supporting structures / hoists / moving gantry cranes / railings etc., with first quality synthetic enamel paint of approved colour including cleaning surface, cost of all materials, labour, scaffolding etc., complete with all leads and all lifts.	sqm	69.00
34.	Excavation and removal of silt and silt mixed with sand from canal bed in dry condition including disposing off the same in spoil bank or on the canal embankment in layers as directed etc., complete with initial lead upto 50 m and all lifts.	cum	75.00
35.	Excavation and removal of silt or silt mixed with sand in slussy condition from canal bed including disposing off the same in spoil bank or on the canal embankment in layers as directed etc., complete with initial lead upto 50 m and all lifts.	cum	94.00
36.a	Removing and hauling all kinds of soil / soft rock including boulders upto 0.6 m diameter slipped due to natural causes and disposing off the same in specified dump area or as directed including cost of all materials, machinery, labour, rampways and all other ancillary operations etc., complete with initial lead upto 50 m and lift upto 1.5 m.	cum	65.00
Note:	<p>1. The rate under this item is for unit quantity of soil / soft rock in slipped condition.</p> <p>2. The rate under this item shall be adopted where the material can be disposed off within 50 m lead or where the slipped zone is inaccessible for disposal of material by mechanical mode.</p> <p>3. The wieghted average rate applicable to entire quantity based on rates provided under items (36.a) and (37.a) may be considered where the slipped material consists of mixture of soil / soft rock and hard rock.</p>		
36.b.	Removing and hauling all kinds of soil / soft rock including boulders upto 0.6 m diameter slipped due to natural causes and disposing off the same in specified dump area or as directed including cost of all materials, machinery, labour, rampways and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	cum	61.00
Note:	<p>1. The rate under this item is for unit quantity of soil / soft rock in slipped condition.</p> <p>2. The wieghted average rate applicable to entire quantity based on rates</p>		

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
<p>37.a</p> <p>Note:</p>	<p>provided under items (36.b) and (37.b) may be considered where the slipped material consists of mixture of soil / soft rock and hard rock.</p> <p>Removing and hauling hard rock of all toughness including boulders above 0.6 m diameter slipped due to natural geological causes including breaking large fragments by blasting if necessary and disposing off the same in specified dump area or as directed including cost of all materials, machinery, labour, rampways and all other ancillary operations etc., completewith initial lead upto 50 m and lift upto 1.5 m.</p> <p>1. The rate under this item is for unit quantity of hard rock in slipped condition.</p> <p>2. The rate under this item shall be adopted where the material can be disposed off within 50 m lead or where the slipped zone is inaccessible for disposal of material by mechanical mode.</p> <p>3. The wieghted average rate applicable to entire quantity based on rates provided under items (36.a) and (37.a) may be considered where the slipped material consists of mixture of soil / soft rock and hard rock.</p>	cum	150.00
<p>37.b</p> <p>Note:</p>	<p>Removing and hauling hard rock of all toughness including boulders above 0.6 m diameter slipped due to natural geological causes including breaking large fragments by blasting if necessary and disposing off the same in specified dump area or as directed including cost of all materials, machinery, labour, rampways and all other ancillary operations etc., completewith initial lead upto 1 km and all lifts.</p> <p>1. The rate under this item is for unit quantity of hard rock in slipped condition.</p> <p>2. The wieghted average rate applicable to entire quantity based on rates provided under items (36.b) and (37.b) may be considered where the slipped material consists of mixture of soil / soft rock and hard rock.</p>	cum	157.00
<p>38.</p> <p>39.</p>	<p>Cleaning concrete / masonry / rock surface for guniting / shotcreting by sand blasting method as per specifications including cleaning by air and water jets after sand blasting cost of all materials, labour, machinery, scaffolding etc., complete with initial lead for sand upto 1 km and all lifts.</p> <p>Providing 40 mm thick shotcreting in layers to concrete / masonry surface in cement concrete 1 : 2 : 2 proportion by weight using 6 mm down size hard graded crushed aggregate including cost of all materials, machinery, labour, cleaning joints / surface, scaffolding wherever required</p>	sqm	177.00

PRELIMINARY AND MAINTENANCE WORKS

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
	and all other ancillary operations etc., complete with initial lead upto 1 km and all lifts.	sqm	919.00
40.	Drilling 25 mm / 32 mm dia. holes vertical or inclined in concrete/ masonry / rock by percussion drilling using jack hammer as directed to specified depth including cost of all materials, machinery, labour, cleaning holes etc., complete.	Rm	162.00
41.	Providing one coat of painting 40 micron dry film thickness to gates / embedded parts / hoist components with zinc rich epoxy primer (zinc content 85 %) paint of approved quality including removing rust, cleaning surface, cost of all materials, labour, scaffolding etc., complete with all leads and all lifts.	sqm	118.00
42.	Providing two coat of painting 40 micron dry film thickness each coat to gate components such as horizontal girders / sector arms / bracings / trunnion assembly / yoke girders / stiffeners / foot bridge etc., with anti-corrosive bituminous black paint of approved quality including removing rust, cleaning surface, cost of all materials, labour, scaffolding etc., complete with all leads and all lifts.	sqm	52.00
43.	Supplying and fixing bulb type uncladded rubber seals and hot dipped G.I bolts / nuts / washers of approved quality including removing existing worn out / damaged bulb type rubber seals from gates, cleaning surface, making holes in new seals, fixing seals / bolts tightly in position, cost of all materials, labour, scaffolding etc., complete with all leads and all lifts.	Rm	792.00
44.	Supplying and fixing bulb type teflon cladded rubber seals and hot dipped G.I bolts / nuts / washers of approved quality including removing existing worn out / damaged bulb type rubber seals from gates, cleaning surface, making holes in new seals, fixing seals / bolts tightly in position, cost of all materials, labour, scaffolding etc., complete with all leads and all lifts.	Rm	1364.00
45.	Supplying and fixing flat rubber seals and hot dipped G.I bolts / nuts / washers of approved quality including removing existing worn-out / damaged flat type rubber seals from gates, cleaning surface, making holes in new seals, fixing seals/ bolts tightly in position, cost of all labour, materials, scaffolding etc., complete with all leads and all lifts.	Rm	676.00

PRELIMINARY AND MAINTENANCE WORKS

Item No.	Brief description of work	Unit	Basic Rate in `:
1	2	3	4
46.	Supplying and fixing Z- type rubber seals and hot dipped G.I bolts / nuts / washers of approved quality including removing existing worn-out / damaged Z - type rubber seals from gates, cleaning surface, making holes in new seals, fixing seals/ bolts tightly in position, cost of all labour, materials, scaffolding etc., complete with all leads and all lifts.	Rm	954.00
47.	Providing and fixing 100 x 50 mm 10 gauge non-galvanized weld mesh to concrete / masonry including fixing the same to exposed reinforcement bars or by driving rafter nails, cost of all materials, machinery, labour, scaffolding etc., complete with all leads and lifts.	sqm	216.00
48.	Removing PCC / Shahbad slabs from the side lining of canal carefully and stacking the same on road side / canal bed as directed with lead upto 50 m and all lifts.	sqm	19.00
49.	Providing and filling / replacing gear oil of approved quality upto the required gauge level for Radicon Gear unit of hoists / gantry cranes including cost of all materials, machinery, labour etc., complete., with all leads and lifts.	ltr	208.00
50.	Providing and applying grease of approved quality to gate and hoist components requiring greasing as part of the annual maintenance using grease gun wherever necessary including cost of all materials, machinery, labour, scaffolding etc., complete with all leads and lifts.	kg	262.00
51.	Providing and applying cardium compound of approved quality to wire ropes of hoists / gantry cranes as part of the annual maintenance including cost of all materials, machinery, labour etc., complete with all leads and lifts.	kg	116.00

WATER RESOURCES DEPARTMENT

**LIFT IRRIGATION WORKS
SCHEDULE OF RATES
FOR THE YEAR : 2011-12**

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**NOTES ON SCHEDULE OF RATES
LIFT IRRIGATION WORKS**

1. All notes under General Notes on Schedule of Rates and Notes on Lead, Lift, Loading and un-loading Charges are applicable to Lift Irrigation Works also to the extent they are relevant.
2. Unless otherwise specified the basic rates are inclusive of all lifts.
3. Unless otherwise specified the basic rates are inclusive of standard finishing required for concrete surface.
4. The basic rates for concrete items include cleaning the top surface of previous lift and providing cement mortar layer before placing the concrete for next lift. The proportion of cement mortar shall be same as that of mortar portion in concrete.
5. Cement content specified for cement concrete works in the item description is based on theoretical design mix computations and is exclusive of wastage and requirement for any incidentals. The actual cement content may vary based on trial mix studies. A suitable Clause shall be included in tender for regulating payment for any upward or downward variation in cement content.
6. The quantities of materials including wastage, requirements for any incidentals etc., for working out additional lead charges shall be as per the statement of requirement of materials under this section.
7. The basic rates are exclusive of cost of site clearance and river / nala diversion works such as coffer dams, bunds, diversion channels etc. Separate item rate or lump-sum provisions, wherever required, may be included in the estimate for these works.
8. Rates for Electric sub-station items, Lighting inside and outside pump house, Earthing for pump house installation etc., are not included in the SR. Separate item rate or lump-sum provisions may be included in the estimate for these items.
9. Lead charges for steel / heavy machinery and parts, wherever applicable, shall be considered from nearest reputed supplier's / manufacturer's place.

**QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES
LIFT IRRIGATION WORKS**

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Steel kg	Cement kg	Sand / FA cum	CA / Stone cum
8	Structural steel	kg	1.025	---	---	---
9.a	M-15 (40 mm CA) for foundation filling	cum	---	245.40	0.410	0.920
9.b	M-20 (40 mm CA) for foundation filling	cum	---	305.00	0.407	0.915
10	M-20 (40 mm CA) for bed lining	cum	---	308.00	0.407	0.915
11	M-20 (40 mm CA) for side lining	cum	---	308.00	0.407	0.915
12	M-20 (20 mm CA) for side lining	cum	---	338.00	0.460	0.915
13	M-20 (40 mm CA) for walls / piers	cum	---	308.00	0.407	0.915
14	M-20 (20 mm CA) for walls / piers	cum	---	338.40	0.460	0.820
15	M-20 (20 mm CA) for columns	cum	---	338.30	0.460	0.820
16	M-20 (20 mm CA) for pump floor	cum	---	338.30	0.460	0.820
17	M-20 (20 mm CA) for tie-beams / roof	cum	---	338.30	0.460	0.820
18	M-20 (20 mm CA) for cut-off wall / apron	cum	---	338.30	0.460	0.820
19	M-20 (40 mm CA) for paving	cum	---	275.40	0.460	0.920
20	UCR masonry in CM 1:4	cum	---	144.50	0.410	1.030
21	Size stone masonry in CM 1:4	cum	---	113.50	0.320	1.020
			Bricks / Nos	Cement kg	Sand / FA cum	CA / Stone cum
22	Burnt breck masonry in CM 1:4	cum	497.00	100.70	0.270	---
23	CC block masonry in CM 1:4	cum	58.40	59.00	0.160	---
			Steel kg	Cement kg	Sand / FA cum	CA / Stone cum
24	CGI sheet roofing	sqm	11.45	---	---	---
25	GI sheet ridge	Rm	11.50	---	---	---
26	Cement mortar pointing in CM 1:3	sqm	---	3.00	0.006	---
27	12 mm thick plastering in CM 1:3	sqm	---	6.10	0.013	---
28	20 mm thick plastering in CM 1:3	sqm	---	10.20	0.021	---
33.a	Steel door	sqm	---	12.80	0.030	0.03
33.b	Steel door	sqm	---	6.00	0.010	0.03
34.a	Steel window	sqm	---	8.30	0.016	0.03
34.b	Steel window	sqm	---	14.10	0.030	0.03
35	Acid resistant tiling / dadoing in CM 1:3	sqm	---	9.30	0.020	---
36	Granolithic flooring in CC 1:1:2	sqm	---	21.40	0.014	0.029
37	Chain link mesh fencing	Rm	88.00	6.00	0.012	0.024
			Soil cum	Cement kg	Sand / FA cum	CA / Stone cum
38	Back-filling	cum	1.20	---	---	---
39	Railing	Rm	1.56	4.60	0.008	0.005

QUANTITY OF MATERIALS FOR ADDITIONAL LEAD CHARGES (Contd)

Item No.	Description of work	Unit	Quantity of materials required per unit quantity of work			
			Steel kg	Cement kg	Sand / FA cum	CA / Stone cum
40.a	Supplying 800 mm 18 ksc PSC pipe	Rm	420.00	---	---	---
40.b	Supplying 1000 mm 18 ksc PSC pipe	Rm	540.00	---	---	---
40.c	Supplying 1200 mm 18 ksc PSC pipe	Rm	660.00	---	---	---
41.a	Supplying 800 mm K-9 Ductile iron pipe	Rm	265.00	---	---	---
41.b	Supplying 1000 mm K-9 Ductile iron pipe	Rm	378.00	---	---	---
41.c	Supplying 1200 mm K-9 Ductile iron pipe	Rm	508.00	---	---	---
48	Sand blanket below embankment	sqm	---	---	0.225	---
			Soil cum	Cement kg	Sand / FA cum	CA / Stone cum
49	Road embankment excavated soil	cum	1.20	---	---	---
50	Road embankment borrow area soil	cum	1.20	---	---	---
51.a	Grade II metalling	cum	0.32	---	---	1.180
51.b	Grade III metalling	cum	0.33	---	---	1.220
52	30 cm th dry stone pitching	sqm	---	---	---	0.350

Notes:

- The quantities of materials specified in the above table are for loose volume.
- The quantity of cement for cement concrete items includes requirement of cement for any incidental works such as mortar layer at lift joints, repair of honey-combs etc.
- The quantities of materials are inclusive of wastage as under:

Cement	1.00 percent.
Sand / Fine aggregate	2.00 percent.
Coarse aggregate	2.00 percent.
Stones / Stone chips	2.00 percent.
Steel (Reinforcement & Structural)	2.50 percent.

**AMOUNT OF ROYALTY CHARGES INCLUDED IN ITEM RATES
LIFT IRRIGATION WORKS**

Item No.	Description of work	Unit	Amount of Royalty charges included in item rate in `:			
			Earth	Sand	CA	Stone
9.a	M-15 (40 mm CA) for foundation filling	cum	---	19.70	44.15	---
9.b	M-20 (40 mm CA) for foundation filling	cum	---	19.55	43.90	---
10	M-20 (40 mm CA) for bed lining	cum	---	19.55	43.90	---
11	M-20 (40 mm CA) for side lining	cum	---	19.55	43.90	---
12	M-20 (20 mm CA) for side lining	cum	---	22.10	43.90	---
13	M-20 (40 mm CA) for walls / piers	cum	---	19.55	43.90	---
14	M-20 (20 mm CA) for walls / piers	cum	---	22.10	39.35	---
15	M-20 (20 mm CA) for columns	cum	---	22.10	39.35	---
16	M-20 (20 mm CA) for pump floor	cum	---	22.10	39.35	---
17	M-20 (20 mm CA) for tie-beams / roof	cum	---	22.10	39.35	---
18	M-20 (20 mm CA) for cut-off wall / apron	cum	---	22.10	39.35	---
19	M-20 (40 mm CA) for paving	cum	---	22.10	44.15	---
20	UCR masonry in CM 1:4	cum	---	19.70	---	49.45
21	Size stone masonry in CM 1:4	cum	---	15.35	---	48.95
22	Burnt breck masonry in CM 1:4	cum	---	12.95	---	---
23	CC block masonry in CM 1:4	cum	---	7.70	---	---
26	Cement mortar pointing in CM 1:3	sqm	---	0.30	---	---
27	12 mm thick plastering in CM 1:3	sqm	---	0.60	---	---
28	20 mm thick plastering in CM 1:3	sqm	---	1.00	---	---
33.a	Steel door	sqm	---	1.45	1.25	---
33.b	Steel door	sqm	---	0.50	1.25	---
34.a	Steel window	sqm	---	0.75	1.60	---
34.b	Steel window	sqm	---	1.45	1.45	---
35	Acid resistant tiling / dadoing in CM 1:3	sqm	---	0.95	---	---
36	Granolithic flooring in CC 1:1:2	sqm	---	0.65	1.40	---
37	Chain link mesh fencing	Rm	---	0.60	1.15	---
38	Back-filling	cum	19.20	---	---	---
39	Railing	Rm	---	0.40	0.25	---
48	Sand blanket below embankment	sqm	---	10.80	---	---
49	Road embankment excavated soil	cum	19.20	---	---	---
50	Road embankment borrow area soil	cum	19.20	---	---	---
51.a	Grade II metalling	cum	5.10	---	56.65	---
51.b	Grade III metalling	cum	5.30	---	58.55	---
52	30 cm th dry stone pitching	sqm	---	---	---	16.80

Notes:

1. In the Govt notification on royalty charges the rates for Earth / Sand / Building stone are on weight basis. For converting the rate per tonne to rate per cum an average density of 1.6 tonne / cum is assumed for working out the royalty charges for various items.

**LIFT IRRIGATION WORKS
SCHEDULE OF RATES
FOR THE YEAR :2011-12**

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	EXCAVATION & FOUNDATION TREATMENT WORKS :		
1.a	Excavation in all kinds of soil including boulders upto 0.6 m diameter (0.113 cum) and placing excavated stuff neatly in specified dump area or disposing off the same as directed for approach channel / foundation of jack-well / pump house / delivery chamber and appurtenant structures including cost of all materials, machinery, labour, working in wet and watery site conditions (excluding dewatering) etc., complete with lead upto 1 km and all lifts.	cum	74.00
1.b	Excavation in all kinds of soil including boulders upto 0.6 m diameter (0.113 cum) and placing excavated stuff neatly as directed for pipe line trenches / anchor blocks / saddles and other similar structures including cost of all labour, materials, machinery, barricading the area, providing danger lights and other safety measures etc., complete with lead upto 1 km and all lifts.	cum	82.00
2.a	Excavation in soft rock without blasting including boulders upto 0.6 m diameter (0.113 cum) and placing excavated stuff neatly as directed for approach channel / foundation of jack-well / pump house / delivery chamber and appurtenant structures including cost of all materials, labour, machinery, working in wet and watery site conditions (excluding dewatering) etc., complete with lead upto 1 km and all lifts.	cum	99.00
2.b	Excavation in soft rock without blasting including boulders upto 0.6 m diameter (0.113 cum) and placing excavated stuff neatly as directed for pipe line trenches / anchor blocks / thrust blocks / saddles and other similar structures including cost of all materials, machinery, labour, barricading the area, providing danger lights and other safety measures etc., complete with lead upto 1 km and all lifts.	cum	138.00
3.a	Excavation in soft rock requiring blasting including boulders upto 0.6 m diameter (0.113 cum) and placing excavated stuff neatly in specified dump area or disposing off the same as directed for approach channel / foundation of jack-well / pump house / delivery chamber and appurtenant structures including cost of all materials, machinery, labour, working in wet and watering conditions (excluding dewatering) etc., complete with lead upto 1 km and all lifts.	cum	167.00

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
3.b	Excavation in soft rock requiring blasting including boulders upto 0.6 m diameter (0.113 cum) and placing excavated stuff neatly as directed for pipe line trenches / anchor blocks / thrust blocks / saddles and other similar structures including cost of all materials, machinery, labour, barricading the area, providing danger lights and other safety measures etc., complete with lead upto 1 km and all lifts.	cum	212.00
4.a	Excavation in hard rock of all toughness including boulders above 0.60 m dia. (0.113 cum) and placing the excavated rock neatly in specified dump area or disposing off the same as directed for approach channel / foundation of jack-well / pump house / delivery chamber and appurtenant structures including cost of all materials, machinery, labour, working in wet and watery site conditions (excluding dewatering) etc., complete with lead upto 1 km and all lifts.	cum	344.00
4.b	Excavation in hard rock of all toughness including boulders above 0.6 m diameter (0.113 cum) and placing the excavated stuff neatly as directed for pipe line trenches / anchor blocks / thrust blocks / saddles and other similar structures including cost of all materials, machinery, labour, barricading the area, providing danger lights and other safety measures etc., complete with lead upto 1 km and all lifts.	cum	453.00
5.a	Excavation in hard rock of all toughness including boulders above 0.6 m dia. (0.113 cum) by approved controlled blasting methods including control of vibration by use of delay detonators and control of fly-rock by muffling for approach channel / foundation of jack well / pump house / delivery chamber and other appurtenant structures adopting only jack hammers for drilling holes and minimising damage to rock beyond excavation line by adopting any one or combination of line drilling / pre-splitting / smooth blasting techniques and placing excavated rock neatly in approved dump area as directed including cost of all materials, machinery, labour, working in wet and watery site conditions (excluding dewatering) etc., complete with lead upto 1 km and all lifts.	cum	437.00
5.b	Excavation in hard rock of all toughness including boulders above 0.6 m dia. (0.113 cum) by approved controlled blasting methods including control of vibration by use of delay detonators and control of fly-rock by muffling for pipe line trenches / anchor blocks / saddles and other similar structures adopting only jack hammers for drelling holes and minimising damage to rock beyond excavation line by adopting any one or combination of line drilling / pre-splitting / smooth blastrng		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	<p>techniques and placing the excavated rock neatly in approved dump area as directed including cost of all materials, machinery, labour, barricading the area, providing danger lights and other safety measures etc., complete with lead upto 1 km and all lifts.</p>	cum	542.00
6.	<p>Providing and placing sand bags consisting of empty cement bags filled with 35 to 40 kg locally available sand for forming ring bund including plugging the joints with selected earth, cost of all labour, materials etc., complete with lead upto 50 m and lift upto 1.5 m.</p>	Each	21.00
7.	<p>Filling clayey soil between two rows of sand bags placed for forming ring bund including tamping, plugging leakage points etc., complete with lead upto 50 m and lift upto 1.5 m.</p>	cum	135.00
STEEL / CONCRETE & MASONRY WORKS :			
8.	<p>Supplying, fabricating, erecting structural steel members fabricated from rolled steel sections like channels / angles / beams / rails / plates etc., as per drawings and specifications including cost of all materials, machinery, labour, scaffolding, cutting, welding, grinding, cleaning, two coats of approved synthetic enamel painting over a coat of zinc chromate red oxide painting etc., complete with lead upto 1 km and all lifts.</p>	tonne	81700.00
9.a	<p>Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for foundation filling / levelling course including cost of all materials, machinery, labour, formwork, cleaning bed, batching, mixing, placing in position, levelling, vibrating / tamping, finishing, curing etc., complete with lead upto 50 m. (Cement content : 240 kg / cum for use of super plasticiser)</p>	cum	3139.00
9.b	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for foundation filling / levelling course including cost of all materials, machinery, labour, formwork, cleaning bed, batching, mixing, placing in position, levelling, vibrating / tamping, finishing, curing etc., complete with lead upto 50 m. (Cement content : 300 kg / cum for use of super plasticiser)</p>	cum	3564.00
10.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive</p>		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved,clean,hard, graded aggregates for approach channel / fore-bay / delivery chamber bed lining including cost of all materials, machinery, labour, formwork, cleaning bed, batching, mixing, placing in position as specified, forming drainage holes, levelling, tamping, vibrating, finishing, curing etc., complete with lead upto 50 m. (Cement content : 300 kg / com for use of super plasticiser)	cum	3548.00
11.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved,clean,hard, graded aggregates for approach channel / fore-bay /delrvy chamber side lining including cost of all materials, machinery, labour, formwork, cleaning bed, batching, mixing, placing in position as specified, forming drainage holes, levelling, vibrating / tamping, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m from bed level. (Cement content : 300 kg / com for use of super plasticiser)	cum	4356.00
Note:	For every additional 1.5 m lift beyond 1.5 m from bed level add	cum	14.00
12.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved,clean,hard, graded aggregates for approach channel / fore-bay / delivery chamber side lining including cost of all materials, machinery, labour, formwork, cleaning bed, batching, mixing, placing in position as specified, forming drainage holes, levelling, vibrating / tamping,finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m from bed level. (Cement content : 330 kg / com for use of super plasticiser)	cum	4539.00
Note:	For every additional 1.5 m lift beyond 1.5 m from bed level add	cum	14.00
13.	Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for pump house sub-structure walls / piers / abutments / well steining including cost of all materials, machinery, labour, formwork, scaffolding, cleaning,batching, mixing, placing in position,levelling, vibrating, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m from foundation level. (Cement content : 300 kg / cum with use of plasticiser)	cum	4618.00
Note:	For every 1.5 m additional lift beyond 1.5 m from foundation level add	cum	28.00

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
14.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for pump house sub-structure walls / piers / abutments / well steining including cost of all materials, machinery, labour, formwork, scaffolding, cleaning,batching, mixing, placing in position,levelling, vibrating, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m from foundation level. (Cement content : 330 kg / cum with use of plasticiser)</p> <p>Note: For every 1.5 m additional lift beyond 1.5 m from foundation level add</p>	cum cum	4909.00 28.00
15.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved,clean,hard, graded aggregates for columns / anchor blocks / thrust blocks / saddles and other similar structures including cost of all materials, machinery, labour, formwork, scaffolding, cleaning,batching, mixing, placing in position,levelling, vibrating, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m. (Cement content : 330 kg / cum with use of plasticiser)</p> <p>Note: For every 1.5 m additional lift beyond 1.5 m add</p>	cum cum	5430.00 28.00
16.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for pump floor beams / pump floor slab / deck slab and other similar structures including cost of all materials, machinery, labour, formwork, scaffolding, cleaning,batching, mixing, placing in position,levelling, vibrating, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m. (Cement content : 330 kg / cum with use of plasticiser)</p> <p>Note: For every 1.5 m additional lift beyond 1.5 m add</p>	cum cum	5776.00 28.00
17.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for beams / tie-beams / lintels / chajjas / roof slab and other similar structures including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m. (Cement content:330 kg /cum with use of super plasticiser)</p> <p>Note: For every 1.5 m additional lift beyond 1.5 m add</p>	cum cum	6215.00 28.00
18.	<p>Providing and laying insitu vibrated M-20 (28 days cube compressive</p>		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	strength not less than 20 N / sq mm) grade cement concrete using 20 mm down size approved, clean, hard, graded aggregates for cut-off walls /apron and similar structures at valley crossing of pipe line including cost of all materials, machinery, labour, formwork, scaffolding, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing, curing etc., complete with lead upto 50 m and all lifts. surface. (Cement content : 330 kg / cum with use of plasticiser)	cum	4150.00
19.	Providing and laying insitu vibrated M-15 (28 days cube compressive strength not less than 15 N / sq mm) grade cement concrete using 40 mm down size approved, clean, hard, graded aggregates for paving in front of pump house and other locations as directed including cost of all materials, machinery, labour, formwork, cleaning, batching, mixing, placing in position, levelling, vibrating, finishing top surface in CM 1 : 3 proportion, curing etc., complete with lead upto 50 m and all lifts. (Cement content : 240 kg / com for use of super plasticiser)	cum	3318.00
20.	Providing and constructing un-coursed rubble stone masonry with approved stones in CM 1 : 4 proportion for retaining walls / ground level reservoirs etc., including cost of all materials, machinery, labour, scaffolding, cleaning, packing cement mortar, wedging with stone chips, curing etc., complete with initial lead upto 50 m and lift upto 1.5 m.	cum	1742.00
Note:	For every 1.5 m additional lift beyond 1.5 m add	cum	28.00
21.	Providing and constructing size stone masonry walls in CM 1 : 4 proportion using 200 mm height size stones from approved source with pin headers including cost of all materials, machinery, labour, scaffolding, ramps, cleaning, packing mortar, wedging stone chips, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m.	cum	2007.00
Note:	For every 1.5 m additional lift beyond 1.5 m add	cum	28.00
22.	Providing and constructing burnt brick masonry in CM 1 : 4 proportion using bricks from approved source including cost of all materials, labour, machinery, scaffolding, cleaning, packing mortar, finishing, curing etc., complete with lead upto 50 m and lift upto 1.5 m.	cum	3629.00
Note:	For every 1.5 m additional lift beyond 1.5 m add	cum	28.00
23.	Providing and constructing cement concrete solid block masonry walls in CM 1 : 4 proportion using CC solid blocks from approved source including cost of all materials, machinery, labour, scaffolding, cleaning, packing mortar, finishing, curing etc., complete with lead upto 50 m and		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	lift upto 1.5 m.	cum	2192.00
Note:	For every 1.5 m additional lift beyond 1.5 m add	cum	28.00
24.	Providing and fixing 1 mm thick Class-II (600 gms / sqm zinc coating both side inclusive) corrugated G.I sheets for roofing with necessary fixtures such as 'J' bolts with nuts, bitumin washers, G.I washers etc., including cost of all materials, machinery, labour etc., complete with lead upto 50 m and all lifts.	sqm	858.00
25.	Providing and fixing 1 mm thick Class-II (600 gms / sqm zinc coating both side inclusive) plain G.I sheets ridge for roofing with necessary fixtures such as 'J' bolts with nuts, bitumin washers, G.I washers etc., including cost of all materials, machinery, labour etc., complete with lead upto 50 m and all lifts.	Rm	855.00
26.	Providing cement mortar pointing to rubble stone / size stone masonry in CM 1 : 3 proportion by volume including raking and cleaning joints for 50 mm depth, pressing cement mortar into joints, cost of all materials, labour, scaffolding, finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	67.00
27.	Providing 12 mm thick plastering in cement mortar 1 : 3 proportion by volume including cost of all materials, machinery, labour, scaffolding, cleaning joints, smooth finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	109.00
28.	Providing 20 mm thick plastering in two layers in cement mortar 1 : 3 proportion by volume including cost of all materials, machinery, labour, scaffolding, cleaning joints, smooth finishing, curing etc., complete with initial lead upto 50 m and all lifts.	sqm	157.00
29.a	Providing and painting with water proof cement paint of approved colour including cost of all materials, labour, scraping surface, scaffolding, curing etc., complete with all leads and lifts- two coat painting.	sqm	38.00
29.b	Providing and painting with water proof cement paint of approved colour including cost of all materials, labour, scraping surface, scaffolding, curing etc., complete with all leads and lifts- one coat painting.	sqm	21.00
30.a	Providing and painting with plastic emulsion paint of approved colour including cost of all materials, labour, scraping surface, scaffolding etc., complete with all leads and lifts- two coat painting.	sqm	78.00

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
30.b	Providing and painting with plastic emulsion paint of approved colour including cost of all materials, labour, scraping surface, scaffolding etc., complete with all leads and lifts- one coat painting.	sqm	38.00
31.	Providing and fixing push and pull type rolling shutter (excluding top cover) made out of 18 gauge x 75 mm wide cold rolled steel lathes of convex corrugations complete with side guides, bottom rails, inter-locking arrangement by means of alternate end clips, suspension shaft with high tension coil type springs, locking arrangements, pulling hooks, handles and all other fittings and accessories including cost of all materials, labour, machinery, applying two coats of synthetic enamel paint of approved quality over a coat of zinc chromate red oxide primer paint etc., complete with all leads and lifts.	sqm	2830.00
32.	Providing and fixing top cover to rolling shutter made out of 18 gauge cold rolled steel sheet including cost of all materials, machinery, labour, applying two coats of synthetic enamel paint of approved quality over a coat of zinc chromate red oxide primer paint etc., complete with all lead and lifts.	Rm	613.00
33.	Providing and fixing steel door made of standard sections with single or double shutter fully panelled or partly panelled and partly glazed with 4 mm thick plain glass fixed with aluminium beading with all fixtures like hinges, tower bolts, aldrops,6 lever mortise lock, handles,stays, all steel srctions cut to length, joints mitred and but welded, all corners grinded, fixing in position with 40 x 5 mm size mild steel hold-fasts 40 cm long 2 numbers on each side embedded in 15 cm thick CC 1: 3: 6 using 20 mm down size hard graded coarse aggregates, applying 2 coats of synthetic enamel paint of approved quality over a coat of zinc chromate red oxide primer paint including cost of all materials, machinery, labour etc., complete with all leads and lifts. a. Door frame made of 16 gauge CRCA sheets to 60 x 125 mm profile with rebate for shutter fixing and shutters made of 16 gauge 60 x 40 mm hollow pipes with 18 gauge M.S sheet of corrugated profile or formed to other specified profile welded to the frame for panned portion and for glazed portion 12 x 3 mm flats welded to frame around for for each halve for fixing glass and anular space in door frame packed with cement concrete or mortar. b. Door frame made of 16 gauge 80 x 40 mm hollow sections and shutters made of 16 gauge 60 x 40 mm hollow pipes with 18 gauge M.S sheet	sqm	4631.00

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	of corrugated profile or formed to other specified profile welded to the frame for paneled portion and for glazed portion 12 x 3 mm flats welded to frame around for for each halve for fixing glass.	sqm	5268.00
34.	Providing and fixing steel glazed windows and ventilators with frame and shutters made of extruded / pressed steel sections cut to length, joints mitred and butt welded, corners grinded, shutters fitted with 4 mm thick plain glass with aluminium beading, fixing frame in position with 40 x 5 mm size mild steel hold-fasts 40 cm long 2 numbers on each side embedded in 10 cm thick CC 1:3:6 using 20 mm down size graded coarse aggregate, applying 2 coats of synthetic enamel paint of approved quality over a coat of zinc chromate red oxide primer paint including cost of all materials, machinery, labour, fixtures like ball hinges, handles, telescopic stays etc., complete with all leads and lifts .		
a.	Frame made of 18 gauge 40 x 40 mm tubular sections and shutter made of extruded ' Z ' sections conforming to IS-7452 with 12 mm square guard bars welded to frame at 12 cm centre to centre.	sqm	3291.00
b.	Frame made of 18 gauge 60 x 85 mm CRCA steel sheet with hollow space on back side packed with C.M 1 : 4 proportion and shutters made of 18 gauge 40 x 20 mm tubular sections with 12 x 3 mm flats welded to shutter frame around for each halve for fixing glass panes and 12 mm square guard bars welded to frame at 12 cm centre to centre.	sqm	3844.00
35.	Providing and fixing acid resistant tiles of approved quality for flooring / dadoing for battery room set over a bed of 20 mm thick CM 1 : 3 proportion including cost of all materials, machinery, labour, grouting joints with acid resistant mortar mix, curing etc., complete with lead upto 50 m and all lifts .	sqm	956.00
36.	Providing and laying 40 mm thick granolithic flooring for pump floor in C.C 1 : 1 : 2 proportion using 10 mm down size approved, clean, hard, graded coarse aggregate including cost of all materials, machinery, labour, formwork, batching, mixing, laying in alternate panels of specified size, levelling, tamping, finishing, curing etc., complete with initial lead upto 50 m and all lifts . (Cement content : 520 kg / cum with use of super plasticiser)	sqm	206.00
Note:	For adding ironite compound or floor hardener to concrete add per	sqm	40.00
37.	Providing and fixing chain link fencing consisting of 3 m long 65 x 65 x 6 mm M.S angles with top 50 cm bent at 30 degree to vertical fixed at		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	2.5 m intervals in C.C 1 : 3 : 6 proportion using 20 mm down graded coarse aggregate for 70 cm depth, fixing 50 x 50 mm opening 10 gauge G.I chain link mesh upto 1.8 m height of poles using 8 gauge stretcher wire at top and bottom and 30 x 30 x 5 mm M.S angles with bolts /nuts / washers (4 bolts for each pole), fixing 3 rows of 12 x 12 gauge (4 barbs at 7.5 cm c/c) G.I barbed wire for top bent portion of poles, including cost of all materials, machinery, labour, excavation of pit, mixing and laying concrete, curing, drilling holes in angles, cleaning angles, painting angles with 2 coats of synthetic enamel paint over a coat of primer etc., complete with lead upto 50 m and all lifts.	Rm	1045.00
38.	Filling behind jack well and appurtenant structures using rubble and soil obtained from excavation in layers including watering and compacting each layer as directed including cost of all materials, machinery, labour etc., complete with lead upto 50 m.	cum	125.00
39.	Providing and constructing protective railing consisting of in-situ railing posts of size 150x150 mm and 1000 mm height above kerb at 2 m centre to centre (1.20 m height including 300 mm high kerb upto top railing pipe) in M-20 grade concrete using 20 mm down size graded aggregates and each railing post reinforced by 4 Nos, 8 mm dia main bars embedded in kerb concrete for a depth of 40 cm and 7 numbers of 6 mm dia stirrups including fixing 4 rows of 40 mm dia G.I pipes with two coats synthetic enamel paint of approved quality over a coat of zinc chromate red oxide primer paint including cost of all materials, labour, machinery, formwork, finishing, curing etc., complete with lead upto 50 m and all lifts.	Rm	1428.00
	DELIVERY / MANIFOLD / RAISING MAIN PIPES:		
40.	Supplying and laying Pre-stressed concrete pipes (safe for 18 kg / sqm test pressure) true to line level with perfect linking at joint including loading, unloading, rolling, lifting and lowering into trench, cleaning socket and spigot with soap solution, applying soft soap to socket and spigot ends, fixing rubber sealing ring in correct position, jointing pipes perfectly by jacking or other approved method, giving necessary hydraulic test at specified test pressure including cost of all materials, machinery, labour, etc., complete with lead upto 1 km and all lifts.		
	a. 800 mm dia Pre-stressed concrete pipes	Rm	5697.00
	b. 1000 mm dia Pre-stressed concrete pipes	Rm	7814.00
	c. 1200 mm dia Pre-stressed concrete pipes	Rm	9853.00
Note:	i. The rates shall be updated for any difference in market rates of pipes		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	<p>based on the quotations obtained from the nearest factory.</p> <p>ii. Lead charges shall be considered from the nearest factory and the weight of pipe per Rm for working out lead charges shall be as per the ' Statement of quantity of materials for working out lead charges '.</p> <p>iii. For pipes of any other size the rate per Rm may be increased / decreased proportionate to increase / decrease in diameter of pipe.</p> <p>41. Supplying and laying ductile iron pipes (safe for 30 kg / sqcm test pressure) true to line and level with perfect linking at joint including loading, unloading, rolling /lifting and lowering into trench, cleaning socket and spigot ends with soap solution, applying soft soap to socket and spigot ends of pipes, inserting rubber sealing ring into correct position, jointing pipes in perfect condition by jacking or other approved method, giving necessary hydraulic test to specified test pressure, including cost of all materials, machinery, labour, water for testing etc., complete with lead upto 1 km and all lifts.</p> <p>a. 800 mm dia Ductile iron pipes</p> <p>b. 1000 mm dia Ductile iron pipes</p> <p>c. 1200 mm dia Ductile iron pipes</p> <p>Note: i. The rates shall be updated for any difference in market rates of pipes based on the quotations obtained from the nearest factory.</p> <p>ii. Lead charges shall be considered from the nearest factory and the weight of pipe per Rm for working out lead charges shall be as per the ' Statement of quantity of materials for working out lead charges '.</p> <p>iii. For pipes of any other size the rate per Rm may be increased / decreased proportionate to increase / decrease in diameter of pipe.</p> <p>42. Cutting PSC /ductile iron pipe to required length using suitable cutting tools wherever required and finishing the cut face neatly including cost of all materials, machinery, labour etc., complete.</p> <p>a. 800 mm dia pipes</p> <p>Note: For cutting other pipes the rate per Each may be increased / decreased proportionate to increase / decrease in diameter of pipe.</p> <p>43. Manufacturing, supplying, laying in position, aligning, jointing, testing and commissioning of electric resistance welded / submerged arc welded (Fe-410 grade) mild steel delivery pipes of specified diameter and plate thickness with flanged ends wherever required and provided with 1 coat of 40 micron thick zinc rich epoxy primer painting and 3 coats of 100 micron thick each coat coal tar epoxy paint for inner surface and 1 coat</p>	<p>Rm</p> <p>Rm</p> <p>Rm</p> <p>Each</p>	<p>14771.00</p> <p>21694.00</p> <p>31081.00</p> <p>399.00</p>

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	<p>of 40 micron thick zinc rich epoxy primer painting and 2 coats of 100 micron thick each coat coal tar epoxy paint for outer surface including cost of all materials, machinery, labour, cutting, bending, welding, finishing, painting, conveying to spot, lowering, aligning, jointing, hydraulic testing at manufacturing site and after laying and jointing at specified tes pressure etc., complete as per specifications and approved drawings with lead upto 1 km and all lifts.</p> <p>Diameter of delivery pipe :mm Thickness of plate :mm.</p> <p>Note: Rate per Rm = Rate per tonne x Weight of steel per Rm</p> <p>Weight of steel per Rm for specified diameter and plate thickness = 0.373 x Diameter of pipe in mm x Plate thickness in mm / 14400</p>	tonne	81870.00
44.	<p>Manufacturing, supplying, laying in position, aligning, jointing, testing and commissioning of electric resistance welded / submerged arc welded (Fe-410 grade) mild steel manifold pipe system of specified diameter and plate thickness with flanged inlets / outlets at specified locations for connecting pump delivary pipes and raising mains and provided with one coat 40 micron thick zinc rich epoxy primer painting and 3 coats of 100 micron thick each coat coal tar epoxy paint for inner surface and exposed outer surface including cost of all materials, machinery, labour, cutting, bending, welding, finishing, painting, conveying to spot, lowering, aligning, jointing, hydraulic testing at fabrication site and after laying and and jointing at specified testpressure etc.,complete as per specifications and approved drawings with lead upto 1 km and all lifts (excluding cost of thrust block for anchoring / encasing manifold pipe).</p> <p>Diameter of manifold pipe :mm Thickness of plate :mm.</p> <p>Note: Rate per Rm = Rate per tonne x Weight of steel per Rm</p> <p>Weight of steel per Rm for specified diameter and plate thickness = 0.976 x Diameter of pipe in mm x Plate thickness in mm / 30000</p>	tonne	75600.00
45.	<p>Manufacturing, supplying, laying in position, aligning, jointing, testing and commissioning of electric resistance welded / submerged arc welded (Fe-410 grade) mild steel raising main of specified diameter and plate thickness provided with flanges / outlets wherever required for connecting to manifold system /for fixing valves and provided with 15 mm thick inner lining of CM 1:1.5 proportion and 25 mm thick outer lining of CM 1:3 proportion (aggregate fo r outer lining shall be mixture of 80 percent natural sand and 20 percent 6 mm down crushed stone chips) over 50 x 50 mm 13 gauge weld mesh including cost of all materials, machinery, labour, cutting, bending, welding, lining, finishing, curing, conveying to spot, lowering, aligning, jointing, hydraulic testing at</p>		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	<p>manufacturing site and after laying and jointing at specified test pressure etc., complete as per specifications and approved drawings with lead upto 1 km and all lifts. Diameter of raising main :mm Thickness of plate :mm. Note: Rate per Rm = Rate per tonne x Weight of steel per Rm Weight of steel per Rm for specified diameter and plate thickness = 0.597 x Diameter of pipe in mm x Plate thickness in mm / 24000</p>	tonne	77800.00
46.	<p>Refilling pipe line trenches with available soil obtained from excavation of trenches in layers of 150 mm thickness and compacting the same to required degree of compaction etc., complete with lead upto 50 m.</p>	cum	91.00
47.	<p>Removing top soil for depth of 15 cm from the service road formation area including grass, vegi tation, shrubs, cutting trees upto 30 cm girth, excavating and removing old and new bush / tree stumps, removing jali-flora shrubs etc including burning or disposal of waste materials and stacking useful wood as directed etc., complete with lead for disposal / stacking upto 50 m and all lifts.</p> <p>Note: For removing trees of girth more than 30 cm the rates provided under preliminary and Maintenance works ' may be adopted.</p>	sqm	15.50
48.	<p>Providing and laying 250 mm thick sand blanket below embankment including cost of all materials, machinery, labour, spreading to specified thickness etc., complete with lead upto 50 m and all lifts.</p>	sqm	67.00
49.	<p>Formation of road embankment using surplus soil / murum from earth work excavation for pipe line trench including excavation of side gutters, spreading collected soil in layers of 25 cm thickness, sectioning the surface to specified camber and sides to the required slope, breaking clads, sorting out vegetation / roots, watering and compaction by power roller to achieve the specified density control etc., complete with lead upto 50 m and all lifts.</p>	cum	61.00
50.	<p>Constructioning embankment for road formation and at other locations wherever specified using murrum from approved borrow area including excavation of side gutters, spreading collected murrum in layers of 25 cm thiickness, sectioning the top surface to spcified camber and sides to the required slope, breaking clads, sorting out any vegetation, roots, watering and compaction by power roller to achieve the specified density control etc.,complete with lead upto 1 km and all lifts.</p>	cum	132.00

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
51.	<p>Providing, laying, spreading in uniformly hard crushed stone aggregate of specified size and gradation from approved source to specified width and thickness over rolled water bound macadam service road surface to proper grade and camber, handhand packing, spreading and brooming binding material from approved source to fill up the interstices of coarse aggregate, watering and compacting using power roller to achieve the specified density control including cost of all materials, machinery,labour etc., complete with lead upto 50 m and all lifts.</p> <p>a. Conforming to Grade II size as per ' MORTH ' specifications</p> <p>b. Conforming to Grade III size as per ' MORTH ' specifications</p> <p>Note: Cost of providing murrum shoulder for about 250 mm width is covered in rate for metalling. Measurements shall be only for quantity of metalling.</p>	cum	924.00
		cum	1006.00
52.	<p>Providing and constructing 300 mm thick dry rubble stone pitching with pin headers at 2 per sqm including cost of all materials, labour,hand packing, finishing etc.,complete with initial lead upto 50 m and all lifts.</p>	sqm	117.00
	<p>PUMPS & OTHER ACCESSORIES:</p>		
53.	<p>Design, manufacture, supply, erection, trail running, performance test and commissioning of vertical turbine pump of approved make conforming to IS: 1710 having specified pump output under specified operating head coupled to HT motor of adequate HP rating operating at 6.6 KV with flexible coupling, self water lubricated thrust bearings, discharge Tee with flanged end for connecting delivery pipe with all other standard accessories and safety devices etc., complete as per specifications, terms and conditions of contract.</p> <p>a. V T pump coupled to more than 1000 hp upto 1500 hp motor</p> <p>b. V T pump coupled to more than 1500 hp upto 2000 hp motor</p> <p>c. V T pump coupled to more than 2000 hp upto 2500 hp motor</p> <p>d. V T pump coupled to more than 2500 hp upto 3000 hp motor</p> <p>e. V T pump coupled to more than 3000 hp upto 3500 hp motor</p> <p>Note: i. The lead charges including loading and un-loading for pump and motor shall be on weight basis. The lead charges provided in the SR for transportation of steel may be made applicable for pump and motor. ii Kirloskarwadi (near Meeraj) for pump and Hosur (near Bangalore) for motor may be considered as source of supply for working out lead charges.</p>	hp	9240.00
		hp	9760.00
		hp	10260.00
		hp	10760.00
		hp	11250.00
54.	<p>Design, fabrication, supply, assembling, testing and commissioning of HT pump panel board made of sheet metal duly painted with recess for</p>		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	cable entries at bottom suitable for 6.6 KV equipped with vacuum circuit breaker of suitable capacity for 1 number incoming 1600A and 2 numbers 630A outgoing of suitable capacity with aluminium bus bars of 1600 Amp metering panel, protection relays and all other accessories complete with wiring as per approved drawings and specifications.		
	a. Panel board with VCBs and fittings common to all pumps	Set	1089000.00
	b. Additional VCB including sheet metal enclosure, extension bus bars, metering and relays complete for each additional pump for mounting on common panel board	Set	384780.00
Note:	Rate for complete set of HT pump panel board = Rate for common VCBs and fittings + (Rate for additional VCB per pump x Number of additional pumps)		
55.	Design, fabrication, supply, assembling, testing and commissioning of Remote control panel made of sheet metal in desk type configuration duly painted with recess for cable entries at the bottom equipped with operating consoles, indicators, annunciation windows, hooters and all other accessories assembled and ready to receive control wires and other connections etc., complete as per specifications and approved drawings.	Each pump	32670.00
Note:	Rate per complete set of Remote control panel = Rate for Remote control panel for each pump x Number of pumps		
56.	Supply, installation and commissioning of High tension Power factor capacitor bank operating at 6.6 KV of specified KVAR rating with all accessories complete as per specifications, terms and conditions of contract.	50 KVAR	29040.00
Note:	Rate for Power Factor Capacitor Bank set per pump = Specified KVAR rating x Rate per 50 KVAR / 50		
57.	Supply, installation and commissioning of Load Break Switch with HRO fuses, CBCT and ELR in painted sheet metal enclosure with operating console complete for use along with Power Factor capacitor bank as per specifications, terms and conditions of contract.	Set	274980.00
58.	Supply and installation of Auxiliary DC supply system of approved make with battery charger cum DCDB with batteries for 110 A hour complete with all accessories.	Set	497310.00
59.	Supplying and installing Temperature scanner suitable for operating at		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	110 V DC or 230 V AC mounted in a duly painted sheet metal enclosure provided wrth NO / NC relays for transmitting signal to VCBS for tripping with audible alarm for both windings and bearings RTDs with all other accessories for satisfactory functioning of the system etc., complete as per specifications, terms and conditions of contract.	Set	56270.00
60.	Supplying, installing and commissioning electrode actuated water level transmitter of approved make with all accessoreis to protect against dry running of pump.	Set	114350.00
61.	Supplying, installing and commissioning electro-magnetic type flow meter of approved make with all accessoreis including display panel in the pump house.	Set	871200.00
62.	Supply and installation of floor mounting type LTAC panel of approved make fabricated from sheet metal and painted with provision for suitable incoming and specified number of outgoing feeder inlets with metering panel and all other accessories complete for auxiliary supply as per specifications.	Each	275880.00
63.	Supply and installation of Auxiliary transformer 6.6 KV / 433 Volts 160 KVA copper wound, insulating oil filled with all accessories complete as per specifications.	Set	235950.00
64.	Fabricating, supplying, erecting, testing and commissioning 6.6 KV 2500A capacity wall entry type bus duct with flexible end connectors to connect transformer and HT motor panel inside pump house with all accessories, supports etc., complete as per specifications and drawings.	Rm	29040.00
65.	Supplying, laying and connecting xLPE 6.6 KV(E) 3 core cable suitable for 28 KA short circuit rating with end connectors from HT panel to motor, starters, capacitor panels etc., complete as per directions.		
a.	3 core 95 sqmm cable 6.6 KV (E) suitable for 28 KA short circuit rating	Rm	444.00
b.	3 core 120 sqmm cable 6.6 KV (E) suitable for 28 KA short circuit rating	Rm	689.00
c.	3 core 240 sqmm cable 6.6 KV (E) suitable for 28 KA short circuit rating	Rm	798.00
d.	3 core 400 sqmm cable 6.6 KV (E) suitable for 28 KA short circuit rating	Rm	1234.00
66.	Supply, installation and commissioning of soft starter for specified kW load operating at 6.6 KV with load break switch, metering, protection by-pass vaccum contactor with all accessories complete housed in painted sheet metal enclosure.	500 kW	544500.00

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
Note:	Rate for Soft starter set per pump =		
	Specified kW load x Rate per 500 kW / 500		
67.	Supplying, installing, testing and commissioning (SITC) electrically actuated wafer type double flanged Butterfly valve PN 1.0 Class conforming to BS:5156 of specified diameter of approved make with gear box, electric motor and extension stem and all other accessories for perfect linking with pipes on either side including loading, unloading, lifting and placing in correct position, cleaning ends, inserting gaskets into correct position, jointing pipes and valve to form water tight joints, cost of all jointing materials, machinery, labour etc., complete with all leads and lifts.		
a.	400 mm diameter butterfly valve with accessories	Set	33900.00
b.	500 mm diameter butterfly valve with accessories	Set	58300.00
c.	600 mm diameter butterfly valve with accessories	Set	84000.00
68.	Supplying, installing, testing and commissioning (SITC) electrically actuated wafer type double flanged Butterfly valve PN 1.6 Class conforming to BS:5156 of specified diameter of approved make with gear box, electric motor and extension stem and all other accessories for perfect linking with pipes on either side including loading, unloading, lifting and placing in correct position, cleaning ends, inserting gaskets into correct position, jointing pipes and valve to form water tight joints, cost of all jointing materials, machinery, labour etc., complete with all leads and lifts.		
a.	400 mm diameter butterfly valve with accessories	Set	37500.00
b.	500 mm diameter butterfly valve with accessories	Set	61800.00
c.	600 mm diameter butterfly valve with accessories	Set	87500.00
69.	Supplying, installing, testing and commissioning (SITC) electrically actuated double flanged Butterfly valve PN 1.0 Class conforming to IS:513905 of specified diameter of approved make with gear box, electric motor and extension stem and all other accessories for perfect linking with pipes on either side including loading, unloading, lifting and placing in correct position, cleaning ends, inserting gaskets into correct position, jointing pipes and valve to form water tight joints, cost of all jointing materials, machinery, labour etc., complete with all leads and lifts.		
a.	700 mm diameter butterfly valve with accessories	Set	276000.00
b.	800 mm diameter butterfly valve with accessories	Set	344400.00
c.	900 mm diameter butterfly valve with accessories	Set	412400.00
d.	1000 mm diameter butterfly valve with accessories	Set	493600.00

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
e.	1100 mm diameter butterfly valve with accessories	Set	616200.00
f.	1200 mm diameter butterfly valve with accessories	Set	778300.00
70.	Supplying, installing, testing and commissioning (SITC) electrically actuated double flanged Butterfly valve PN 1.6 Class conforming to IS:513905 of specified diameter of approved make with gear box, electric motor and extension stem and all other accessories for perfect linking with pipes on either side including loading, unloading, lifting and placing in correct position, cleaning ends, inserting gaskets into correct position, jointing pipes and valve to form water tight joints, cost of all jointing materials, machinery, labour etc., complete with all leads and lifts.		
a.	700 mm diameter butterfly valve with accessories	Set	309700.00
b.	800 mm diameter butterfly valve with accessories	Set	379600.00
c.	900 mm diameter butterfly valve with accessories	Set	469400.00
d.	1000 mm diameter butterfly valve with accessories	Set	572200.00
e.	1100 mm diameter butterfly valve with accessories	Set	701300.00
f.	1200 mm diameter butterfly valve with accessories	Set	861600.00
71.	Supplying and fixing Butterfly valve actuator DOL panel board with push button starter and all other accessories including wiring for specified number of valves etc complete.	Set	275900.00
72.	Supplying, installing, testing and commissioning (SITC) Cast steel double flanged dual plate Check valve Class 150 conforming to API 594 of approved make of specified diameter and to withstand specified water pressure with all accessories true to line and perfect linking with pipes on either side including loading, unloading, lifting and placing in correct position, cleaning ends, inserting gaskets into correct position, jointing pipes and valve to form water tight joints, cost of all jointing materials, machinery, labour etc., complete with all leads and lifts.		
a.	400 mm diameter check valve with accessories	Set	80800.00
b.	500 mm diameter check valve with accessories	Set	100800.00
c.	600 mm diameter check valve with accessories	Set	125800.00
d.	700 mm diameter check valve with accessories	Set	169000.00
e.	800 mm diameter check valve with accessories	Set	228800.00
f.	900 mm diameter check valve with accessories	Set	307400.00
g.	1000 mm diameter check valve with accessories	Set	414200.00
h.	1100 mm diameter check valve with accessories	Set	558000.00
i.	1200 mm diameter check valve with accessories	Set	753200.00
73.	Supplying, installing, testing and commissioning (SITC) Cast steel		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	<p>double flanged dual plate Check valve Class 300 conforming to API 594 of approved make of specified diameter and to withstand specified water pressure with all accessories true to line and perfect linking with pipes on either side including loading, unloading, lifting and placing in correct position, cleaning ends, inserting gaskets into correct position, jointing pipes and valve to form water tight joints, cost of all jointing materials, machinery, labour etc., complete with all leads and lifts.</p>		
	a. 400 mm diameter check valve with accessories	Set	89300.00
	b. 500 mm diameter check valve with accessories	Set	110900.00
	c. 600 mm diameter check valve with accessories	Set	139200.00
	d. 700 mm diameter check valve with accessories	Set	187400.00
	e. 800 mm diameter check valve with accessories	Set	252200.00
	f. 900 mm diameter check valve with accessories	Set	340000.00
	g. 1000 mm diameter check valve with accessories	Set	457400.00
	h. 1100 mm diameter check valve with accessories	Set	617000.00
	i. 1200 mm diameter check valve with accessories	Set	831200.00
	<p>74. Supplying, fixing and commissioning C.I Scour valve (sluice valve) of approved make body and seat ring of bronze PN 1.0 conforming to IS: 14846 of specified diameter and to withstand specified pressure with all accessories true to line and perfect linking with pipes on either side including loading, unloading, lifting and placing in position, cleaning ends, inserting gaskets into correct position, jointing pipes and valve to form water tight joint, cost of all jointing materials, machinery, labour etc., complete with all leads and lifts.</p>		
	a. 100 mm diameter scour valve with accessories	Set	7110.00
	b. 150 mm diameter scour valve with accessories	Set	11000.00
	c. 200 mm diameter scour valve with accessories	Set	19620.00
	d. 250 mm diameter scour valve with accessories	Set	27910.00
	<p>75. Supplying, fixing and commissioning C.I Tamper proof Air valve of approved make body and seat ring of bronze PN 1.0 conforming to IS: 14845 of specified diameter with all fixtures including cost of all materials, machinery, labour etc., complete with all leads and lifts.</p>		
	a. 80 mm diameter air valve with accessories	Set	16340.00
	b. 100 mm diameter air valve with accessories	Set	19120.00
	c. 150 mm diameter air valve with accessories	Set	35180.00
	d. 200 mm diameter air valve with accessories	Set	37880.00
	<p>76. Supplying, fixing and commissioning C.I Tamper proof Air valve of approved make body and seat ring of bronze PN 1.6 conforming to</p>		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
	IS: 14845 of specified diameter with all fixtures including cost of all materials, machinery, labour etc., complete with all leads and lifts.		
	a. 80 mm diameter air valve with accessories	Set	17250.00
	b. 100 mm diameter air valve with accessories	Set	21310.00
	c. 150 mm diameter air valve with accessories	Set	35690.00
	d. 200 mm diameter air valve with accessories	Set	38560.00
77.	Design, fabrication, supply, erection and commissioning of embedded parts consisting of sill beam, wheel tracks, seal tracks, guide rails, gate groove liners etc., with all accessories for pump house intake stoplog gate including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	116200.00
Note:	Wt of 1 set of embedded parts in tonnes = $0.0665 \times (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 0.50 m. (H) is total height of stoplog gate in m = FSL - Sill level + 0.30 m (h) is head of water above sill of gate in m = FSL - Sill level		
78.	Design, fabrication, supply, erection, testing and commissioning of sliding type stoplog gate consisting of skin plate, horizontal and vertical girders, slide blocks, stiffeners, guide shoes, rubber seals etc., with all accessories for pump house intake vent including cost of all materials, machinery, labour, cutting, aligning, welding, finishing, cleaning, applying one coats of zinc rich epoxy primer and three coats of cold applied coal tar epoxy paint, seal fixing etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	108100.00
Note:	Wt of 1 stoplog gate in tonnes = $0.0995 (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 0.50 m. (H) is total height of stoplog gate in m = FSL - Sill level + 0.30 m (h) is head of water above sill of gate in m = FSL - Sill level		
79.	Design, fabrication, supply, erection and commissioning of embedded parts consisting of liners for trash rack grooves (coarse and fine screens) with all accessories for pump house intake structure including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.	tonne	113200.00
Note:	Wt of 1 set of embedded parts in tonnes = 100 to 125 kg / m height		

Item No.	Brief description of Item	Unit	Basic Rate in `:
1	2	3	4
80.	<p>Design, fabrication, supply, erection and commissioning of trash racks consisting of a number of structural steel panels of suitable height with vertical trash bars at wider interval and weld mesh frame for pump house intake structure including cost of all materials, machinery, labour, aligning, anchoring, welding, finishing, cleaning, applying one coat of zinc rich epoxy primer and four coats of cold applied coal tar epoxy paint etc., complete as per specifications and approved drawings with all leads and lifts.</p> <p>Note: Wt of trash rack panels for 1 vent in tonnes = $0.0375 \times (L^2 \times H \times h)^{0.716}$ Where (L) is length = Clear distance between piers in m + 0.20 m. (H) is total height of trash rack panels in m (h) is head of water above sill of trash rack in m = FSL - Sill level</p>	tonne	92200.00
81.	<p>Design, supply, erection and commissioning of electrically operated mono-rail hoist assembly consisting of rope drum, gear system, wire rope with lifting attachment, festoon cabling and all other accessories etc., complete as per specifications for operating pump house stop-log gate (excluding hoist supporting structure).</p> <p>Note: i. Hoist capacity = 1.50 x weight of stop-gate</p>	tonne capacity	38000.00
82.	<p>Design, fabrication, supply, erection and commissioning of structural steel hoist supporting structure consisting of columns, bracings, stiffeners etc., with all accessories for electrically operated mono-rail rope drum hoist for operating pump house stop-log gates including cost of all materials, machinery, labour, cutting, aligning, anchoring, welding, finishing, cleaning, applying two coats of zinc chromate red primer and three coats of synthetic enamel paint etc., complete with all leads and lifts.</p> <p>Note: Columns with bracings/anchors/stiffeners: 150 kg per metre height. Weight proposed above is for each intake vent Mono rail beam with cross beams : 100 kg per metre length</p>	tonne	91100.00
83.	<p>Design, supply, erection and commissioning EOT crane of double girder box type construction, rail mounted end carriages with long and cross travel arrangement, pendant control, gear boxes, electric motors, breaks, rope drum, wire rope, sheaves, end buffer stoppers, pendant operated, DSL bus bars and other accessories for main and auxiliary hoists etc., complete as per specifications and approved drawings.</p> <p>Note: i. EOT crane Main hoist capacity = 1.25 x Maximum lifting load ii. EOT crane auxiliary hoist capacity = 10 % of main hoist iii. Rate for EOT crane shall be based on capacity of main hoist.</p>	tonne capacity	138300.00

