6.3. CONCRETE WORK

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref.
6.3.1	Providing and laying P.C.C M-75 with nominal mix of (1: 4 : 8) in various components of Barrage foundation with approved quality of gravel coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	Analysis same as Item 5.3.2				
6.3.2	Providing and laying P.C.C or R.C.C M-100 with nominal mix of (1: 3 : 6) in various components of Barrage foundation with approved quality of gravel coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	Analysis same as Item 5.3.3				
6.3.3	Providing and laying P.C.C or R.C.C M-150 with nominal mix of (1: 2 4) in various components of Barrage foundation with approved quality of gravel coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	Analysis same as Item 5.3.4				
6.3.4	Providing and laying P.C.C or R.C.C M-200 with nominal mix of (1:1.5:3) in various components of Barrage foundation with approved quality of gravel coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	Analysis same as Item 5.3.5				
6.3.5	Providing and laying P.C.C or R.C.C M-250 with nominal mix of (1: 1 : 2) in various components of Barrage foundation with approved quality of gravel coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	Analysis same as Item 5.3.6				

6.3.6	Providing and laying P.C.C or R.C.C M-75 with nominal mix of (1: 4 : 8) in various components of Barrage superstructure with approved quality of gravel coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.					
	Unit:- Per Cum					
	Assuming out put=2.832 Cum					
	MATERIALS					
	Coarse aggregates Gr IV **(Rate of approved quality of aggregate as per Design)**	2.718	M^3	513.10	1394.61	
	Sand	1.368	M^3	145.20	198.63	
	Cement	0.34	M^3	9118.00	3100.12	
	Labour					
	Head mason	0.5	nos	330.00	165.00	
	Mason Gr II	1.25	nos	295.00	368.75	
	Unskilled mazdoor	12	nos	242.00	2904.00	
	Bhisti	1	nos	243.00	243.00	
	HIRE CHARGES OF MACHINE					
	(i)Concrete mixer (10 H.P) for 2.832 cum consists on the basic of mixer production capacity 1.98 M^3 per hour. **(vide item 3.25)**	**80.00**				
	Used rate per hourx2.832/1.98				114.42	
	(ii) Vibrator 1no. To vibrate 2.832 cum on thebasic of vibrator capacity 1.98 cum per hour. **(Vide iten no 3.22)**	**107.27**				
	Used rate per hourx2.832/1.98				153.43	
					8641.96	
	Add Overhead charge & C.P@15%				1296.29	
					9938.25	
	Add 1% cess				99.38	
					10037.63	3544.36
		Say Rs		**3544.40**	Per M^3	
6.3.7	Providing and laying P.C.C or R.C.C M-100 with nominal mix of (1: 3 : 6) in various components of Barrage superstructure with approved quality of gravel coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=2.832 Cum					
	MATERIALS					
	Coarse aggregates Gr III **(Rate of approved quality of aggregate as per Design)**	2.66	M^3	490.30	1304.20	
	Sand	1.330	M^3	145.20	193.12	
	Cement	0.443	M^3	9118.00	4039.27	
	Labour					
	Head mason	0.5	nos	330.00	165.00	
	Mason Gr II	1.25	nos	295.00	368.75	
	Unskilled mazdoor	12	nos	242.00	2904.00	
	Bhisti	1	nos	243.00	243.00	

	HIRE CHARGES OF MACHINE					
	(i)Concrete mixer (10 H.P) for 2.832 cum consists on the basic of mixer production capacity 1.98 M^3 per hour. **(vide item 3.25)**	80.00				
	Used rate per hourx2.832/1.98				114.42	
	(ii) Vibrator 1no. To vibrate 2.832 cum on thebasic of vibrator capacity 1.98 cum per hour. **(Vide iten no 3.22)**	107.27				
	Used rate per hourx2.832/1.98				153.43	
					9485.19	
	Add Overhead charge & C.P@15%				1422.78	
					10907.97	
	Add 1% cess				109.08	
					11017.05	3890.20
		Say Rs		3890.20	Per M^3	
6.3.8	Providing and laying P.C.C or R.C.C M-150 with nominal mix of (1: 2 : 4) in various components of Barrage superstructure with approved quality of gravel coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	**Analysis same as Item 5.3.9**				
6.3.9	Providing and laying P.C.C or R.C.C M-200 with nominal mix of (1: 1.5 : 3) in various components of Barrage superstructure with approved quality of gravel coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	**Analysis same as Item 5.3.10**				
6.3.10	Providing and laying P.C.C or R.C.C M-250 with nominal mix of (1: 1 : 2) in various components of Barrage superstructure with approved quality of gravel coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=2.832 Cum					
	MATERIALS					
	Coarse aggregates (20 mm To 10 mm) **(Rate of approved quality of aggregate as per Design)**	2.40	M^3	691.30	1659.12	
	Sand	1.20	M^3	145.20	174.24	
	Cement	1.20	M^3	9118.00	10941.60	
	Labour					
	Head mason	0.5	nos	330.00	165.00	
	Mason Gr II	1.25	nos	295.00	368.75	
	Unskilled mazdoor	12	nos	242.00	2904.00	
	Bhisti	1	nos	243.00	243.00	

	HIRE CHARGES OF MACHINE					
	(i)Concrete mixer (10 H.P) for 2.832 cum consists on the basic of mixer production capacity 1.98 M^3 per hour. **(vide item 3.25)**	**80.00**				
	Used rate per hourx2.832/1.98				114.42	
	(ii) Vibrator 1no. To vibrate 2.832 cum on thebasic of vibrator capacity 1.98 cum per hour. **(Vide iten no 3.22)**	**107.27**				
	Used rate per hourX2.832/1.98				153.43	
					16723.56	
	Add Overhead charge & C.P@15%				2508.53	
					19232.10	
	Add 1% cess				192.32	
					19424.42	6858.90
		Say Rs		**6858.90**	Per M^3	
6.3.11	Providing and laying R.C.C M-150 with nominal mix of (1: 2 : 4) in deck slab with approved quality of graded coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	**Analysis same as Item 5.3.12**				
6.3.12	Providing and laying R.C.C M-200 with nominal mix of (1: 1.5 : 3) in deck slab with approved quality of graded coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened excluding cost of shuttering or form work as well as reinforcement its cutting, bending, binding, and placing but including necessary tools and plants, vibrating, curing, royalty and all taxes etc. complete job as per specifications and direction of E/I.	**Analysis same as Item 5.3.13**				
6.3.13	Providing and laying mass concrete of M-100 with nominal mix of (1:3:6) in flow and non-over flow of dam section with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=1.00 Cum					
	MATERIALS					
	Coarse aggregates **Gr IV** **(Rate of approved quality of aggregate as per Design)**	0.94	M^3	513.10	482.31	
	Sand	0.470	M^3	145.20	68.24	
	Cement	0.157	M^3	9118.00	1431.53	
(B)	(a). Batching and mixing charge					
	Use rate of Batching and mixing plant (vide item 3.13a)	**2775.00**				P&M-002
	Batching and mixing plant capacity 26.76 cum (35 cuyd)	26.76	cum			
	(Taking job management factor as 0.69)	0.69				
	Rate per cum= Use rate/26.76*0.69	71.55			71.55	

	(b) Transport of concrete by 3.06 cum (4 cuyd) buckets hauled by 5 T Diesel Locomotive from batching and mixing plant to pick up point	3.06	cum			
	Average lead= 1.0 Km	1.00	Km			
	Hauling Cycle time					
	Ideal production at Batching plant=57.34 cum (75 cuy	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	I.Loading time of a Train =3.06 x2 x60/39.56 =9.28 minutes	9.28	minute			
	ii.spolting time and waiting time =	1.50	minutes			
	iii.Turning and unloading time	9.28	minutes			
	iv.Empty haul @6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	v.Loaded haul @ 6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	Total hauling cycle time=(i +ii+iii+iv+v)	40.06	minutes			
	No of trips in 50 cum in working	1.25				
	Output of one train with 2 buckets per hr	7.65	cum			
	Use rate of Diesel Locomotive (Vide item 3.17a)	**#VALUE!**				
	Use rate of concrete buckets 2.nos (Vide item 3.30a)	**22.00**				P&M-008
	Total use rate	#VALUE!				
	Transport rate per cum= Total use rate/7.65	#VALUE!			#VALUE!	
	(c). Placement of concrete by Hammer Head Crane					
	Use rate per cum (vide item 3.20 b)	**1163.00**				P&M-071
	Output of crane per hour (production) using 2 no Bucates of 3.06 cum (4 cuyd) capacity each	3.06	cum			
	(Taking job management factor as 0.69)	0.69				
	Ideal production =57.34 cum (75 cuyd)	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	Rate per cum= Use rate/26.76*0.69	29.39			29.39	
	(d). Vibrating the concrete. (Vide item no 3.22) Hire charge of vibrator per hr				**107 27**	
					#VALUE!	
	Add Overhead charge & C.P@1%%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	
		Say	Rs	#VALUE!	Per M^3	
6.3.14	Providing and laying mass concrete of M-150 with nominal mix of (1:2 :4) in over flow and non-over flow sectopm of dry intake, structures and bridges etc with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=1.00Cum					
A	MATERIALS					
	Coarse aggregates (20 mm To 10 mm) **(Rate of approved quality of aggregate as per Design)**	0.90	M^3	691.30	622.17	
	Sand	0.450	M^3	145.20	65.34	
	Cement	0.225	M^3	9118.00	2051.55	
(B)	(a). Batching and mixing charge					
	Use rate of Batching and mixing plant (vide item 3.13a)	**2775.00**				
	Batching and mixing plant capacity 26.76 cum (35 cuyd)	26.76	cum			

	(Taking job management factor as 0.69)	0.69				
	Rate per cum= Use rate/26.76*0.69	71.55			71.55	
	(b) Transport of concrete by 3.06 cum (4 cuyd) buckets hauled by 5 T Diesel Locomotive from batching and mixing plant to pick up point	3.06	cum			
	Average lead= 1.0 Km	1.00	Km			
	Hauling Cycle time					
	Ideal production at Batching plant=57.34 cum (75 cuy	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	I.Loading time of a Train =3.06 x2 x60/39.56 =9.28 minutes	9.28	minute			
	ii.spolting time and waiting time =	1.50	minutes			
	iii.Turning and unloading time	9.28	minutes			
	iv.Empty haul @6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	v.Loaded haul @ 6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	Total hauling cycle time=(i +ii+iii+iv+v)	40.06	minutes			
	No of trips in 50 cum in working	1.25				
	Output of one trian with 2 buckets per hr	7.65	cum			
	Use rate of Diesel Locomotive (Vide item 3.17a)	**#VALUE!**				
	Use rate of concrete buckets 2.nos (Vide item 3.30a)	**22.00**				
	Total use rate	#VALUE!				
	Transport rate per cum= Total use rate/7.65	#VALUE!			#VALUE!	
	(c). Placement of concrete by Hammer Head Crane					
	Use rate per cum (vide item 3.20 b)	**1163.00**				P&M-071
	Output of crane per hour (production) using 2 no Bucate.. of 3.06 cum (4 cuyd) capacity each	3.06	cum			
	(Taking job management factor as 0.69)	0.69				
	Ideal production =57.34 cum (75 cuyd)	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	Rate per cum= Use rate/26.76*0.69	29.39			29.39	
	(d). Vibrating the concrete. (Vide item no 3.22) Hire charge of vibrator per hr				**107.27**	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	
		Say Rs		#VALUE!	Per M^3	
6.3.15	Providing and laying mass concrete of M-200 with nominal mix of (1:1.5 :3) in Dam and Spillways with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=1.00Cum					
(A)	MATERIALS					
	Coarse aggregates (20 mm To 10 mm) **(Rate of approved quality of aggregate as per Design)**	0.860	M^3	691.30	594.52	
	Sand	0.430	M^3	145.20	62.44	
	Cement	0.287	M^3	9118.00	2616.87	
(B)	(a). Batching and mixing charge					
	Use rate of Batching and mixing plant (vide item 3.13a)	2775.00				

	Batching and mixing plant capacity 26.76 cum (35 cuyd)	26.76	cum			
	(Taking job management factor as 0.69)	0.69				
	Rate per cum= Use rate/26.76*0.69	71.55			71.55	
	(b) Transport of concrete by 3.06 cum (4 cuyd) buckets hauled by 5 T Diesel Locomotive from batching and mixing plant to pick up point	3.06	cum			
	Average lead= 1.0 Km	1.00	Km			
	Hauling Cycle time					
	Ideal production at Batching plant=57.34 cum (75 cuy	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	I.Loading time of a Train =3.06 x2 x60/39.56 =9.28 minutes	9.28	minute			
	ii.spolting time and waiting time =	1.50	minutes			
	iii.Turning and unloading time	9.28	minutes			
	iv.Empty haul @6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	v.Loaded haul @ 6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	Total hauling cycle time=(i +ii+iii+iv+v)	40.06	minutes			
	No of trips in 50 cum in working	1.25				
	Output of one trian with 2 buckets per hr	7.65	cum			
	Use rate of Diesel Locomotive (Vide item 3.17a)	**#VALUE!**				
	Use rate of concrete buckets 2.nos (Vide item 3.30a)	**22.00**				
	Total use ratr	#VALUE!				
	Transport rate per cum= Total use rate/7.65	#VALUE!			#VALUE!	
	(c). Placement of concrete by Hammer Head Crane					
	Use rate per cum (vide item 3.20 b)	**1163.00**				P&M-071
	Output of crane per hour (production) using 2 no Bucates of 3.06 cum (4 cuyd) capacity each	3.06	cum			
	(Taking job management factor as 0.69)	0.69				
	Ideal production =57.34 cum (75 cuyd)	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	Rate per cum= Use rate/26.76*0.69	29.39			29.39	
	(d). Vibrating the concrete. (Vide item no 3.22) Hire charge of vibrator per hr				**107.27**	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	
		Say Rs		#VALUE!	Per M^3	
6.3.16	Providing and laying mass concrete of M-200 with nominal mix of (1: 1 : 2) in Dam , Spillways and Head works with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=1.00 Cum					
A	MATERIALS					
	Coarse aggregates (20 mm To 10 mm) **(Rate of approved quality of aggregate as per Design)**	0.84	M^3	691.30	580.69	
	Sand	0.420	M^3	145.20	60.98	
	Cement	0.42	M^3	9118.00	3829.56	
(B)	(a). Batching and mixing charge					

	Use rate of Batching and mixing plant (vide Item 3.13a)	**2775.00**				
	Batching and mixing plant capacity 26.76 cum (35 cuyd)	26.76	cum			
	(Taking job management factor as 0.69)	0.69				
	Rate per cum= Use rate/26.76*0.69	71.55			71.55	
	(b) Transport of concrete by 3.06 cum (4 cuyd) buckets hauled by 5 T Diesel Locomotive from batching and mixing plant to pick up point	3.06	cum			
	Average lead= 1.0 Km	1.00	Km			
	Hauling Cycle time					
	Ideal production at Batching plant=57.34 cum (75 cuy	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	I.Loading time of a Train =3.06 x2 x60/39.56 =9.28 minutes	9.28	minute			
	ii.spolting time and waiting time =	1.50	minutes			
	iii.Turning and unloading time	9.28	minutes			
	iv.Empty haul @6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	v.Loaded haul @ 6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	Total hauling cycle time=(i +ii+iii+iv+v)	40.06	minutes			
	No of trips in 50 cum in working	1.25				
	Output of one trian with 2 buckets per hr	7.65	cum			
	Use rate of Diesel Locomotive (Vide item 3.17a)	**#VALUE!**				
	Use rate of concrete buckets 2.nos (Vide item 3.30a)	**22.00**				
	Total use ratr	#VALUE!				
	Transport rate per cum= Total use rate/7.65	#VALUE!			#VALUE!	
	(c). Placement of concrete by Hammer Head Crane					
	Use rate per cum (vide item 3.20 b)	**1163.00**				P&M-071
	Output of crane per hour (production) using 2 no Bucates of 3.06 cum (4 cuyd) capacity each	3.06	cum			
	(Taking job management factor as 0.69)	0.69				
	Ideal production =57.34 cum (75 cuyd)	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	Rate per cum= Use rate/26.76*0.69	29.39			29.39	
	(d). Vibrating the concrete. (Vide item no 3.22) Hire charge of vibrator per hr				**107.27**	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	
		Say Rs		#VALUE!	Per M^3	
6.3.17	Providing and laying dry pitching with precast cement concrete block 600 mm x 600 mm x 300 mm size of M-75 with nominal mix of (1:4:8) in floor and flank wall with approved quality of graded coarse aggregate of required grade(as per design) and approved quality of sand of requisite F.M washed and screened including necessary form work, tools and plants, vibrating, curing as well royalty and all taxes complete job as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
A	**MATERIALS**					
	Coarse aggregates Gr III **(Rate of approved quality of aggregate as per Design)**	2.720	M^3	490.30	1333.62	
	Sand	1.360	M^3	145.20	197.47	

	Cement	0.34	M^3	9118.00	3100.12	
					4631.21	A
B	**LABOUR**					
	Head mason	0.5	nos	330.00	165.00	
	Mason Gr II	1	nos	295.00	295.00	
	Unskilled mazdoor	12	nos	242.00	2904.00	
	Bhisti	1	nos	243.00	243.00	
	Unskilled mazdoor for placing blocks in position	4	nos	242.00	968.00	
					4575.00	B
C	**HIRE CHARGES OF MACHINE**					
	(i)Concrete mixer (10 H.P) for 2.832 cum consists	**80.00**				
	on the basic of mixer production capacity 1.98 m3					
	per hour. Used rate per hourx2.832/1.98				95.83	
	(ii) Vibrator 1no. To vibrate 2.832 cum on the	**107.27**				
	basic of vibrator capacity 1.98 cum per hour.					
	Used rate per hourx2.832/1.98				153.43	
					249.26	C
D	**SHUTTERING CHARGES**					
	Shuttering 25 blocks 25 mm thick mango planks					
	with 10 % wastage 20.45 sqm 20.45X25/1000	0.51	M^3	33253.00	5339.5	
	Add 1 % for cost of nails and spikes				53.40	
	LABOUR for shuttering					
	Carpenter Gr II	3	nos	295.00	885.00	
	Unskilled mazdoor	8	nos	242.00	1936.00	
	Total cost of Shuttering				8213.90	
	Assuming 4 uses to calculate					
	Cost of Shuttering for 2.832 Cum=total cost/4				2053.47	D
	Total Cost =A+B+C+D				11508.94	
	Add Overhead charge & C.P@15%				1726.34	
					13235.28	
	Add 1% cess				132.3528	
					13367.63	4720.21
		Say Rs		**4720.20**	Per M^3	
6.3.18	Providing and laying dry pitching with precast cement concrete block 600 mm x 600 mm x 300 mm size of M-100 with nominal mix of (1:3:6) in floor and flank wall with approved quality of graded coarse aggregate of required grade (as per design) and approved quality of sand of requisite F.M washed and screened including necessary form work, tools and plants, vibrating, curing as well royalty and all taxes complete job as per specifications and direction of E/I.					
	Unit:- Per Cum					
	Taking Out put=2.832 Cum					
A	**MATERIALS**					
	Coarse aggregates GR III **(Rate of approved quality of aggregate as per Design)**	2.66	M^3	490.30	1304.20	
	Sand	1.33	M^3	145.20	193.12	
	Cement	0.45	M^3	9118.00	4103.10	
					5600.41	A
B	**LABOUR**					
	Head mason	0.5	nos	330.00	165.00	
	Mason Gr II	1	nos	295.00	295.00	
	Unskilled mazdoor	12	nos	242.00	2904.00	
	Bhisti	1	nos	243.00	243.00	
	Unskilled mazdoor for placing blocks in position	4	nos	242.00	968.00	
					4575.00	B
C	**HIRE CHARGES OF MACHINE**					
	(i)Concrete mixer (10 H.P) for 2.832 cum consists	**80.00**				
	on the basic of mixer production capacity 1.98 m3					
	per hour. Used rate per hourx2.832/1.98				114.42	
	(ii) Vibrator 1no. To vibrate 2.832 cum on the	**107.27**				

	basic of vibrator capacity 1.98 cum per hour.					
	Used rate per hourx2.832/1.98				153.43	
					267.85	C
D	SHUTTERING CHARGES					
	Shuttering 25 blocks 25 mm thick mango planks					
	with 10 % wastage 20.45 sqm 20.45X25/1000 0.51M	0.51	PerM^3	33253.00	16959.03	
	Add 1 % for cost of nails and spikes				169.59	
	LABOUR					
	Carpenter Gr II	3	nos	295.00	885.00	
	Unskilled mazdoor	8	nos	242.00	1936.00	
	Total cost of Shuttering				19949.62	
	Assuming 4 uses to calculate					
	Cost of shuttering for 2.832 cum total cost/4				4987.41	D
	TOTAL Cost=A+B+C+D				15430.67	
	Add overhead charges & C.P @15%				2314.60	
					17745.27	
	Add 1% cess				177.45271	
					17922.72	6328.65
		Say Rs		6328.60	Per M^3	
6.3.19	Centering and shuttering in major Barrage work involving mass concrete including cost of form work, their carriage from work shop to work site, erection with the help of suitable crane and stripping etc. complete job as per specifications and direction of E/I.					
	Brief specification					
	Heavir type steel shuttering for use in dams					
	Working with suitable crane				-	
	Shuttering once manufactured shall be used thirty four times.					
	Materials (for 100 sqm).					
	(A).Materials (for 100 sqm).					
	M.S. plates 3 mm thick	57	kg	#VALUE!	#VALUE!	
	M.S. plates 2 mm thick	23	kg	#VALUE!	#VALUE!	
	M.S. plates 60x60x10 mm thick	47	kg	#VALUE!	#VALUE!	
	M.S. plates 65x45x8 mm thick	20	kg	#VALUE!	#VALUE!	
	M.S. channel 125 x 50 mm	82	kg	#VALUE!	#VALUE!	
	M.S. channel 150x55 mm	42	kg	#VALUE!	#VALUE!	
	M.S. channel 100x45 mm	30	kg	#VALUE!	#VALUE!	
	M.S. plates 63x6 mm	22	kg	#VALUE!	#VALUE!	
	G.I pipe 50 mm dia	3.5	M	IINPUT	#VALUE!	
	Nuts and bolts 10 mm dia and 85 mm long(31 nos)	4.5	kg	#VALUE!	#VALUE!	M-130
	Slotted pins and wedges 10 mm dia and 60 mm long	30	nos	#VALUE!	#VALUE!	
	Tube and nuts 25 mm dia and above	26	nos	#VALUE!	#VALUE!	
	Total of materials cost				#VALUE!	
	Deduct salvage @ 20 % of the above sub total				#VALUE!	
	Net total cost of materials				#VALUE!	
	Additional materials (per 50 % sqm)	50	%		#VALUE!	
	M.S. rods 16 mm and 25 mm dia for ancorage 24 kg	24	kg	46.95	1126.74	M-126
	Linssed oil @ 8 litres per % sqm	8	lit	114.46	915.68	
	Sub Total of materials				#VALUE!	
	(B). Transportation and fabrication (per % sqm)					
	i. Transportation shuttering from work shops to work site including loading, unloading for lead below 5 km @ 5% of sub Total of materials cost at sl (A)				#VALUE!	
	ii. Fabrication charge including cutting, welding, marking and oil other operations @ 90 % of the materials item 1 to 12				#VALUE!	
	Total transportaion and febrication charge per sqm.				#VALUE!	
	(C). Machinery charge					
	Taking in output of crane / hr	8.33	sqm			
	Hourly use rate or crane	1163.00				
	Machinary charge per sqm = Use rate of crane *100 / 8.33				13961.58	
	(D). Labour charge					

	Foreman	0.25	nos	415.00	103.75	
	Semi Skilled mazdoor	20	nos	252.00	5040	
	Carpenters Gr II	4	nos	295.00	1180	
	Total				6323.75	
	Total Of A+B+C				#VALUE!	
	Add Overhead charge & C.P@15%		%		#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	
	Say Rs			#VALUE!	Per M^2	
6.3.20	Providing shuttering including structting proping etc. and its removal after use in foundation work as per specifications and direction of E/I.	**Analysis same as Item 5.3.18**				
6.3.21	Providing shuttering including structting. Proping etc. and its removal after use in superstructure portion of various components of Barrage work as per specifications and direction of E/I.	**Analysis same as Item 5.3.19**				
6.3.22	Providing centering including strutting. Proping etc. and removing after use in deck slab as per specifications and direction of E/I.					
	(Assuming size in slab 7.32 x 3.05 =22.326 sqm)					
A.	**MATERIALS**					
	a. 40 mm thick local wood planks 22.326 x40 / 1000					
	=0.85					
	Add 5 % for wastages =0.04					
	=0.89	0.89	cum	33253.00		
	Assuming 4 uses to calculate					
	Cost of planks per use =0.89 x rate of local wood /4				7398.79	
	b. Assuming av. Hight of slab from G.L=3.66 M					
	150 mm salbullah required =78 nos					
	Length of sal bullah =78 x3.66 =285.48 Mtr	285.48	mtr	28.60		
	(Assuming sal bullah to be used 10 times for centerins					
	=285.48 x Rate per Mtr / 10				816.47	
	c. Salwood scanting required (75 mm x 63 mm size) =0.311 cum	0.311	cum	54109.00		
	(Assuming 10 uses)					
	Cost per use =0.311 x Rate per Mtr/10				1682.79	
					9898.06	
	Add 1 % for cost of nails and spikes				98.98	
					9997.04	(A)
B.	**LABOUR**					
	Carpenter Gr II	4	nos	295.00	1180.00	
	Unskilled mazdoor	7	nos	242.00	1694.00	
					2874.00	(B)
C.	Carriage of materials					
	Cost of the carriage of materials from Godowm and back to godown after use including loading unloading and stacking @ 1 % of Total cost of wooden materials				98.98	(C)
	TOTAL cost per 22.326 sqm =A+B+C				12970.02	
	Add Overhead charge & C.P@15%				1945.50	
					14915.52	
	Add 1% cess				149.16	
					15064.68	674.76
		Say Rs		**674.80**	Per M^2	
6.3.23	Providing M.S reinforcement(Plain steel) as per approved design , drawing, removal of rust, cutting, bending, binding, including supplying annealed wire, placing M.S rods in position complete job as per specifications and direction of E/I.	**Analysis same as Item 5.3.21**				

6.3.24	Providing M.S reinforcement (Tor steel) as per approved design , drawing, removal of rust, cutting, bending, binding, including supplying annealed wire, placing M.S rods in position complete job as per specifications and direction of E/I.	Analysis same as Item 5.3.22				
6.3.25	Grouting for Dam foundation per bags of cement all complete as per specifications and direction of E/I.					
	Unit:-Per Bag of Cement					
	Taking Out put=1.0 Bag					
	(A). Cost of 1.05 bag of cement at site including 5 % wastage and incidental charge	0.0357	Cum	9118.00	325.51	
	(B). Grouting					
	i. Hourly use rate of grouting machine	**175.60**				
	Taking progress of grouting 8 bags of cement per ho	8	Bags			
	Cost of Grouting= use rate/8				21.95	
					347.46	
	Add Overhead charge & C.P@15%				52.12	
					399.58	
	Add 1% cess				4	
					403.58	403.58
		Say Rs		403.60	Bags of cement	
6.3.26	Providing and laying mass concrete of M-100 with nominal mix of (1:3:6) in Barrage with approved quality of graded coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened including vibrating, curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	With Batching Plant, Transit Mixer And Concrete Pump					
	Unit:-Per Cum					
	Taking Out put=1.0 Cum					
	MATERIALS					
	Coarse aggregates **Gr IV (Rate of approved quality of aggregate as per Design)**	0.94	M^3	513.10	482.31	
	Sand	0.470	M^3	145.20	68.24	
	Cement	0.157	M^3	9118.00	1431.53	
	(b)LABOURS					
	Mate	0.01	nos	266.00	1.86	
	Mason	0.03	nos	295.00	7.38	
	Mazdoor	0.15	nos	242.00	36.30	
	c) Machinery					
	Batching Plant @ 20 cum/hour	0.05	hr	1804.00	90.20	P&M-003
	Generator 100 KVA	0.05	hr	1842.00	92.10	P&M-080
	Loader 1 cum capacity	0.05	hr	1291.00	64.55	P7M-017
	Transit Mixer 4 cum capacity for lead up to 1 km.	0.13	hr	1268.00	158.50	**Lead**
	Lead beyond 1 km, L-lead in km	2.50	t.km	6.30	15.75	**1**
	Concrete Pump	0.05	hr	349.00	17.45	P&M-007
	(d). Vibrating the concrete.				**107.27**	
					2573.44	
	Add Overhead charge & C.P@15%				386.02	
					2959.46	
	Add 1% cess				29.59	
					2989.05	2989.05
		Say Rs		2989.00	Per M^3	

6.3.27	Providing and laying mass concrete of M-150 with nominal mix of (1:2:4) in Barrage with approved quality of graded coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened including vibrating,curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	With Batching Plant, Transit Mixer And Concrete Pump					
	Unit:-Per Cum					
	Taking Out put=1.0 Cum					
	MATERIALS					
	Coarse aggregates (20 mm To 10 mm) **(Rate of approved quality of aggregate as per Design)**	0.90	M^3	691.30	622.17	
	Sand	0.450	M^3	145.20	65.34	
	Cement	0.225	M^3	9118.00	2051.55	
	(b)LABOURS					
	Mate	0.01	nos	266.00	1.86	
	Mason	0.03	nos	295.00	7.38	
	Mazdoor	0.15	nos	242.00	36.30	
	c) Machinery					
	Batching Plant @ 20 cum/hour	0.05	hr	1804.00	90.20	P&M-003
	Generator 100 KVA	0.05	hr	1842.00	92.10	P&M-081
	Loader 1 cum capacity	0.05	hr	1291.00	64.55	
	Transit Mixer 4 cum capacity for lead upto 1 km.	0.13	hr	1268.00	158.50	**Lead**
	Lead beyond 1 km, L-lead in km	2.50	t.km	6.30	15.75	**1**
	Concrete Pump	0.05	hr	349.00	17.45	
	(d). Vibrating the concrete.				**107.27**	
					3330.42	
	Add Overhead charge & C.P@15%				499.56	
					3829.98	
	Add 1% cess				38.3	
					3868.28	3868.28
		Say Rs		**3868.30**	Per M^3	
6.3.28	Providing and laying mass concrete of M-200 with nominal mix of (1:1.5:3) in Barrage with approved quality of graded coarse aggregate of required grades as per design and approved quality sand of requisite F.M washed and screened including vibrating,curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	With Batching Plant, Transit Mixer And Concrete Pump					
	Unit:-Per Cum					
	Taking Out put=1.0 Cum					
	MATERIALS					
	Coarse aggregates (20 mm To 10 mm) **(Rate of approved quality of aggregate as per Design)**	0.86	M^3	691.30	594.52	
	Sand	0.430	M^3	145.20	62.44	
	Cement	0.287	M^3	9118.00	2616.87	
	(b)LABOURS					
	Mate	0.01	nos	266.00	1.86	
	Mason	0.03	nos	295.00	7.38	
	Mazdoor	0.15	nos	242.00	36.30	
	c) Machinery					
	Batching Plant @ 20 cum/hour	0.05	hr	1804.00	90.20	
	Generator 100 KVA	0.05	hr	1842.00	92.10	

	Loader 1 cum capacity	0.05	hr	1291.00	64.55	
	Transit Mixer 4 cum capacity for lead upto 1 km.	0.13	hr	1268.00	158.50	Lead
	Lead beyond 1 km, L-lead in km	2.50	t.km	6.30	15.75	1
	Concrete Pump	0.05	hr	349.00	17.45	
	(d). Vibrating the concrete.				**107.27**	
					3865.18	
	Add Overhead charge & C.P@15%				579.78	
					4444.95	
	Add 1% cess				44.45	
					4489.40	4489.40
		Say Rs		**4489.40**	Per M^3	
6.3.29	Providing and laying mass concrete of M-250 with nominal mix of (1:1:2) in Barrage with approved quality of graded coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened including vibrating, curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.					
	With Batching Plant, Transit Mixer And Concrete Pump					
	Unit:-Per Cum					
	Taking Cut put=1.0 Cum					
	MATERIALS					
	Coarse aggregates (20 mm To 10 mm) **(Rate of approved quality of aggregate as per Design)**	0.84	M^3	691.30	580.69	
	Sand	0.420	M^3	145.20	60.98	
	Cement	0.42	M^3	9118.00	3829.56	
	(b)LABOURS					
	Mate	0.01	nos	266.00	1.86	
	Mason	0.03	nos	295.00	7.38	
	Mazdoor	0.15	nos	242.00	36.30	
	c) Machinery					
	Batching Plant @ 20 cum/hour	0.05	hr	1804.00	90.20	
	Generator 100 KVA	0.05	hr	1842.00	92.10	
	Loader 1 cum capacity	0.05	hr	1291.00	64.55	
	Transit Mixer 4 cum capacity for lead upto 1 km.	0.13	hr	1268.00	158.50	Lead
	Lead beyond 1 km, L-lead in km	2.50	t.km	6.30	15.75	1
	Concrete Pump	0.05	hr	349.00	17.45	
	(d). Vibrating the concrete.				**107.27**	
					5062.59	
	Add Overhead charge & C.P@15%				759.39	
					5821.98	
	Add 1% cess				58.22	
					5880.20	5880.20
		Say Rs		**5880.20**	Per M^3	

Sr.No.	Item	Rate	Unit

6.4 MASONARY WORK

Sr.No	Item	Rate	Uni
6.4.1	Brick work in designation 100 A Brick with cement motar (1 : 3) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5418.70	Per M^3
	Patna	4848.00	Per M^3
	Muzaffarpur	4886.20	Per M^3
	Darbhanga	4886.20	Per M^3
	Bhagalpur	4869.30	Per M^3
	Munger	4869.30	Per M^3
	Saharsa	4964.50	Per M^3
	Purnea	5120.60	Per M^3
	Gaya	4677.00	Per M^3
	Saran	4714.20	Per M^3
6.4.2	Brick work in designation 100 A Brick with cement motar(1 : 4) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5236.50	Per M^3
	Patna	4665.80	Per M^3
	Muzaffarpur	4704.00	Per M^3
	Darbhanga	4704.00	Per M^3
	Bhagalpur	4690.10	Per M^3
	Munger	4690.10	Per M^3
	Saharsa	4782.30	Per M^3
	Purnea	4938.40	Per M^3
	Gaya	4504.40	Per M^3
	Saran	4535.00	Per M^3
6.4.3	Brick work in designation 100A Brick with cement motar (1 : 5) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5088.70	Per M^3
	Patna	4518.00	Per M^3
	Muzaffarpur	4556.20	Per M^3
	Darbhanga	4556.20	Per M^3
	Bhagalpur	4544.80	Per M^3
	Munger	4544.80	Per M^3
	Saharsa	4634.50	Per M^3
	Purnea	4790.60	Per M^3
	Gaya	4364.30	Per M^3
	Saran	4389.60	Per M^3

Sr.No.	Item	Rate	Unit
6.4.4	Brick work in designation 100 A Brick with cement motar (1:3) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5518.00	Per M^3
	Patna	4947.30	Per M^3
	Muzaffarpur	4985.50	Per M^3
	Darbhanga	4985.50	Per M^3
	Bhagalpur	4968.60	Per M^3
	Munger	4968.60	Per M^3
	Saharsa	5063.80	Per M^3
	Purnea	5219.90	Per M^3
	Gaya	4776.20	Per M^3
	Saran	4813.40	Per M^3
6.4.5	Brick work in designation 100 A Brick with cement motar (1 : 4) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5335.80	Per M^3
	Patna	4765.10	Per M^3
	Muzaffarpur	4803.30	Per M^3
	Darbhanga	4803.30	Per M^3
	Bhagalpur	4789.40	Per M^3
	Munger	4789.40	Per M^3
	Saharsa	4881.50	Per M^3
	Purnea	5037.70	Per M^3
	Gaya	4603.70	Per M^3
	Saran	4634.20	Per M^3
6.4.6	Brick work in designation 100 A Brick with cement motar (1 : 5) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5188.00	Per M^3
	Patna	4617.30	Per M^3
	Muzaffarpur	4655.50	Per M^3
	Darbhanga	4655.50	Per M^3
	Bhagalpur	4644.00	Per M^3
	Munger	4644.00	Per M^3
	Saharsa	4733.80	Per M^3
	Purnea	4889.90	Per M^3
	Gaya	4463.60	Per M^3
	Saran	4488.80	Per M^3
6.4.7	Providing rough dressed random rubble stone masonry in cement mortar (1:3) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E/I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3

Sr.No.	Item	Rate	Unit
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
6.4.8	Providing rough dressed random rubble stone masonry in cement mortar (1:4) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E/I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
6.4.9	Providing rough dressed random rubble stone masonry in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E/I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
6.4.10	Providing rough dressed random rubble stone masonry in cement mortar (1:3) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3

Sr.No.	Item	Rate	Unit
6.4.11	Providing rough dressed random rubble stone masonry in cement mortar (1:4) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
6.4.12	Providing rough dressed random rubble stone masonry in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E/I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3

6. 4 MASONARY WORK

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref.
6.4.1	Brick work in designation 100 A Brick with cement motar (1 : 3) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curring, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.1**				
6.4.2	Brick work in designation 100 A Brick with cement mortar (1 : 4) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.2**				
6.4.3	Brick work in designation 100 A Brick with cement mortar (1 : 5) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.3**				
6.4.4	Brick work in designation 100 A Brick with cement mortar (1 : 3) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.5**				
6.4.5	Brick work in designation 100 A Brick with cement mortar (1 : 4) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.6**				
6.4.6	Brick work in designation 100 A Brick with cement mortar (1 : 5) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.7**				
6.4.7	Providing rough dressed random rubble stone masonry in cement mortar (1:3) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.9**				

6.4.8	Providing rough dressed random rubble stone masonry in cement mortar (1:4) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.10**
6.4.9	Providing rough dressed random rubble stone masonry in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.11**
6.4.10	Providing rough dressed random/coursed rubble stone masonry in cement mortar (1:3) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.12**
6.4.11	Providing rough dressed random /coursed rubble stone masonry in cement mortar (1:4) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.13**
6.4.12	Providing rough dressed random/coursed rubble stone masonry in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.14**

Sr.No.	Item	Rate	Unit

6.5. PLASTER WORK

Sr.No.	Item	Rate	Unit
6.5.1	Providing 12 mm thick cement plaster (1: 3) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	148.70	Per M^2
	Patna	148.70	Per M^2
	Muzaffarpur	148.70	Per M^2
	Darbhanga	148.70	Per M^2
	Bhagalpur	147.90	Per M^2
	Munger	147.90	Per M^2
	Saharsa	148.70	Per M^2
	Purnea	148.70	Per M^2
	Gaya	146.10	Per M^2
	Saran	147.90	Per M^2
6.5.2	Providing 12 mm thick cement plaster (1: 4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	138.50	Per M^2
	Patna	138.50	Per M^2
	Muzaffarpur	138.50	Per M^2
	Darbhanga	138.50	Per M^2
	Bhagalpur	137.90	Per M^2
	Munger	137.90	Per M^2
	Saharsa	138.50	Per M^2
	Purnea	138.50	Per M^2
	Gaya	136.50	Per M^2
	Saran	137.90	Per M^2
6.5.3	Providing 12 mm thick cement plaster (1: 5) with approved quality sand of requisite F.M., washed and screened, including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	131.80	Per M^2
	Patna	131.80	Per M^2
	Muzaffarpur	131.80	Per M^2
	Darbhanga	131.80	Per M^2
	Bhagalpur	131.30	Per M^2
	Munger	131.30	Per M^2
	Saharsa	131.80	Per M^2
	Purnea	131.80	Per M^2
	Gaya	130.10	Per M^2
	Saran	131.30	Per M^2
6.5.4	Providing 25 mm thick cement plaster (1: 3) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	247.30	Per M^2
	Patna	247.30	Per M^2

Sr.No.	Item	Rate	Unit
	Muzaffarpur	247.30	Per M^2
	Darbhanga	247.30	Per M^2
	Bhagalpur	245.80	Per M^2
	Munger	245.80	Per M^2
	Saharsa	247.30	Per M^2
	Purnea	247.30	Per M^2
	Gaya	242.30	Per M^2
	Saran	245.80	Per M^2
6.5.5	Providing 25 mm thick cement plaster (1: 4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	228.40	Per M^2
	Patna	228.40	Per M^2
	Muzaffarpur	228.40	Per M^2
	Darbhanga	228.40	Per M^2
	Bhagalpur	227.10	Per M^2
	Munger	227.10	Per M^2
	Saharsa	228.40	Per M^2
	Purnea	228.40	Per M^2
	Gaya	224.40	Per M^2
	Saran	227.10	Per M^2
6.5.6	Providing 25 mm thick cement plaster (1: 5) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	213.40	Per M^2
	Patna	213.40	Per M^2
	Muzaffarpur	213.40	Per M^2
	Darbhanga	213.40	Per M^2
	Bhagalpur	212.40	Per M^2
	Munger	212.40	Per M^2
	Saharsa	213.40	Per M^2
	Purnea	213.40	Per M^2
	Gaya	210.10	Per M^2
	Saran	212.40	Per M^2
6.5.7	Providing 12 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	158.60	Per M^2
	Patna	158.60	Per M^2
	Muzaffarpur	158.60	Per M^2
	Darbhanga	158.60	Per M^2
	Bhagalpur	157.90	Per M^2
	Munger	157.90	Per M^2
	Saharsa	158.60	Per M^2
	Purnea	158.60	Per M^2
	Gaya	156.10	Per M^2
	Saran	157.90	Per M^2

Sr.No.	Item	Rate	Unit
6.5.8	Providing 25 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	267.30	Per M^2
	Patna	267.30	Per M^2
	Muzaffarpur	267.30	Per M^2
	Darbhanga	267.30	Per M^2
	Bhagalpur	265.70	Per M^2
	Munger	265.70	Per M^2
	Saharsa	267.30	Per M^2
	Purnea	267.30	Per M^2
	Gaya	262.30	Per M^2
	Saran	265.70	Per M^2
6.5.9	Providing 25 mm thick water proof cement plaster (1:4) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	248.30	Per M^2
	Patna	248.30	Per M^2
	Muzaffarpur	248.30	Per M^2
	Darbhanga	248.30	Per M^2
	Bhagalpur	247.10	Per M^2
	Munger	247.10	Per M^2
	Saharsa	248.30	Per M^2
	Purnea	248.30	Per M^2
	Gaya	244.30	Per M^2
	Saran	247.10	Per M^2
6.5.10	Providing 1.5 mm thick cement punning including curing, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	44.50	Per M^2
	Patna	44.50	Per M^2
	Muzaffarpur	44.50	Per M^2
	Darbhanga	44.50	Per M^2
	Bhagalpur	44.20	Per M^2
	Munger	44.20	Per M^2
	Saharsa	44.50	Per M^2
	Purnea	44.50	Per M^2
	Gaya	43.70	Per M^2
	Saran	44.20	Per M^2
6.5.11	Providing cement ruled pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	132.50	Per M^2
	Patna	132.50	Per M^2
	Muzaffarpur	132.50	Per M^2
	Darbhanga	132.50	Per M^2
	Bhagalpur	132.20	Per M^2
	Munger	132.20	Per M^2
	Saharsa	132.50	Per M^2

Sr.No.	Item	Rate	Unit
	Purnea	132.50	Per M^2
	Gaya	131.70	Per M^2
	Saran	132.20	Per M^2
6.5.12	Providing cement flush pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	98.90	Per M^2
	Patna	98.90	Per M^2
	Muzaffarpur	98.90	Per M^2
	Darbhanga	98.90	Per M^2
	Bhagalpur	98.70	Per M^2
	Munger	98.70	Per M^2
	Saharsa	98.90	Per M^2
	Purnea	98.90	Per M^2
	Gaya	98.10	Per M^2
	Saran	98.70	Per M^2
6.5.13	Providing cement truck pointing (1:3) on Brick work with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	146.00	Per M^2
	Patna	146.00	Per M^2
	Muzaffarpur	146.00	Per M^2
	Darbhanga	146.00	Per M^2
	Bhagalpur	145.60	Per M^2
	Munger	145.60	Per M^2
	Saharsa	146.00	Per M^2
	Purnea	146.00	Per M^2
	Gaya	144.70	Per M^2
	Saran	145.60	Per M^2
6.5.14	Providing cement truck pointing (1:3) on stone masonry with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	190.80	Per M^2
	Patna	190.80	Per M^2
	Muzaffarpur	190.80	Per M^2
	Darbhanga	190.80	Per M^2
	Bhagalpur	190.20	Per M^2
	Munger	190.20	Per M^2
	Saharsa	190.80	Per M^2
	Purnea	190.80	Per M^2
	Gaya	188.90	Per M^2
	Saran	190.20	Per M^2

6.5 PLASTER WORK

Sl.no.	Description	Quantity	Unit	Rate	Amount	Ref.
6.5.1	Providing 12 mm thick cement plaster (1: 3) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.1**				
6.5.2	Providing 12 mm thick cement plaster (1: 4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.2**				
6.5.3	Providing 12 mm thick cement plaster (1: 5) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.3**				
6.5.4	Providing 25 mm thick cement plaster (1: 3) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.4**				
6.5.5	Providing 25 mm thick cement plaster (1: 4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.5**				
6.5.6	Providing 25 mm thick cement plaster (1: 5) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.6**				
6.5.7	Providing 12 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.7**				
6.5.8	Providing 25 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.8**				
6.5.9	Providing 25 mm thick water proof cement plaster (1:4) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.9**				

6.5.10	Providing 1.5 mm thick cement punning including curing, , royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.10**
6.5.11	Providing cement ruled pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.11**
6.5.12	Providing cement flush pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.12**
6.5.13	Providing cement truck pointing (1:3) on Brick work with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.13**
6.5.14	Providing cement truck pointing (1:3) on stone masonry with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.14**

Sr.No.	Item	Rate	Unit

6.6 PITCHING & PILING

Sr.No.	Item	Rate	Unit
6.6.1	Labour for laying dry graded jhama khoa or stone filter under brick pitching or boulder pitching in slope or apron including light ramming etc.all complete job as per specification and direction of E / I.	297.80	Per M^3
6.6.2	Labour for laying sand filter under brick pitching or boulder pitching in slope or apron including light ramming etc.all complete job as per specification and direction of E / I.	297.80	Per M^3
6.6.3	Providing pitching work with designation 100A bricks in panel in herring bond pattern one brick on edge over a brick flat soling filled with local sand free from clay contents including royalty and all taxes as per approved design, specifications and direction of E/I		
	Patna Urban	837.50	Per M^2
	Patna	716.70	Per M^2
	Muzaffarpur	724.70	Per M^2
	Darbhanga	724.70	Per M^2
	Bhagalpur	724.70	Per M^2
	Munger	724.70	Per M^2
	Saharsa	741.30	Per M^2
	Purnea	771.40	Per M^2
	Gaya	691.90	Per M^2
	Saran	691.90	Per M^2
6.6.4	Providing pitching work with designation 100A bricks in panel two brick on edge over a brick flat soling joints filled with local sand free from clay contents including royalty and all taxes as per approved design, specifications and direction of E/I		
	Patna Urban	1390.80	Per M^2
	Patna	1194.30	Per M^2
	Muzaffarpur	1207.50	Per M^2
	Darbhanga	1207.50	Per M^2
	Bhagalpur	1207.50	Per M^2
	Munger	1207.50	Per M^2
	Saharsa	1234.40	Per M^2
	Purnea	1288.20	Per M^2
	Gaya	1154.10	Per M^2
	Saran	1154.10	Per M^2
6.6.5	Providing Brick flat soling work with designation 100A bricks joints filled with local sand free from clay contents including royalty and all taxes as per approved design, specifications and direction of E/I		
	Patna Urban	321.40	Per M^2
	Patna	276.10	Per M^2
	Muzaffarpur	279.10	Per M^2
	Darbhanga	279.10	Per M^2
	Bhagalpur	279.10	Per M^2
	Munger	279.10	Per M^2
	Saharsa	285.30	Per M^2
	Purnea	297.70	Per M^2
	Gaya	266.80	Per M^2
	Saran	266.80	Per M^2

Sr.No.	Item	Rate	Unit
6.6.6	Labour charge for pitching with stone boulder duly packed in slope and apron with materials within 150 meter of work site and all lifts as per approved design, specifications and direction of E/I	715.30	Per M^2
6.6.7	Providing and laying coarse clean sand in filling in foundation trenches including ramming as well as royalty and all taxes etc. as per approved design, specifications and direction of E/I	241.90	Per M^3

6.6 PITCHING & PILING

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref.
6.6.1	Labour for laying dry graded jhama khoa or stone filter under brick pitching or boulder pitching in slope or apron including light ramming etc.all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Unskilled mazdoor	3	nos	242.00	726.00	
					726.00	
	Add Overhead charge & C.P@15%				108.90	
					834.90	
	Add 1% cess				8.349	
					843.25	297.76
	Say Rs			297.80	Per M^3	
6.6.2	Labour for laying sand filter under brick pitching or boulder pitching in slope or apron including light ramming etc.all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Unskilled mazdoor	3	nos	242.00	726.00	
					726.00	
	Add Overhead charge & C.P@15%				108.90	
					834.90	
	Add 1% cess				8.349	
					843.25	297.76
	Say Rs			297.80	Per M^3	
6.6.3	Providing pitching work with designation 100A bricks in panel in herring bond pattern one brick on edge over a brick flat soling filled with local sand free from clay contents including royalty and all taxes as per approved design, specifications and direction of E/I					
	Unit:-Per Sqm					
	Taking Out put=9.30 Sqm					
	Materials					
	Bricks	800	er%0nos	7222.00	5777.60	
	Local Sand	0.43	M^3	122.80	52.19	M-006
	Labour					
	Mason Gr II	1.13	nos	295.00	331.88	
	Unskilled mazdoor	2.25	nos	242.00	544.50	
					6706.17	
	Add Overhead charge & C.P@15%				1005.92	
					7712.09	
	Add 1% cess				77.12	
					7789.21	837.55
	Say Rs			837.50	Per M^2	
6.6.4	Providing pitching work with designation 100A bricks in panel two brick on edge over a brick flat soling joints filled with local sand free from clay contents including royalty and all taxes as per approved design, specifications and direction of E/I					
	Unit:-Per Sqm					
	Taking Out put=9.30 Sqm					
	Materials					
	Bricks	1300	er%0nos	7222.00	9388.60	
	Local Sand	0.56	M^3	122.80	68.28	

	Labour					
	Mason Gr II	2	nos	295.00	590.00	
	Unskilled mazdoor	4.50	nos	242.00	1089.00	
					11135.88	
	Add Overhead charge & C.P@15%				1670.38	
					12806.26	
	Add 1% cess				128.06	
					12934.32	1390.79
	Say Rs			**1390.80**	Per M^2	
6.6.5	Providing Brick flat soling work with designation 100A bricks joints filled with local sand free from clay contents including royalty and all taxes as per approved design, specifications and direction of E/I					
	Unit:-Per Sqm					
	Taking Out put=9.30 Sqm					
	Materials					
	Bricks	300	er%0nos	7222.00	2166.60	
	Local Sand	0.142	M^3	122.80	17.44	
	Labour					
	Mason Gr II	0.50	nos	295.00	147.50	
	Unskilled mazdoor	1	nos	242.00	242.00	
					2573.54	
	Add Overhead charge & C.P@15%				386.03	
					2959.57	
	Add 1% cess				29.6	
					2989.17	321.42
	Say Rs			**321.40**	Per M^2	
6.6.6	Labour charge for pitching with stone boulder duly packed in slope and apron with materials within 150 metre of work site and all lifts as per approved design, specifications and direction of E/I					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Unskilled mazdoor for lifting stone boulder on head carrying to work site and unloading from head at place of work site	6	nos	242.00	1452.00	
	Mason Gr II	0.50	nos	295.00	147.50	
	Stone dresser	0.25	nos	312.00	78.00	
	Mate	0.25	nos	266.00	66.50	
					1744.00	
	Add Overhead charge & C.P@15%				261.60	
					2005.60	
	Add 1% cess				20.06	
					2025.66	715.28
	Say Rs			**715.30**	Per M^2	
6.6.7	Providing and laying coarse clean sand in filling in foundation trenches including ramming as well as royalty and all taxes etc. as per approved design, specifications and direction of E/I					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Local sand	2.832	cum	122.80	347.77	
	Labour					
	Unskilled mazdoor	1	nos	242.00	242.00	
					589.77	
	Add Overhead charge & C.P@15%				88.47	
					678.24	
	Add 1% cess				6.78	
					685.02	241.88
	Say Rs			**241.90**	Per M^3	

Sr.No.	Item	Rate	Unit

6.7 MISCELLANEOUS

Sr.No	Item	Rate	Unit
6.7.1	Supplying, fitting and fixing copper strip of 16 gauge of approved quality (with 99 % purity) in expansion joints complete job as per drawing, specifications and direction of E/I.	982.10	Per kg
6.7.2	Supplying, fitting and fixing rubber seal of (water stop) of approved quality for construction joints expansion joints complete job as per drawing, specifications and direction of E/I.	#VALUE!	Per mtr
6.7.3	Supplying, and fixing in position 25 mm thick Bituminous board (Shalitex or equivalent) in expansion or construction joint in dam and its allied works all complete as per approved design, specifications and direction of E/I	#VALUE!	Per M^2
6.7.4	Supplying, and fixing Bitumen filter (Bitumen, cement and sand) in construction joints in dam and its allied works all complete as per approved design, specifications and direction of E/I		
	Patna Urban	175.70	cm width/cm depth/100 M length
	Patna	175.70	
	Muzaffarpur	175.70	
	Darbhanga	175.60	
	Bhagalpur	175.60	
	Munger	175.70	
	Purnea	175.70	
	Gaya	175.30	
	Saran	175.60	
6.7.5.1	Providing and driving steel sheet piles on specified alignment and upto designed levels including painting the sheet piles with two coats of anti-corrosive bitumen paint (portion of sheet pile inside concrete shell not be painted) including cost of sheet piles and hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I . (For the purpose of payment of sheet pile driving, measurement of sheet pile duly driven shall be taken only)	#VALUE!	Per M.T
6.7.5.2	Labour rate for extracting steel sheet piles on specified alignment with hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I . (For the purpose of payment of sheet pile extracting, measurement of sheet pile duly extracted shall be taken only)	#VALUE!	Per M.T
6.7.6	Providing weep holes with dry graded Stone metal filter of 20 mm to 40 mm size in abutment and wing wall as per specification and direction of E/I	69.50	Each

6.7 MISCELLANEOUS

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref.
6.7.1	Supplying, fitting and fixing copper strip of 16 gauge of approved quality (with 99 % purity) in expansion joints complete job as per drawing, specifications and direction of E/I.	**Analysis same as Item 5.8.1**				
6.7.2	Supplying, fitting and fixing rubber seal of (water stop) of approved quality for construction joints expansion joints complete job as per drawing, specifications and direction of E/I.	**Analysis same as Item 5.8.2**				
6.7.3	Supplying, and fixing in position 25 mm thick Bituminous board (Shalitex or equivalent) in expansion or construction joint in dam and its allied works all complete as per approved design, specifications and direction of E/I	**Analysis same as Item 5.8.3**				
6.7.4	Supplying, and fixing Bitumen filter (Bitumen, cement and sand) in construction joints in dam and its allied works all complete as per approved design, specifications and direction of E/I	**Analysis same as Item 5.8.4**				
6.7.5.1	Providing and driving steel sheet piles on specified alignment and up to designed levels including painting the sheet piles with two coats of anti-corrosive bitumen paint (portion of sheet pile inside concrete shell not be painted) including cost of sheet piles and hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I.(For the purpose of payment of sheet pile driving, measurement of sheet pile duly driven shall be taken only)	**Analysis same as Item 5.8.5.1**				
6.7.5.2	Labour rate for extracting steel sheet piles on specified alignment with hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I .(For the purpose of payment of sheet pile extracting, measurement of sheet pile duly extracted shall be taken only)	**Analysis same as Item 5.8.5.2**				
6.7.6	Providing weep holes with dry graded Stone metal filter of 20 mm to 40 mm size in abutment and wing wall as per specification and direction of E/I	**Analysis same as Item 5.8.6(a)**				

Sr.No.	Item	Rate	Unit

CHAPTER VII

EARTHEN MASONARY AND COCRETE DAM WITH SPILLWAY OUTLET INTAKE WELL, SURGE TANK AND TUNNELLING ETC.

7.1 EARTH WORK

Sr.No	Item	Rate	Unit
7.1.1	Cutting of trees along with branches and their removal away from the work site and stacking the same as per specifications and direction of E/I.(Measurement of girth at a height of one meter above the ground level)		
	(a) Girth above 0.50 meter but upto 0.75 meter	226.20	Each
	(b) Girth above 0.75 meter but upto 1.50 meter	452.40	Each
	(c) Girth above 1.5 meter but upto2.50 meter	819.10	Each
	(d) Girth above 2.50 meter but upto 4.00 meter	1326.40	Each
	(e) Girth above 4.00 meter	1919.40	Each
7.1.2	Uprooting of stumps and their removal ,away from the work site as per specifications and direction of E/I.		
	(a) Girth above 0.50 meter but upto 0.75 meter	140.50	Each
	(b) Girth above 0.75 meter but upto 1.50 meter	140.50	Each
	(c) Girth above 1.5 meter but upto2.50 meter	187.40	Each
	(d) Girth above 2.50 meter but upto 4.00 meter	281.10	Each
	(e) Girth above 4.00 meter	351.40	Each
7.1.3.1	Preparation of borrow areas by removing the grass and the jungle, bushes from the top before excavation as per specifications and direction of E/I.	2.30	Per M^2
7.1.3.2	Jungle clearance and weeding out shrubs including small tree upto 0.50 M girth and removal as per specifications and direction of E/I.	6.80	Per M^2
7.1.4	Removal of stone boulder of more than 300 mm size from alignment of the dam and stacking the same (beyond 50 M away from Toe of the dam base in the country side) within initial lead of 150M as per specifications and direction of E/I.	89.30	Per M^3
7.1.5	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials (beyond 50M away from Toe of the dam base in the country side) with initial lead of 150M and all lifts as per specifications and direction of E/I.	166.50	Per M^3
7.1.6	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond initial lead of 150M but within 1.00 K.M and all lifts by Truck including loading unloading and maintenance of haul roads as per specifications and direction of E/I.	306.70	Per M^3
7.1.7	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond 1.00 K.M but up to 2 K.M away with all lifts by Truck including loading unloading and maintenance of haul roads as per specifications and direction of E/I.	329.20	Per M^3

Sr.No.	Item	Rate	Unit
7.1.8	Earth work in excavation of cut -off trenches as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same (beyond 50 mtr away from Toe of the dam base in the country side) with initial lead of 150 m and initial lifts of 1.5 mtr as per specifications and direction of E/I.	151.90	Per M^3
7.1.9	Earth work in excavation of cut -off trenches as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150 mtr but up to1 K.M away with all lifts by truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	312.40	Per M^3
7.1.10.1	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil (beyond 50 M away from Toe of the dam base in the country side) with initial lead of 150M and initial lifts of 1.5 M including making the section in proper profile, dressing side in proper slope and bed in proper grade etc.all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	643.90	Per M^3
7.1.10.2	Earth work in excavation of cut-off trenches as per designed section in soft rock or ordinary rock (Where blasting is not required) (vide classification of soil item C) disposal of soil (beyond 50M away from Toe of the dam base in the country side) with initial lead of 150M and initial lifts of 1.5M including making the section in proper profile, dressing side in proper slope and bed in proper grade etc.all complete as per specifications and direction of E/I.	424.80	Per M^3
7.1.11.1	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150 M from the Toe of the dam but within 1 k.m with all lifts by Truck including loading unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	763.40	Per M^3
7.1.11.2	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock. (Where blasting is not required) (vide classification of soil item C) with disposal of soil beyond 150 mtr from the Toe of the dam but within 1 k.m with all lifts by truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I	481.60	Per M^3
7.1.12	Earth work in excavation of cut -off trenches as per designed section in hard rock and stacking properly in approved stack size in approved stack yard (beyond 50 M away from Toe of the dam base in the country side) with initial lead of 150 M and initial lifts of 1.5 M as per specifications and direction of E/I.	1097.10	Per M^3
7.1.13	Earth work in excavation of cut-off trenches as per designed section in hard rock and stacking properly in approved stack size in approved stack yard beyond initial lead of 150 M but upto 1 k.m in country side with all lifts by truck including loading, unloading, stacking properly in approved stack yards, construction and maintenance of haul roads as per specifications and direction of E/I.	1287.00	Per M^3
7.1.14.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc.as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same (beyond 50 M away the edge of the trench) with initial lead of 150 M and initial lift of 1.5 M , as per specifications and direction of E/I.	151.90	Per M^3

Sr.No.	Item	Rate	Unit
7.1.14.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150 M but up to 1 K.M away with all lifts by truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	395.70	Per M^3
7.1.15.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil (beyond 50 M from Toe the edge of the trench) with initial lead of 150 M and initial lifts of 1.5 M,all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	504.70	Per M^3
7.1.15.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (where blasting is not required) (vide classification of soil Item C) disposal of soil (beyond 50M from Toe the edge of the trench) with initial lead of 150 M and initial lifts of 1.5 M, all complete as per specifications and direction of E/I.	418.30	Per M^3
7.1.15.3	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150 mtr but upto 1 k.m away from toe of the dam with all lifts by truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	763.40	Per M^3
7.1.15.4	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock(Where blasting is not required) (vide classification of soil item C) disposal of soil beyond 150 M but upto 1 k.m away from toe of the dam with all lifts by truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	481.60	Per M^3
7.1.16.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in hard rock where blasting needed and staking properly in approved stack size in approved stack yard (beyond 50 M from the edge of the trench in country side) with initial lead of 150 M and initial lifts of 1.5 M, all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	1097.20	Per M^3
7.1.16.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in hard rock where blasting needed and disposal of excavated rock by truck beyond initial lead of 150 M but upto 1 k.m away from toe of the dam with all lifts including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	1287.00	Per M^3
7.1.17.1	Earth work in excavation of the toe drain and heel trench as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same (beyond 50M away the edge of the trench) with initial lead of 100 M and initial lift of 1.5 M,all comlete as per specifications and direction of E/I.	142.30	Per M^3

Sr.No.	Item	Rate	Unit
7.1.17.2	Earth work in excavation of the drain and heel trench as per designed section in soft rock or ordinary rock (vide classification of soil item C) with disposal of the soil (beyond 50M away from the toe drain in country side) with initial lead of 100M and initial lifts of 1.5 M,all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	618.40	Per M^3
7.1.17.3	Earth work in excavation of the drain and heel trench as per designed section in soft rock or ordinary rock (Where blasting is not required) (vide classification of soil item C) with disposal of the soil (beyond 50 M away from the toe drain in country side) with initial lead of 100 M and initial lifts of 1.5 M,all complete as per specifications and direction of E/I.	418.30	Per M^3
7.1.17.4	Earth work in excavation of the toe drain and heel trench as per designed section in hard rock where blasting needed and and stacking properly in approved stack yard (beyond 50 M away from the toe drain in country side)and approved stack size with initial lead of 150 M and initial lifts of 1.5 M,all complete as per specifications and direction of E/I.	1097.10	Per M^3
7.1.17.5	Earth work in excavation of the toe drain and heel trench as per designed section in hard rock with chisel and hammer and stacking properly in approved stack yard (beyond 50M away from the toe drain with initial lead of 100 m and initial lifts of 1.5 M,all complete as per specifications and direction of E/I.	409.60	Per M^3
7.1.18	Earth work in excavation of foundation trenches in hard rock (on- blasting zone) or dismantling cement concrete (1:2:4) by manual labour with chisel hammer, wedging barring etc. disposal of excavated materials with an initial lead of and initial lifts of 1.5M including making the edges straight, dressing, profiling and final preparation of surface all complete as per specifications and direction of E/I.	409.60	Per M^3
7.1.19	Earth work in dam fill by head load in semi previous or impervious soil with initial lead of 150 M and initial lift of 1.5 M including breaking clods to maximum 63 mm cubs, placing the earth in layer not exceeding 225 mm thick all complete as per specifications and direction of E/I. (Mode of measurement- sectional measurement of compacted earth).	214.40	Per M^3
7.1.20.1	Extra for earth work in all kinds of soil for each additional lead of 25 Mtr or part there of over the initial lead as per specification and direction of E/I.	9.90	Per M^3
7.1.20.2	Extra for earth work in rock for each additional lead of 25M or part there of over the initial lead as per specification and direction of E/I.	14.90	Per M^3
7.1.21.1	Extra for earth work in all kinds of soil for each additional lift of 1 Mtr or part there of over the initial lift of 1.50M as per specification and direction of E/I.	9.90	Per M^3
7.1.21.2	Extra for earth work in rock each additional lift of 1 M or part there of over the initial lift of 1.50 M as per specification and direction of E/I.	14.90	Per M^3
7.1.22	Earth work in dam fill in semi previous or impervious zone by manual excavation and carriage by Tipper and loading by manual labours including , making dam in proper design section including earth to be laid in layers of not more than 225 mm thick with all lift and breaking clods to maximum 63 mm cubs as well as construction and maintenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurement- sectional measurement of compacted earth).		
7.1.22.1	**Lead beyond 150 mtr but upto 1/2 K.M**	343.00	Per M^3
7.1.22.2	**Lead beyond 1/2 K.M but upto 1 K.M**	354.40	Per M^3
7.1.22.3	**Lead beyond 1 K.M but upto 2 K.M**	372.10	Per M^3
7.1.22.4	**Lead beyond 2 K.M but upto 3 K.M**	#VALUE!	Per M^3

Sr.No.	Item	Rate	Unit
7.1.23	Earth work in **dam fill in semi previous or impervious zone** fill materials to be loosened and excavated by **Ripper and shovel** at the borrow area and transported **by truck** to the dam fill site with all lift as well as spreading leveling by Dozer including construction and maintenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurement-sectional measurement of compacted earth).		
7.1.23.1	**Lead beyond 150 mtr but upto 1/2 K.M**	#VALUE!	Per M^3
7.1.23.2	**Lead beyond 1/2 K.M but upto 1 K.M**	#VALUE!	Per M^3
7.1.23.3	**Lead beyond 1 K.M but upto 2 K.M**	#VALUE!	Per M^3
7.1.23.4	**Lead beyond 2 K.M but upto 3 K.M**	#VALUE!	Per M^3
7.1.24	Earth work in dam fill **in semi previous or impervious zone** fill materials to be loosened and excavated by **Ripper and shovel** at the borrow area and transported **by Dumper** to the dam fill site with all lift as well as spreading leveling by Dozer including construction and maintenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurement-sectional measurement of compacted earth).		
7.1.24.1	**Lead beyond 150 mtr but upto 1/2 K.M**	#VALUE!	Per M^3
7.1.24.2	**Lead beyond 1/2 K.M but upto 1 K.M**	#VALUE!	Per M^3
7.1.24.3	**Lead beyond 1 K.M but upto 2 K.M**	#VALUE!	Per M^3
7.1.24.4	**Lead beyond 2 K.M but upto 3 K.M**	#VALUE!	Per M^3
7.1.25	Earth work in dam fill in semi previous or impervious zone fill materials to be loosened and excavated by **Ripper and scraper** at the borrow area and transported **by Scraper** itself to the dam fill site with all lift as well as spreading leveling by Dozer including construction and maintenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurement- sectional measurement of compacted earth).		
7.1.25.1	**Lead beyond 150 mtr but upto 1/2 K.M**	#VALUE!	Per M^3
7.1.25.2	**Lead beyond 1/2 K.M but upto 1 K.M**	#VALUE!	Per M^3
7.1.25.3	**Lead beyond 1 K.M but upto 2 K.M**	#VALUE!	Per M^3
7.1.25.4	**Lead beyond 2 K.M but upto 3 K.M**	#VALUE!	Per M^3
7.1.26*	Labour for initial Rolling and compacting the ground before forming the embankment with power **road roller** at O.M.C to achieve minimum 95 % of dry density including sprinkling the required quanting of water, making arrangement for supply and carriage of water with all leads and lifts, finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine and other tools and plants etc. all complete as per specifications and direction of E/I.	64.00	Per 10 M^2
7.1.27	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C by **sheep foot roller** driven by tractor to achieve minimum 95 % of dry density includingsprinking the required quanting of water making arrangement for supply and carriage of water with all leads and lifts, finishing the surfaces plan and drawing including hire charge of compaction, machine and other tools and plants etc. for lined canal all complete as per specifications and direction of E/I. (mode of measurement-sectional measurement of compacted earth)	#VALUE!	Per M^3
7.1.28	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **road roller** to achieve minimum **95 %** of maximum dry density including sprinkling the required quanting of **water by tanker within 1 km. lead** and all lifts including cost of water, finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)	31.10	Per M^3

Sr.No.	Item	Rate	Unit
7.1.29	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **sheep foot roller** driven by tractor to achieve minimum **90 %** of maximum dry density including sprinkling the required quanting of **water by tanker within 1 km. lead** and all lifts including cost of water, finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)	#VALUE!	Per M^3
7.1.30	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **road roller** to achieve minimum **90 %** of maximum dry density including sprinkling the required quanting of water **by tanker within 1 km. lead and** all lifts including cost of water, finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)	30.10	Per M^3
7.1.31	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **sheep foot roller** driven by tractor to achieve minimum **95 %** of maximum dry density including sprinkling the required quanting of water making arrangement for supply and carriage of water with all leads and lift finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)	#VALUE!	Per M^3
7.1.32	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **road roller** to achieve minimum **95 %** of maximum dry density including sprinkling the required quanting of water making arrangement for supply and carriage of water with all leads and lift finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)	41.10	Per M^3
7.1.33	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **sheep foot roller driven by tractor** to achieve minimum **90 %** of maximum dry density including sprinkling the required quanting of water making arrangement for supply and carriage of water with all leads and lift finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)	#VALUE!	Per M^3
7.1.34	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **road roller** to achieve minimum **90 %** of maximum dry density including sprinkling the required quanting of water making arrangement for supply and carriage of water with all leads and lift finishing the surface with proper grade, camber or super elevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)	40.00	Per M^3
7.1.35	Close timbering in trenches including shuttering, shoring and packing cavities (wherever required) depth not exceeding 1.5 meter all complete as per specifications and direction of E/I. (Measurement to be taken of the face area timbered)	131.40	Per M^2

Sr.No.	Item	Rate	Unit
7.1.36	Close timbering in trenches including shuttering, shoring and packing cavities (wherever required) depth not exceeding 1.5 meter but upto 3.0 meter all complete as per specifications and direction of E/I. (Measurement to be taken of the face area timbered)	135.40	Per M^2
7.1.37	Supply and laying 300 mm thick humous earth layer on slopes of dam with manual compaction and turfing the surface with approved dub grass with 1 k.m lead including watering and ramming till growth of grass all complete as per specifications and direction of E/I.	#NAME?	Per M^2
7.1.38	Trimming an dressing the side slope of dam to proper section with all lead and lifts as per drawing, specifications and direction of E/I.	26.90	Per M^2
7.1.39	Earth work in foundation excavation as per designed section in ordinary or soft rock (vide classification of soil item C) by shovel and its disposal upto 1 k.m by dumper with all lift including construction and maintenance of haul roads, all complete as per specifications and direction of E/I.	#VALUE!	Per M^3
7.1.40	Earth work in foundation excavation as per designed section in hard rock where blasting is needed and disposal of excavated rock with the combination of machines shovel, Dumper and Tractor - Dozer within one k.m with all lift including stacking properly in approved stack yard as well as construction and maintenance of haul roads, all complete as per specifications and direction of E/I.	#REF!	Per M^3
7.1.41	Earth work in foundation excavation as per designed section in sand and slushes soil in river bed and disposal of the same upto 1/2 k.m with the combination of machines Dragline Dumper and Tractor - Dozer complete job including construction and maintenance of haul roads, all complete as per specifications and direction of E/I.	#VALUE!	Per M^3
7.1.42	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond initial lead of 150 mtr but within 1.00 K.M and all lifts by Tipper and loading by Front end loader, including unloading and maintenance of haul roads as per specifications and direction of E/I.	267.60	Per M^3
7.1.43	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond 1.00 K.M but up to 2 K.M away with all lifts by by Tipper and loading by Front end loader, including unloading and maintenance of haul roads as per specifications and direction of E/I.	301.30	Per M^3
7.1.44	Earth work in excavation of cut -off trenches as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150 M but up to1 K.M away with all lifts by Tipper and loading by Front end loader, including unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	273.20	Per M^3
7.1.45.1	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150 M from the Toe of the dam but within 1 k.m with all lifts by by Tipper and loading by Front end loader, including unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	679.70	Per M^3
7.1.45.2	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock. (Where blasting is not required) (vide classification of soil item C) with disposal of soil beyond 150 M from the Toe of the dam but within 1 k.m with all lifts by Tipper and loading by Front end loader, including unloading, construction and maintenance of haul roads as per specifications and direction of E/I	423.60	Per M^3

Sr.No.	Item	Rate	Unit
7.1.46	Earth work in excavation of cut -off trenches as per designed section in hard rock and stacking properly in approved stack size in approved stack yard beyond initial lead of 150 M but upto 1 k.m in country side with all lifts by Tipper and loading by Front end loader, including unloading, stacking properly in approved stack yards, construction and maintenance of haul roads as per specifications and direction of E/I.	1205.50	Per M^3
7.1.47	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150 M but up to 1 K.M away with all lifts by Tipper and loading by Front end loader, including unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	273.20	Per M^3
7.1.48.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150 M but upto 1 k.m away from toe of the dam with all lifts by Tipper and loading by Front end loader, including unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)	681.00	Per M^3
7.1.48.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock(Where blasting is not required) (vide classification of soil item C) disposal of soil beyond 150 M but upto 1 k.m away from toe of the dam with all lifts by Tipper and loading by Front end loader, including unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	423.60	Per M^3
7.1.49	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in hard rock where blasting needed and disposal of excavated rock by Tipper and loading by Front end loader, including beyond initial lead of 150 M but upto 1 k.m away from toe of the dam with all lifts including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.	1205.50	Per M^3
7.1.50	Earth work in dam fill in semi previous or impervious zone by manual excavation and carriage by Tipper and loading by manual labours including , making dam in proper design section including earth to be laid in layers of not more than 225 mm thick with all lift and breaking clods to maximum 63 mm cubs as well as construction and maintenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurement- sectional measurement of compacted earth).		
7.1.50.1	**Lead beyond 150 mtr but upto 1/2 K.M**	333.00	Per M^3
7.1.50.2	**Lead beyond 1/2 K.M but upto 1 K.M**	349.90	Per M^3
7.1.50.3	**Lead beyond 1 K.M but upto 2 K.M**	383.60	Per M^3
7.1.50.4	**Lead beyond 2 K.M but upto 3 K.M**	417.30	Per M^3

CHAPTER --VIII

EARTHEN MASONARY AND COCRETE DAM WITH SPILLWAY OUTLET INTAKE WELL, SURGE TANK AND TUNNELLING ETC.

7.1 EARTH WORK

Sl.no.	Description	Quantity	unit	Rate	amount	Ref.
7.1.1	Cutting of trees alongwith branches and their removal away from the work site and stacking the same as per specifications and direction of E/I.(Measurment of girth at a hight of one metre above the ground level)	Analysis same as Item 5.1.4				
7.1.2	Up.rooting of stumps and their removal ,away from the work site as per specifications and direction of E/I.	Analysis same as Item 5.1.5				
7.1.3.1	Preparation of borrow areas by removing the grass and the jungle, bushes from the top befor excavation as per specifications and direction of E/I.	Analysis same as Item 5.1.2				
7.1.3.2	Jungle clearance and weeding out shurbs including small tree upto 0.50 mtr girth and removal as per specifications and direction of E/I.	Analysis same as Item 5.1.3				
7.1.4	Removal of stone boulder of more than 300 mm size from alignment of the dam and stacking the same (beyond 50 mtr away from Toe of the dam base in the country side) within initial lead of 150 m as per specifications and direction of E/I.	Analysis same as Item 6.1.4				
7.1.5	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials (beyond 50 mtr away from Toe of the dam base in the country side) with initial lead of 150 m and all lifts as per specifications and direction of E/I.	Analysis same as Item 6.1.5				
7.1.6	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond initial lead of 150 mtr but within 1.00 K.M and all lifts by Truck including loading unloading and maintenance of haul roads as per specifications and direction of E/I.	Analysis same as Item 6.1.6				
7.1.7	Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond 1.00 K.M but up to 2 K.M away with all lifts by Truck including loading unloading and maintenance of haul roads as per specifications and direction of E/I.	Analysis same as Item 6.1.7				
7.1.8	Earth work in excavation of cut -off trenches as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same (beyond 50 M away from Toe of the dam base in the country side) with initial lead of 150M and initial lifts of 1.5M as per specifications and direction of E/I.					

	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Unskilled mazdoor for cutting earth	7	nos	242.00	1694.00	
	Unskilled mazdoor for profilling dressing and making edge straight	1	nos	242.00	242.00	
	Unskilled mazdoor for carrying excavated materials	7	nos	242.00	1694.00	
	Mason Gr II	0.25	nos	295.00	73.75	
					3703.75	
	Add Overhead charge & C.P@15%				555.56	
					4259.31	
	Add 1% cess				42.59	
					4301.91	151.90
	Say Rs			151.90	Per M^3	
7.1.9	Earth work in excavation of cut -off trenches as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150M but up to 1K.M away with all lifts by Truck including loading unloading, construction and maintenance of haul roads as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
A.	Unskilled mazdoor for cutting earth	7.00	nos	242.00	1694.00	
	Unskilled mazdoor for profilling dressing and making edge straight	1.00	nos	242.00	242.00	
	Mason Gr I	0.25	nos	330.00	82.50	
B.	Carriage of earth by 10 M.T capacity Truck					
	Carriage cost of earth for 1 k.m lead					
	Average lead	575	M			
	Truck capicty 8 MT (compacted earth)	4.8	Cum			
	Cycle time---- Average speed	16	km/hr			
	(a) Hauling time =Average leadx60x2/1000xAverage speed	4.31	minutes			
	(b) Loading unloding turning and spollting time=	60	minutes			
	Total hauling cycle time=	64.31	minutes			
	No of trip per working hour = L,U & S time / Total hauling t	0.93	trips			
	Material carried=tripsxnet capacity	4.48	M^3			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			P&M 057
	Rate per 28.32 cum for carriage only=Use rate of truckx28.32/material carrieed			Rs	5331.18	
	© Constuction and maintenance of haul road @ 5 % of Item (B)			Rs	266.56	
					7616.24	
	Add Overhead charge & C.P 15%				1142.44	
					8758.68	
	Add 1% cess				87.59	
					8846.27	312.37
	Say Rs			312.40	Per M^3	
7.1.10.1	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil (beyond 50M away from Toe of the dam base in the country side) with initial lead of 150M and initial lifts of 1.5M including making the section in proper profile, dressing side in proper slope and bed in proper grade etc.all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by conccerned Chief Engineer)					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
	Labour					
	Hammer man	2.75	nos	258.00	709.50	

	Unskilled mazdoor for all work	9.50	nos	242.00	2299.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.33	nos	408.00	134.64	
	Materials					
	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.00	Kg	1099.00	2198.00	M-104
	Detonator	10	nos	7.40	63.14	M-094
	Fuse coil	1	nos	15.61	15.61	326
	Tools and Plants					
	Cost of hire charge of compressor, drilling equpment and other accessories				15.00	
					5543.79	
	Add Overhead charge & C.P @15%				831.57	
					6375.36	
	Add 1% cess				63.753585	
					6439.11	643.91
	Say Rs			643.90	Per M^3	
7.1.10.2	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock (Where blasting is not required)(vide classification of soil item C) disposal of soil (beyond 50M away from Toe of the dam base in the country side) with initial lead of 150M and initial lifts of 1.5M including making the section in proper profile, dressing side in proper slope and bed in proper grade etc.all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
	Labour					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work (i.e cutting & carrying etc.)	11.50	nos	242.00	2783.00	
	Mason Gr I	0.50	nos	330.00	165.00	
					3657.50	
	Add Overhead charge & C.P15%				548.625	
					4206.13	
	Add 1% cess				42.06	
					4248.19	424.82
	Say Rs			424.80	Per M^3	
7.1.11.1	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150M from the Toe of the dam but within 1 k.m with all lifts by Truck including loading unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by conccerned Chief Engineer)					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work	4.00	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.33	nos	408.00	134.64	
B.	**Cost of carriage of 10 cum earth by Truck including loadingand unloading**					
	Carriage cost of earth for 1 k.m lead					
	Average lead=	575	M			
	Truck capicty 8 MT	6	cum			
	Swell factor	0.67				
	Net capacity=Truck capacityx swell factor	4.02	Cum			
	Cycle time---- Average speed	16	km/hr			

	(a) Hauling time =Average leadx60x2/1000xAverage speed	4.31	minutes			
	(b) Loading unloding turning and spollting time=	60	minutes			
	Total hauling cycle time=	64.31	minutes			
	No of trip per working hour = Loading unloding turning and spollting time / Total hauling time	0.93	trips			
	Material carried=tripsxnet capacity	3.75	M^3			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per 10 cum for carriage only=Use rate of truckx10/material carrieed			Rs	2247.74	
	© Constuction and maintenance of haul road @ 5 % of Item (B)			Rs	112.39	
	Materials					
C.	**Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.**					
	Special Gelatin	2.00	Kg	1099.00	2198.00	
	Detonator	10	nos	7.40	63.14	
	Fuse coil	1	nos	15.61	15.61	
	Tools and Plants					
	Cost of hire charge of compressor, drilling equpment and other accessories				15.00	
					6572.91	
	Add Overhead charge & C.P@15%				985.94	
					7558.85	
	Add 1% cess				75.59	
					7634.44	763.44
	Say Rs			**763.40**	Per M^3	
7.1.11.2	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock. (Where blasting is not required) (vide classification of soil item C) with disposal of soil beyond 150M from the Toe of the dam but within 1 k.m with all lifts Truck including loading unloading, construction and maintenance of haul roads as per specifications and direction of E/I					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work	4	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	
B.	**Cost of carriage of 10 cum earth by Truck including loadingand unloading**					
	Carriage cost of earth for 1 k.m lead					
	Average lead=	575	M			
	Truck capicty 8 MT	6	cum			
	Swell factor	0.67				
	Net capacity=Truck capacity X swell factor	4.02	Cum			
	Cycle time---- Average speed	16	km/hr			
	(a) Hauling time = Average lead X 60 X 2/1000 X Average speed	4.31	minutes			
	(b) Loading unloding turning and spollting time=	60	minutes			
	Total hauling cycle time=	64.31	minutes			
	No of trip per working hour = Loading unloding turning and spollting time / Total hauling time	0.93	trips			
	Material carried=tripsxnet capacity	3.75	M^3			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per 10 cum for carriage only=Use rate of truckx10/material carrieed			Rs	2247.74	
	(c) Constuction and maintenance of haul road @ 5 % of Item (B)			Rs	112.39	

					4146.52	
	Add Overhead charge & C.P@15%				621.98	
					4768.50	
	Add 1% cess				47.69	
					4816.19	481.62
	Say Rs			481.60	Per M^3	
7.1.12	Earth work in excavation of cut -off trenches as per designed section in hard rock and stacking properly in approved stack size in approved stack yard (beyond 50 m away from Toe of the dam base in the country side) with initial lead of 150 m and initial lifts of 1.5 m as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
A.	**Labour**					
	Hammer man	10.50	nos	258.00	2709.00	
	Unskilled mazdoor for all work	13.00	nos	242.00	3146.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.67	nos	408.00	272.00	
	Materials					
B.	**Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.**					
	Special Gelatin	2.75	Kg	1099.00	3022.25	
	Detonator	18	nos	7.40	113.65	
	Fuse coil	3	nos	15.61	46.83	
C.	**Tools and Plants**					
	Cost of hire charge of compressor, drilling equpment and other accessories				26.50	
					9445.13	
	Add Overhead charge & C.P@15%				1416.77	
					10861.90	
	Add 1% cess				108.62	
					10970.52	1097.05
	Say Rs			1097.10	Per M^3	
7.1.13	Earth work in excavation of cut -off trenches as per designed section in hard rock and stacking properly in approved stack size in approved stack yard beyond initial lead of 150 m but upto 1 k.m in country side with all lifts by Truck including loading, unloading, stacking properly in approved stack yards,construction and maintenance of haul roads as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
A.	**Labour**					
	Hammer man	10.50	nos	258.00	2709.00	
	Unskilled mazdoor for all work	10.00	nos	242.00	2420.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.67	nos	408.00	273.36	
	Materials					
B.	**Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.**					
	Special Gelatin	2.75	Kg	1099.00	3022.25	
	Detonator	18	nos	7.40	113.65	
	Fuse coil	3	nos	15.61	46.83	
C.	**Tools and Plants**					
	Cost of hire charge of compressor, drilling equpment and other accessories				26.50	
D.	**Cost of carriage of 10 cum earth by Truck including loadingand unloading**					
	Carriage cost of earth for 1 k.m lead					
	Average lead=	575	M			
	Truck capicty 8 MT	6	cum			
	Swell factor	0.67				
	Net capacity=Truck capacityx swell factor	4.02	Cum			

	Cycle time---- Average speed	16	km/hr			
	(a) Hauling time = Average leadx60x2/1000xAverage speed	4.31	minutes			
	(b) Loading unloding turning and spoltting time=	60	minutes			
	Total hauling cycle time=	64.31	minutes			
	No of trip per working hour = Loading unloding turning and spoltting time / Total hauling time	0.93	trips			
	Material carried=tripsxnet capacity	3.75	M^3			
	Hourly use rate of truck (Vide item no 3.26 b)	**843.00**	hr			
	Rate per 10 cum for carriage only=Use rate of truckx10/material carrieed			Rs	2247.74	
	© Constuction and maintenance of haul road @ 5 % of Item (B)			Rs	112.39	
					11080.61	
	Add Overhead charge & C.P@15%				1662.09	
					12742.71	
	Add 1% cess				127.43	
					12870.13	1287.01
	Say Rs			**1287.00**	Per M^3	
7.1.14.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc.as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same (beyond 50M away the edge of the trench) with initinal lead of 150M and initial lift of 1.5M , as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Unskilled mazdoor for cutting earth	7	nos	242.00	1694.00	
	Unskilled mazdoor for profilling dressing and making edge straight	1	nos	242.00	242.00	
	Unskilled mazdoor for carrying excavated materials	7	nos	242.00	1694.00	
	Mason Gr II	0.25	nos	295.00	73.75	
					3703.75	
	Add Overhead charge & C.P@15%				555.5625	
					4259.31	
	Add 1% cess				42.593125	
					4301.91	151.90
	Say Rs			**151.90**	Per M^3	
7.1.14.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150M but up to 1 K.M away with all lifts by Truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
A.	**Labour**					
	Unskilled mazdoor for cutting foundation	7	nos	242.00	1694.00	
	Unskilled mazdoor for forming spoil	1	nos	242.00	242.00	
	Mason Gr II	0.25	nos	295.00	73.75	
B.	**Cost of carriage of 28.32 cum earth by Truck including loadingand unloading**		L.S		4.50	
	Carriage cost of earth for 1 k.m lead				2014.25	
	Average lead	575	M			
	Truck capicty 8 MT (compacted earth)	4.8	Cum			
	Cycle time---- Average speed	17	km/hr			
	(a) Hauling time =Average leadx60x2/1000xAverage speed	4.06	minutes			

	(b) Loading unloading turning and spollting time=	60	minutes			
	Total hauling cycle time=	64.06	minutes			
	No of trips per working hour = Loading, unloading, turning and spollting time / Total hauling time	0.94	trips			
	Material carried=trips x net capacity	4.46	M^3			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per cum= Use rate of truck x 28.32/material carried			Rs	5352.86	
	© Construction and maintenance of haul road @ 5 % of Item (B)			Rs	267.64	
					9649.00	
	Add Overhead charge & C.P@15%				1447.35	
					11096.35	
	Add 1% cess				110.96	
					11207.32	395.74
	Say Rs			**395.70**	Per M^3	
7.1.15.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil (beyond 50 m from Toe the edge of the trench) with initial lead of 150 m and initial lifts of 1.5M all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by conccerned Chief Engineer)					
	Unit:-Per Cum					
	Assuming out put=10.0 Cum					
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for cutting	4	nos	242.00	968.00	
	Unskilled mazdoor for carrying	0.50	nos	242.00	121.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.33	nos	408.00	134.64	
B.	**Materials**					
	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.00	Kg	1099.00	2198.00	
	Detonator	10	nos	7.40	63.14	
	Fuse coil	1	nos	15.61	15.61	
C	**Tools and Plants**					
	Cost of hire charge of compressor, drilling equpment and other accessories				26.50	
					4345.30	
	Add Overhead charge & C.P@15%				651.80	
					4997.10	
	Add 1% cess				49.97	
					5047.07	504.71
	Say Rs			**504.70**	Per M^3	
7.1.15.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (where blasting is not required) (vide classification of soil item C) disposal of soil (beyond 50M from Toe the edge of the trench) with initial lead of 150 m and initial lifts of 1.5M all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10.0 Cum					
	Labour					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for cutting	11.50	nos	242.00	2783.00	
	Mason Gr I	0.33	nos	330.00	108.90	

					3601.41	
	Add Overhead charge & C.P@15%				540.21	
					4141.62	
	Add 1% cess				41.42	
					4183.04	418.30
	Say Rs			418.30	Per M^3	
7.1.15.3	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150 m but upto 1 k.m away from toe of the dam with all lifts by Truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by conccerned Chief Engineer)					
	Unit:-Per Cum	Per M^3				
	Assuming out put=10.0 Cum	10	Cum			
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work	4	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.33	nos	408.00	134.64	
B.	**Cost of carriage of 10 cum earth by Truck including loading and unloading**					
	Carriage cost of earth for 1 k.m lead					
	Average lead=	575	M			
	Truck capacity 8 MT	6	cum			
C.	Swell factor	0.67				
	Net capacity=Truck capacity X swell factor	4.02	Cum			
	Cycle time--- - Average speed	16	km/hr			
	(a) Hauling time =Average leadx60x2/1000xAverage speed	4.31	minutes			
	(b) Loading unloading turning and spollting time=	60	minutes			
	Total hauling cycle time=	64.31	minutes			
	No of trip per working hour = Loading unloading turning and spollting time / Total	0.93	trips			
	Material carried=trips x net capacity	3.75	M^3			
	Hourly use rate of truck (Vide item no 3.26)	843.00	hr			
	Rate per cum=Use rate of truck x 10/material carried			Rs	2247.74	
	© Constuction and maintenance of haul road @ 5 % of Item (B)			Rs	112.39	
	Materials					
C.	**Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.**					
	Special Gelatin	2.00	Kg	1099.00	2198.00	
	Detonator	10	nos	7.40	63.14	
	Fuse coil	1	nos	15.61	15.61	
D.	**Tools and Plants**					
	Cost of hire charge of compressor, drilling equpment and other accessories				15.00	
					6572.91	
	Add Overhead charge & C.P@15%				985.94	
					7558.85	
	Add 1% cess				75.59	
					7634.44	763.44
		Say Rs		763.40	Per M^3	

7.1.15.4	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock(Where blasting is not required) (vide classification of soil item C) disposal of soil beyond 150 m but upto 1 k.m away from toe of the dam with all lifts by Truck including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work	4	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	
B.	**Cost of carriage of 10 cum earth by Truck including loadingand unloading**					
	Carriage cost of earth for 1 k.m lead					
	Average lead=	575	M			
	Truck capacity 8 MT	6	cum			
	Swell factor	0.67				
	Net capacity=Truck capacity x swell factor	4.02	Cum			
	Cycle time---- Average speed	16	km/hr			
	(a) Hauling time =Average leadx60x2/1000xAverage speed	4.31	minutes			
	(b) Loading unloding turning and spollting time=	60	minutes			
	Total hauling cycle time=	64.31	minutes			
	No of trip per working hour = Loading, unloding, turning and spollting time / Total hauling time	0.93	trips			
	Material carried=trips x net capacity	3.75	M^3			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per cum=Use rate of truck x 10/material carrieed			Rs	2247.74	
C.	Constuction and maintenance of haul road @ 5 % of Item (B)			Rs	112.39	
	Rate (A+B+C)				4146.52	
	Add Overhead charge & C.P@15%				621.98	
					4768.50	
	Add 1% cess				47.69	
					4816.19	481.62
		Say Rs		**481.60**	Per M^3	
7.1.16.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in hard rock where blasting needed and staking properly in approved stack size in approved stack yard (beyond 50 m from the edge of the trench in country side) with initial lead of 150 m and initial lifts of 1.5 m all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by concerned Chief Engineer)					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
A.	**Labour**					
	Hammer man	10.50	nos	258.00	2709.00	
	Unskilled mazdoor for all job	13.00	nos	242.00	3146.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.67	nos	408.00	273.36	
B.	**Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.**					
	Special Gelatin	2.75	Kg	1099.00	3022.25	
	Detonator	18	nos	7.40	113.65	
	Fuse coil	3	nos	15.61	46.83	
C.	**Tools and Plants**					

	Cost of hire charge of compressor, drilling equpment and other accessories				26.50	
					9446.50	
	Add Overhead charge & C.P@15%				1416.98	
					10863.48	
	Add 1% cess				108.63	
					10972.11	1097.21
	Say Rs			**1097.20**	Per M^3	
7.1.16.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in hard rock where blasting needed and disposal of excavated rock by Truck beyond initial lead of 150 m but up to 1 k.m away from toe of the dam with all lifts including loading, unloading and stacking properly in approved stock size in approved stock yard as well as construction and maintenance of haul roads as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
A.	**Labour**					
	Hammer man	10.50	nos	258.00	2709.00	
	Unskilled mazdoor for all work	10	nos	242.00	2420.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.67	nos	408.00	273.36	
B.	**Cost of carriage of 10 cum earth by Truck including loading and unloading**					
	Carriage cost of earth for 1 k.m lead					
	Average lead=	575	M			
	Truck capacity 8 MT	6	cum			
	Swell factor	0.67				
	Net capacity=Truck capacity X swell factor	4.02	Cum			
	Cycle time----- Average speed	16	km/hr			
	(a) Hauling time =Average leadx60x2/1000xAverage speed	4.31	minutes			
	(b) Loading unloading turning and spoltting time=	60	minutes			
	Total hauling cycle time=	64.31	minutes			
	No of trip per working hour = Loading ,unloading	0.93	trips			
	Material carried=tripsxnet capacity	3.75	M^3			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per cum=Use rate of truck x 10/material carrieed			Rs	2247.74	
	Constuction and maintenance of haul road @ 5 % of Item (B)			Rs	112.39	
	Materials					
C.	**Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.**					
	Special Gelatin	2.75	Kg	1099.00	3022.25	
	Detonator	18	nos	7.40	113.65	
	Fuse coil	3	nos	15.61	46.83	
D.	**Tools and Plants**					
	Cost of hire charge of compressor, drilling equpment and other accessories				26.50	
					11080.61	
	Add Overhead charge & C.P@15%				1662.09	
					12742.71	
	Add 1% cess				127.43	
					12870.13	1287.01
		Say Rs		**1287.00**	Per M^3	

7.1.17.1	Earth work in excavation of the toe drain and heel trench as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same (beyond 50 m away the edge of the trench) with initinal lead of 100 m and initial lift of 1.5 m as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Unskilled mazdoor for cutting earth	7	nos	242.00	1694.00	
	Unskilled mazdoor for profilling dressing and making edge straight	1	nos	242.00	242.00	
	Unskilled mazdoor for carrying excavated materials	6	nos	242.00	1452.00	
	Mason Gr I	0.25	nos	330.00	82.50	
					3470.50	
	Add Overhead charge & C.P@15%				520.58	
					3991.08	
	Add 1% cess				39.91	
					4030.99	142.34
	Say Rs			142.30	Per M^3	
7.1.17.2	Earth work in excavation of the drain and heel trench as per designed section in soft rock or ordinary rock (vide classification of soil item C) with disposal of the soil (beyond 50 m away from the toe drian in country side) with initial lead of 100 m and initial lifts of 1.5 m all complete as per specifications and direction of E/I. (Soft rock where blasting is required and approved by conccerned Chief Engineer)					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
	Labour					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for cutting	4.00	nos	242.00	968.00	
	Unskilled mazdoor for carryingand stacking	4.50	nos	242.00	1089.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.33	nos	408.00	134.64	
	Materials					
	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.00	Kg	1099.00	2198.00	
	Detonator	10	nos	7.40	73.99	
	Fuse coil	1	nos	15.61	15.61	
	Tools and Plants					
	Cost of hire charge of compressor, drilling equipment and other accessories				26.50	
					5324.15	
	Add Overhead charge & C.P@15%				798.62	
					6122.77	
	Add 1% cess				61.23	
					6184.00	618.40
	Say Rs			618.40	Per M^3	
7.1.17.3	Earth work in excavation of the drain and heel trench as per designed section in soft rock or ordinary rock (Where blasting is not required) (vide classification of soil item C) with disposal of the soil (beyond 50 mtr away from the toe drain in country side) with initial lead of 100 m and initial lifts of 1.5 mtr .all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
	Labour					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for cutting	7	nos	242.00	1694.00	
	Unskilled mazdoor for carrying and stacking	4.50	nos	242.00	1089.00	

	Mason Gr I	0.33	nos	330.00	108.90	
					3601.40	
	Add Overhead charge & C.P@15%				540.21	
					4141.61	
	Add 1% cess				41.42	
					4183.03	418.30
	Say Rs			**418.30**	Per M^3	
7.1.17.4	Earth work in excavation of the toe drain and heel trench as per designed section in hard rock where blasting needed and and stacking properly in approved stack yard (beyond 50M away from the toe drain in country side)and approved stack size with initial lead of 150 m and initial lifts of 1.5 M all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
	Labour					
	Hammer man	10.50	nos	258.00	2709.00	
	Unskilled mazdoor for all work	13	nos	242.00	3146.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.67	nos	408.00	272.00	
	Materials					
	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.75	Kg	1099.00	3022.25	
	Detonator	18	nos	7.40	113.65	
	Fuse coil	3	nos	15.61	46.83	
	Tools and Plants					
	Cost of hire charge of compressor, drilling equipment and other accessories				26.50	
					9445.13	
	Add Overhead charge & C.P@15%				1416.77	
					10861.90	
	Add 1% cess				108.62	
					10970.52	1097.05
	Say Rs			**1097.10**	Per M^3	
7.1.17.5	Earth work in excavation of the toe drain and heel trench as per designed section in hard rock with chisel and hammer and stacking properly in approved stack yard (beyond 50 m away from the toe drain with initial lead of 100 m and initial lifts of 1.5 m .all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
	Labour					
	Hammer man	2.25	nos	258.00	580.50	
	Skilled mazdoor for all work	2.25	nos	307.00	690.75	
	Unskilled mazdoor for collecting the excavated materials and carrying the same beyond 50 m and stacking properly	4	nos	242.00	968.00	
	Unskilled mazdoor for making edge straight, dressing, profiling and final preparation of surface	3	nos	242.00	726.00	
	Blacksmith	1	nos	295.00	295.00	
	Mate	1	nos	266.00	266.00	
					3526.25	
	Add Overhead charge & C.P@15%				528.94	
					4055.19	
	Add 1% cess				40.55	
					4095.74	409.57
	Say Rs			**409.60**	Per M^3	

7.1.18	Earth work in excavation of foundation trenches in hard rock (non- blasting zone) or dismantling cement concrete (1:2:4) by manual labour with chisel hammer, wedging barring etc. disposal of excavated materials with an initial lead of and initial lifts of 1.5 m including making the edges straight, dressing, profiling and final preparation of surface all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=10 Cum					
	Labour					
	Hammer man	2.25	nos	258.00	580.50	
	Skilled mazdoor for all work	2.25	nos	307.00	690.75	
	Unskilled mazdoor for collecting the excavated materials and carrying the same beyond 50 m and stacking properly	4	nos	242.00	968.00	
	Unskilled mazdoor for making edge straight, dressing, profiling and final preparation of surface	3	nos	242.00	726.00	
	Blacksmith	1	nos	295.00	295.00	
	Mate	1	nos	266.00	266.00	
					3526.25	
	Add Overhead charge & C.P@15%				528.94	
					4055.19	
	Add 1% cess				40.55	
					4095.74	409.57
	Say Rs			**409.60**	Per M^3	
7.1.19	Earth work in dam fill by head load in semi previous or impervious soil with initinal lead of 150 m and initial lift of 1.5 m including breaking clods to maximum 63 mm cubs, placing the earth in layer not exceeding 225 mm thick all complete as per specifications and direction of E/I. (Mode of measurment- sectional measurement of compacted earth).					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrpw area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	5	nos	242.00	1210.00	
	Unskilled mazdoor for carriage of earth	14	nos	242.00	3388.00	
	Mate	1	nos	266.00	266.00	
					5227.00	
	Add Overhead charge & C.P@15%				784.05	
					6011.05	
	Add 1% cess				60.11	
					6071.16	214.38
	Say Rs			**214.40**	Per M^3	
7.1.20.1	Extra for earth work in all kinds of soil for each additional lead of 25 M or part there of over the initial lead as per specification and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Unskilled mazdoor for cutting	1	nos	242.00	242.00	
					242.00	
	Add Overhead charge & C.P@15%				36.30	
					278.30	
	Add 1% cess				2.78	
					281.08	9.93
			Say Rs	**9.90**	Per M^3	
7.1.20.2	Extra for earth work in rock for each additional lead of 25 M or part there of over the initial lead as per specification and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					

	Unskilled mazdoor for cutting	1.50	nos	242.00	363.00	
					363.00	
	Add Overhead charge & C.P@15%^				54.45	
					417.45	
	Add 1% cess				4.17	
					421.62	14.89
			Say Rs	14.90	Per M^3	
7.1.21.1	Extra for earth work in all kinds of soil for each additional lift of 1 M or part there of over the initial lift of 1.50 m as per specification and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Unskilled mazdoor for cutting	1	nos	242.00	242.00	
					242.00	
	Add Overhead charge & C.P@15%				36.30	
					278.30	
	Add 1% cess				2.783	
					281.08	9.93
			Say Rs	9.90	Per M^3	
7.1.21.2	Extra for earth work in rock each additional lift of 1 M or part there of over the Initial lift of 1.50 m as per specification and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Unskilled mazdoor for cutting	1.50	nos	242.00	363.00	
					363.00	
	Add Overhead charge & C.P@15%				54.45	
					417.45	
	Add 1% cess				4.1745	
					421.62	14.89
			Say Rs	14.90	Per M^3	
7.1.22	Earth work in dam fill in semi previous or impervious zone by manual excavation and carriage by Truck including loading, including , making dam in proper design section including earth to be laid in layers of not more than 225 mm thick with all lift and breaking clods to maximum 63 mm cubs as well as construction and maintenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurement-sectional measurement of compacted earth).					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
7.1.22.1	Lead beyond 150 m but up to 1/2 K.M					
A.	Labour					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1	nos	266.00	266.00	
B.	Carriage of earth by 10 M.T capacity Truck					
	Average lead	325	M			
	Truck capacity 8 MT	4.8	Cum			
	Cycle time----					
	(a) Hauling time @ 16 KM (Average)speed per hours	16	k.m/hr			
	=Average leadx60x2/1000xhauling time=	2.44	minutes			
	(b) Loading unloading turning and spollting time=	60	minutes			
	Total hauling cycle time=(a+b)	62.44	minutes			
	No of trip per working hour = 60 / Total hauling time	0.96	Trips			
	Material carried=TripsxTruck capacity =	4.61	Cum			
	Hourly use rate of truck (Vide item no 3.26)	843.00	hr			

	Rate per cum=Use rate of truckx28.32/material carried			Rs	5175.76	
	© Construction and maintenance of haul road @ 5 % of Item (B)			Rs	258.79	
					8362.54	
	Add Overhead charge & C.P@15%				1254.38	
					9616.93	
	Add 1% cess				96.17	
					9713.10	342.98
			Say Rs	**343.00**	Per M^3	
7.1.22.2	**Lead beyond 1/2 K.M but up to 1 K.M**					
A.	**Labour**					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1.00	nos	266.00	266.00	
B.	**Carriage of earth by 10 M.T capacity Truck**					
	Average lead	750	M			
	Truck capacity 8 MT	4.8	Cum			
	Cycle time----					
	(a) Hauling time @ 16 KM (Average)speed per hours	16	k.m/hr			
	=Average leadx60x2/1000xhauling time=5.63 minutes	5.63	minutes			
	(b) Loading unloading turning and spollting time=	60	minutes			
	Total hauling cycle time=(a+b)	65.63	minutes			
	No of trip per working hour = 60 / Total hauling time	0.91	Trips			
	Material carried=TripsxTruck capacity =	4.39	Cum			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per cum=Use rate of truckx28.32/material carried			Rs	5439.98	
	© Construction and maintenance of haul road @ 5 % of Item (B)			Rs	272.00	
					8639.98	
	Add Overhead charge & C.P@15%				1295.9975	
					9935.98	
	Add 1% cess				99.36	
					10035.34	354.36
			Say Rs	**354.40**	Per M^3	
7.1.22.3	**Lead beyond 1 K.M but up to 2 K.M**					
A.	**Labour**					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1.00	nos	266.00	266.00	
B.	**Carriage of earth by 10 M.T capacity Truck**					
	Average lead	1.5	M			
	Truck capacity 8 MT	4.8	Cum			
	Cycle time----					
	(a) Hauling time @ 17 KM (Average)speed per hours 250 M	17	k.m/hr			
	=Average leadx60x2/hauling time=5.63 minutes	10.59	minutes			
	(b) Loading unloading turning and spollting time=	60	minutes			
	Total hauling cycle time=(a+b)	70.59	minutes			
	No of trip per working hour = 60 / Total hauling time	0.85	Trips			
	Material carried=TripsxTruck capacity =	4.080	Cum			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per cum=Use rate of truckx28.32/material carried			Rs	5851.41	
	© Construction and maintenance of haul road @ 5 % of Item (B)			Rs	292.57	

					9071.98	
	Add Overhead charge & C.P@15%				1360.80	
					10432.78	
	Add 1% cess				104.3278	
					10537.11	372.07
			Say Rs	372.10	Per M^3	
7.1.22.4	**Lead beyond 2 K.M but up to 3 K.M**					
A.	**Labour**					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1.00	nos	266.00	266.00	
B.	**Carriage of earth by 8 M.T capacity Truck**					
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour 172.48x0.69x0.88 =104.72 Say100 cum		»			
	Truck capacity	8	M.T			
	Machinery charges					
	i. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	**#VALUE!**				P&M-041
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour (vide item no 3.10)	**#VALUE!**				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii. Carriage by Truck					
	Truck capacity 8 MT =4.8 cum (compacted earth)	4.8	cum			
	Average lead 2.5 k.m	2.5	k.m			
	Cycle time-----					
	(i). Loading time per minute= Body capacityx60/ shovel	2.88	minute			
	(ii) Hauling time @ 17.5 KM (Average)speed per hours	17.50	k.m/hr			
	=Average leadx60x2/hauling time=	17.14	minutes			
	(b) Loading unloading turning and spollting time=	20	minutes			
	Total hauling cycle time=(a+b)	37.14	minutes			
	No of trip per working hour = 60 / Total hauling time	1.62	Trips			
	Material carried=TripsxTruck capacity =	7.75	Cum			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**	hr			
	Rate per cum= Use rate of truckx28.32/material carried			Rs	3078.96	
	© Construction and maintenance of haul road @ 5 % of Item			Rs	153.95	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.23	Earth work in **dam fill in semi previous or impervious zone** fill materials to be loosened and excavated by **Ripper and shovel** at the borrow area and transported **by truck** to the dam fill site with all lift as well as spreading leveling by Dozer including construction and maintenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurement-sectional measurement of compacted earth).					
	Unit:-Per Cum					
	Assuming out put=1.0 Cum					
7.1.23.1	**Lead beyond 150 m but up to 1/2 K.M**					

	(Ref.Report of committee on cost control of River valley projects vol. II. Jan. 1981 page 89 to 93)					
	Average lead =	325	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			
	Truck capacity 10 M.T	10	M.T			
A.	Clearing and grubbing of borrow area		L.S		1.00	
B.	Machinery charges					
	I. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	**#VALUE!**				
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour (vide item no 3.10)	**#VALUE!**				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii. Carriage by Truck					
	Truck capacity 8 MT =4.8 cum (compacted earth)	4.8	cum			
	Average lead 325 M . . .	325	M			
	Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	2.88	minute			
	(b) Hauling time @ 16 KM (Average)speed per hours	16.00	k.m/hr			
	=Average leadx60x2/1000xhauling time=	2.44	minutes			
	(c) Loading unloading turning and spoltting time=	20	minutes			
	Total hauling cycle time=(a+b+c)	25.32	minutes			
	No of trip per working hour of 50 minute = 50 / Total hauling time	1.97	Trips			
	Material carried=TripsxTruck capacity =	9.48	Cum			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**				
	Rate per cum=Use rate of truck / Material carried				88.93	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer	5011.38				P&M-014
	Rate per cum =Use rate of D-8 / Out put				16.70	
	Total Machinery charges (i+ii+iii+iv)	#VALUE!			#VALUE!	
C.	Add for					
	I. Construction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Leveling and trimming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.23.2	**Lead beyond 1/2 K.M but up to 1 K.M**					
	(Ref.Report of committee on cost control of River valley projects vol. II. Jan. 1981 page 89 to 93)					
	Average lead =	750	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				

	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			
	Truck capacity 10 M.T	10	M.T			
A.	Clearing and grubbing of borrow area		L.S		1.00	
B.	Machinery charges					
	I. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	**#VALUE!**				
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour	**#VALUE!**				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii. Carriage by Truck					
	Truck capacity 8 MT =4.8 cum (compacted earth)	4.8	cum			
	Average lead 750 M	750	M			
	Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	2.88	minute			
	(b) Hauling time @ 16 KM (Average)speed per hours	16.00	k.m/hr			
	=Average leadx60x2/1000xhauling time=	5.63	minutes			
	(c) Loading unloading turning and spoltting time=	20	minutes			
	Total hauling cycle time=(a+b+c)	28.51	minutes			
	No of trip per working hour of 50 minute = 50 / Total hauling time	1.75	Trips			
	Material carried=TripsxTruck capacity =	8.42	Cum			
	Hourly use rate of truck (Vide item no 3.26)	**843.00**				
	Rate per cum=Use rate of truck / Material carried				100.12	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer	**5011.38**				
	Rate per cum=Use rate of D-8 / Out put				16.70	
	Total Machinery charges (i+ii+iii+iv)				#VALUE!	
C.	Add for					
	I. Construction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Leveling and trimming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.23.3	**Lead beyond 1 K.M but up to 2 K.M**					
	(Ref.Report of committee on cost control of River valley projects vol II. Jan. 1981 page 89 to 93)					
	Average lead =	1500	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			

	Truck capacity 10 M.T	10	M.T			
A	Machinery charges					
	i. Ropper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	#VALUE!				
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour (Vide item no 3.10)	#VALUE!				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii. Carriage by Truck					
	Truck capicty 8 MT =4.8 cum (compacted earth)	4.8	cum			
	Average lead	1500	M			
	Cycle time----					
	(a) Loading time per minute= Body capacity / shovel out put	2.88	minute			
	(b) Hauling time @ 16 KM (Average)speed per hours	16.00	k.m/hr			
	=Average leadx60x2/1000xhauling time=	11.25	minutes			
	(c) Loading unloding turning and spollting time=	20	minutes			
	Total hauling cycle time=(a+b+c)	34.13	minutes			
	No of trip per working hour of 50 minute = 50 / Total hauling time	1.46	Trips			
	Material carried=TripsxTruck capicty =	7.03	Cum			
	Hourly use rate of truck (Vide item no 3.26)	843.00				
	Rate per cum=Use rate of truck / Material carried				119.88	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer (vide item no 3.11 a)	5011.38				
	Rate per cumof D-8=Use rate of / Out put				16.70	
	Total Machinary charges (i+ii+iii+iv)				#VALUE!	
B.	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Levelling and triming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.23.4	**Lead beyound 2 K.M but upto 3 K.M**					
	(Ref.Report of committee on cost control of River vally projects vol II. Jan. 1981 page 89 to 93)					
	Average lead =	2500	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			
	Truck capacity 10 M.T	10	M.T			
A.	Machinery charges					
	I. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			

	Use rate per working hour (Vide item no 3.11 b+3.27c)	#VALUE!				
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour (Vide item no 3.10)	#VALUE!				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii. Carriage by Truck					
	Truck capicty 8 MT =4.8 cum (compacted earth)	4.8	cum			
	Average lead 750 M	2500	M			
	Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	2.88	minute			
	(b) Hauling time @ 16 KM (Average)speed per hours	16.00	k.m/hr			
	=Average leadx60x2/1000xhauling time=	18.75	minutes			
	(c) Loading unloding turning and spollting time=	20	minutes			
	Total hauling cycle time=(a+b+c)	41.63	minutes			
	No of trip per working hour of 50 minute = 50 / Total hauling time	1.20	Trips			
	Material carried=TripsxTruck capicty =	5.77	Cum			
	Hourly use rate of truck (Vide item no 3.26)	843.00				
	Rate per cum=Use rate of truck / Material carried				146.23	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer (vide item no 3.11 a)	5011.38				
	Rate per cumof D-8=Use rate of / Out put				16.70	
	Total Machinary charges (i+ii+iii+iv)				#VALUE!	
B.	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Levelling and triming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.24	Earth work in dam fill **in semi previous or impervious zone** fill materials to be loosened and excavated by **Ripper and shovel** at the borrow area and transported **by Dumper** to the dam fill site with all lift as well as spreading levelling by Dozer including construction and mainttenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurment-sectional measurement of compacted earth).					
	Unit:-Per Cum					
	Assuming out put=1.0 Cum					
7.1.24.1	**Lead beyound 150 mtr but upto 1/2 K.M**					
	(Ref.Report of committee on cost control of River vally projects voi II. Jan. 1981 page 89 to 93)					
	Average lead =	325	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				

	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			
	Dumper 15 M.T	10	M.T			
	Capacity 8.33 cum	8.33	cum			
	Swell factor= 0.75	0.75				
A	Machinery charges					
	I. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	**#VALUE!**	Per hr			
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour	**#VALUE!**				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii.Dumper					
	Average lead	325	M			
	Body capicity= capacity x Swell factor	6.25	(Bank volume)			
	Handling Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	3.75	minute			
	(b) spolting time=	0.30	minutes			
	(c). Turning and dumping time	2.00	minutes			
	(d). Empty haul @ 15 K.M per hour =Average Leadx60/15x1000	1.3	minutes			
	(e). Loaded haul @10 K.M per hour =Average Leadx60/15x1000	1.95	minutes			
	Total hauling cycle time=(a+b+c+d+e)	9.30	minutes			
	No of dumper trip per working hour of 50 minute = 50 / Total hauling time	5.38	Trips			
	Material carried=TripsxDumper capaicty =	33.59	Cum			
	Hourly use rate of Dumper 15 T (vide item	**#VALUE!**				
	Rate per cum=Use rate of Dumper/ Material carried				#VALUE!	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer	**5011.38**				
	Rate per cumof D-8=Use rate of / Out put				16.70	
	Total Machinary charges (i+ii+iii+iv)				#VALUE!	
B	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Levelling and triming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% coss				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.24.2	**Lead beyound 1/2 K.M but upto 1 K.M**					
	(Ref.Report of committee on cost control of River vally projects vol II. Jan. 1981 page 89 to 93)					
	Average lead =	750	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			

	Say	100	cum			
	Dumper 15 M.T	10	M.T			
	Capacity 8.33 cum	8.33	cum			
	Swell factor= 0.75	0.75				
A.	Machinery charges					
	I. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	**#VALUE!**				
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour	**#VALUE!**				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii.Dumper					
	Average lead	750	M			
	Body capicity= capacity x Swell factor	6.25	(Bank volume)			
	Handling Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	3.75	minute			
	(b) spolting time=	0.30	minutes			
	(c). Turning and dumping time	2.00	minutes			
	(d). Empty haul @ 25 K.M per hour =Average Leadx60/25x1000	1.8	minutes			
	(e). Loaded haul @20 K.M per hour =Average Leadx60/20x1000	2.25	minutes			
	Total hauling cycle time=(a+b+c+d+e)	10.10	minutes			
	No of dumper trip per working hour of 50 minute = 50 / Total hauling time	4.95	Trips			
	Material carried=TripsxDumper capaicty =	30.93	Cum			
	Hourly use rate of Dumper	**#VALUE!**				
	Rate per cum=Use rate of Dumper/ Material carried				#VALUE!	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer (vide item 3.11a)	**5011.38**				
	Rate per cumof D-8=Use rate of / Out put				16.70	
	Total Machinary charges (i+ii+iii+iv)				#VALUE!	
B.	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Levelling and triming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.24.3	**Lead beyound 1 K.M but upto 2 K.M**					
	(Ref.Report of committee on cost control of River vally projects vol II. Jan. 1981 page 89 to 93)					
	Average lead =	1500	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			
	Dumper 15 M.T	10	M.T			
	Capacity 8.33 cum	8.33	cum			
	Swell factor= 0.75	0.75				

A.	Machinery charges					
	I. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	#VALUE!				
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour (vide item 3.10a) =	#VALUE!				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii.Dumper					
	Average lead	1500	M			
	Body capicity= capacity x Swell factor	6.25	(Bank volume)			
	Handling Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	3.75	minute			
	(b) spolting time=	0.30	minutes			
	(c). Turning and dumping time	2.00	minutes			
	(d). Empty haul @ 25 K.M per hour =Average Leadx60/25x1000	3.6	minutes			
	(e). Loaded haul @20 K.M per hour =Average Leadx60/20x1000	4.5	minutes			
	Total hauling cycle time=(a+b+c+d+e)	14.15	minutes			
	No of dumper trip per working hour of 50 minute = 50 / Total hauling time	3.53	Trips			
	Material carried=TripsxDumper capaicty =	22.08	Cum			
	Hourly use rate of Dumper (Vide item no 3.12c)	#VALUE!				
	Rate per cum=Use rate of Dumper/ Material carried				#VALUE!	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer (vide item 3.11a)	5011.38				
	Rate per cumof D-8=Use rate of / Out put				16.70	
	Total Machinary charges (i+ii+iii+iv)				#VALUE!	
B.	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Levelling and triming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.24.4	**Lead beyound 2 K.M but upto 3 K.M**					
	(Ref.Report of committee on cost control of River vally projects voi II. Jan. 1981 page 89 to 93)					
	Average lead =	2500	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			
	Dumper 15 M.T	10	M.T			
	Capacity 8.33 cum	8.33	cum			
	Swell factor= 0.75	0.75				

A.	Machinery charges					
	I. Ripper with D-9 tractor dozer					
	Out put per working hour =	150	cum			
	Use rate per working hour (Vide item no 3.11 b+3.27c)	**#VALUE!**				
	Cost of ripping per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour (vide item 3.10a) =	**#VALUE!**				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii.Dumper					
	Average lead	2500	M			
	Body capicity= capacity x Swell factor	6.25	(Bank volume)			
	Handling Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	3.75	minute			
	(b) spotting time=	0.30	minutes			
	(c). Turning and dumping time	2.00	minutes			
	(d). Empty haul @ 25 K.M per hour =Average Leadx60/25x1000	6	minutes			
	(e). Loaded haul @20 K.M per hour =Average Leadx60/20x1000	7.5	minutes			
	Total hauling cycle time=(a+b+c+d+e)	19.55	minutes			
	No of dumper trip per working hour of 50 minute = 50 / Total hauling time	2.56	Trips			
	Material carried=TripsxDumper capaicty =	15.98	Cum			
	Hourly use rate of Dumper (Vide item no 3.12c)	**#VALUE!**				
	Rate per cum=Use rate of Dumper/ Material carried				#VALUE!	
	(iv). Spreading charge at placement by D- 8 Tractor Dozer					
	Out put per working hour =	300	cum			
	Use Rate of D-8 Tractor Dozer (vide item 3.11a)	**5011.38**				
	Rate per cumof D-8=Use rate of / Out put				16.70	
	Total Machinary charges (i+ii+iii+iv)				#VALUE!	
C.	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	
	ii. Levelling and triming of waste pile etc. @ 5 % of machinery charges				#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.25	Earth work in dam fill in semi previous or imprevious zone fill materials to be loosened and excavated by **Dozer and scraper** at the borrow area and transported **by Scraper** itself to the dam fill site with all lift as well as spreading levelling by Dozer including construction and mainttenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurment-sectional measurement of compacted earth).					
	Unit:-Per Cum					
7.1.25.1	**Lead beyound 150 mtr but upto 1/2 K.M**					
.	Average lead =	325	Metre			
	Capacity of scraper 9.175 cum (12 cyd) but actually loaded to 7.645 cum (10 cyd) for all practical purpose.	7.645	cum			

	Assuming speed of scraper as 8 km per hr	8	km/hr			
	For average condition (Ref:- Back "construction planing, equipment and methods" by R.L .Peurifey)					
	(a). Loading time	1.00	minute			
	(b) Time of dumping and running	0.50	minutes			
	(c). Time for accelerating and decelerating	0.40	minutes			
	Total time=(a+b+c)	1.90	minutes			
	Operating efficiency of scraper	0.83				
	No of trip per hour = 1000x8xefficiency / average leadx2	10.22	Trips			
	Loading and unloading time =Tripsx total time	19.41	minutes			
	Total time taken by scraper in 10.21 trip=1 per 19.41 minut	1.32	hr			
	Eart work involved per day= Actu.capacityx no of tripsx 8 hr/Total time taken by scraper in no of trips	**472.07**	**cum**			
	Time taken by ripper per day @ 15 minutes per 1.32 hr	1.51	hr			
	(I). Cost of 8 hour of scraper (vide Item no 3.23a)	**8**	**hr**	**#VALUE!**	#VALUE!	
	(ii). Cost of 1.51 hour of dozer (vide Item no 3.11a)	**1.51**	**hr**	**5011.38**	7572.99	
	Add for					
	I. Constuction and maintenance of haul road @ 5 % of (i+ii)	#VALUE!			#VALUE!	
	ii. Unskilled mazdoor for controlling slope	1.00	nos	242.00	242.00	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.25.2	**Lead beyound 1/2 K.M but upto 1 K.M**					
	Average lead =500+500/2	750	Metre			
	Capacity of scraper 9.175 cum (12 cyd) but actually loaded to 7.645 cum (10 cyd) for all practical purpose.	7.645	cum			
	Assuming speed of scraper as 8 km per hr	8	km/hr			
	For average condition (Ref:- Back "construction planing, equipment and methods" by R.L .peurifey)					
	(a). Loading time ut	1.00	minute			
	(b) Time of dumping and running	0.50	minutes			
	(c). Time for accelerating and decelerating	0.40	minutes			
	Total time=(a+b+c)	1.90	minutes			
	Operating efficiency of scraper	0.83				
	No of trip per hour = 1000x8xefficiency / average leadx2	4.43	Trips			
	Loading and unloading time =Tripsx total time	8.41	minutes			
	Total time taken by scraper in 10.21 trip=1 per 19.41 minutes	1.14	hr			
	Eart work involved per day= Actu.capacityx no of tripsx 8 hr/Total time taken by scraper in no of trips	**237.45**	**cum**			
	Time taken by dozer per day @ 8 minutes per 1.14 hr	0.94	hr			
	(I). Cost of 8 hour of scraper (vide Item no 3.23a)	**8**	**hr**	**#VALUE!**	#VALUE!	
	(ii). Cost of 0.94 hour of dozer (vide Item no 3.11a)	**0.94**	**hr**	**5011.38**	4688.2794	
	Add for					
	I. Constuction and maintenance of haul road @ 5 % of (i+ii)	#VALUE!			#VALUE!	
	ii. Unskilled mazdoor for controlling slope	1.00	nos	242.00	242.00	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	

7.1.25.3	Lead beyound 1 K.M but upto 2 K.M					
	Average lead =	1500	Metre			
	Capacity of scraper 9.175 cum (12 cyd) but actually loaded to 7.645 cum 9 10 cyd 0 for all practical purpose.	7.645	cum			
	Assuming speed of scraper as 8 km per hr	8	km/hr			
	For average condition (Ref:- Back "construction planing, equipment and methods" by R.L .Peurifey)					
	(a). Loading time ut	1.00	minute			
	(b) Time of dumping and running	0.50	minutes			
	(c). Time for accelerating and decelerating	0.40	minutes			
	Total time=(a+b+c)	1.90	minutes			
	Operating efficiency of scraper	0.83				
	No of trip per hour = 1000x8xefficiency / average leadx2	2.21	Trips			
	Loading and unloading time =Tripsx total time	4.21	minutes			
	Total time taken by scraper in 10.21 trip=1 per 19.41 minutes	1.07	hr			
	Eart work involved per day= Actu.capacityx no of tripsx 8 hr/Total time taken by scraper in no of trips	**126.50**	**cum**			
	Time taken by dozer per day @ 4 minutes per 1.07 hr	0.50	hr			
	(I). Cost of 8 hour of scraper (vide Item no3.23a)	**8**	**hr**	**#VALUE!**	#VALUE!	
	(ii). Cost of 0.50 hour of dozer (vide Item no 3.11a)	**0.50**	**hr**	**5011.38**	2497.6766	
	Add for					
	I. Constuction and maintenance of haul road @ 5 % of (i+ii)	#VALUE!			#VALUE!	
	ii. Unskilled mazdoor for controlling slope	1.00	nos	242.00	242.00	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.25.4	**Lead beyound 2 K.M but upto 3 K.M**					
	Average lead =	2500	Metre			
	Capacity of scraper 9.175 cum (12 cyd) but actually loaded to 7.645 cum 9 10 cyd 0 for all practical purpose.	7.645	cum			
	Assuming speed of scraper as 8 km per hr	8	km/hr			
	For average condition (Ref:- Back "construction planing, equipment and methods" by R.L >peurifey)	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor					
	(a). Loading time ut	1.00	minute			
	(b) Time of dumping and running	0.50	minutes			
	(c). Time for accelerating and decelerating	0.40	minutes			
	Total time=(a+b+c)	1.90	minutes			
	Operating efficiency of scraper	0.83				
	No of trip per hour = 1000x8xefficiency / average leadx2	1.33	Trips			
	Loading and unloading time =Tripsx total time	2.52	minutes			
	Total time taken by scraper in 10.21 trip=1 per 19.41 minutes	1.04	hr			
	Eart work involved per day= Actu.capacityx no of tripsx 8 hr/Total time taken by scraper in no of trips	**77.94**	**cum**			
	Time taken by dozer per day @ 2.5 minutes per 1.04 hr	0.32	hr			
	(I). Cost of 8 hour of scraper (vide Item no3.23a)	**8**	**hr**	**#VALUE!**	#VALUE!	
	(ii). Cost of 0.32 hour of dozer (vide Item no 3.11a)	**0.32**	**hr**	**5011.38**	1603.05	

	Add for					
	I. Constuction and maintenance of haul road @ 5 % of (i+ii)	#VALUE!			#VALUE!	
	ii. Unskilled mazdoor for controlling slope	1	nos	242.00	242.00	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	#VALUE!
	Add 1% cess				#VALUE!	#VALUE!
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.26	Labour for initial Rolling and compacting the ground before forming the embankment with **power road roller** at O.M.C to achieve minimum 95 % of dry density including sprinking the required quanting of water, making arrangement for supply and carriage of water with all leads and lifts, finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine and other tools and plants etc. all complete as per specifications and direction of E/I.					
	Unit:-Per Sqm					
	Assuming out put=93 Sqm					
	Unskiiled mazdoor	0.2	nos	242.00	48.40	
	Bhisti for carriage of water and sprikling	1	nos	243.00	243.00	
	Cost of water				15.00	
	Hire charge of Roller (Vide item no3.16a)					
	Assuming 2300 sqm. to be rolled in 8 hrs	0.32	hrs	**644.00**	206.08	
					512.48	
	Add Overhead charge & C.P@15%				76.87	
					589.35	
	Add 1% cess				5.89	
					595.25	64.00
			Say Rs	**64.00**	Per 10 M^2	
7.1.27	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C. by **sheep foot roller** driven by tractor to achieve minimum **95 %** of maximum dry density including sprinking the required quanting of **water by tanker within 1 km. lead** and all lifts including cost of water, finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)					
	Unit:-Per Cum					
	Assuming out put=100 Cum Fill					
	(A). Watering for compaction					
	Assuming additional moisture required 7 % including 1 % loss. Quantity of water reqwired = 100 x 62.5x 35.3x7/10x100 =1544.38 gal for 100 cum fill	1544.38	Gal for 100 cm fill			
	One Imp gail = 10 lbs	10	lbs			
	Bound trip time for 8000 gail tankar					
	Filling time + hauling (1 km) 16 km / hr+ Return @ 24 kmh					
	Sprinkling at 500 gpm+ lost time=16+3.75+2.5-16+6=44.25 mts.	44.25	mts			
	Quantity hauled per hour (50 mts)= 50 x 8000/44.25=90.40 gallon	9040	gallon			
	Use Rate of tanker (vide item 3.29b)	**661.00**				
	Cost of water	**1.07**	Per gallon			
	Rate per 100 cum fill=1544.38x Use rate of tanker/9040 gallon+cost of water per gallonx1544.38				1763.50	
	(B). Hire charge of **sheep foot** roller for 100 cum					

	Assuming 1450 cum to be rolled in 8 hrs **(Vide item no 3.16 d)**	0.55	hrs	**#VALUE!**	#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.28	Labour for Rolling and compacting the earth in layers of 225 mm thicl at O.M.C. by **road roller** to achieve minimum **95 %** of maximum dry density including sprinking the required quanting of **water by tanker within 1 km. lead** and all lifts including cost of water, finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of					
	Unit:-Per Cum					
	Assuming out put=100 Cum					
	(A). Watering for compaction					
	Assuming additional moisture required 7 % including 1 % loss. Quantity of water reqwired = 100 x 62.5x 35.3x7/10x100 =1544.38 gal for 100 cum fill	1544.38	for 100 cm fill			
	One Imp gail = 10 lbs					
	capacity of tanker	8000	gallon			
	Bound trip time for 8000 gal tankar =					
	Filling time	16	mts			
	Hauling (1 km) 16 km / hr	3.75	mts			
	Returning Time @ 24 kmh	2.5	mts			
	Sprinkling Time at 500 gpm	16	mts			
	lost time	6	mts			
	Total time	44.25	mts			
	Quantity hauled per hour (50 mts)= 50 x 8000/44.25=9040 gallon	9040	gallon			
	Use Rate of tanker (vide item 3.29b)	**661.00**				
	Cost of water	**1.07**	Per gallon			
	Rate per 100 cum fill=1544.38x Use rate of tanker/9040 gallom+cost of water per gallonx1544.38				1763.51	
	(B). Hire charge of **Road roller** for 100 cum					
	Assuming 566 cum to be rolled in 8 hrs **(Vide Item no3.16a)**	1.41	hrs	**644.00**	910.25	
					2673.76	
	Add Overhead charge & C.P@15%				401.06	
					3074.82	
	Add 1% cess				30.75	
					3105.57	**31.06**
			Say Rs	**31.10**	Per M^3	
7.1.29	Labour for Rolling and compacting the earth in layers of 225 mm thicl at O.M.C. by **sheep foot roller** driven by tractor to achieve minimum **90 %** of maximum dry density including sprinking the required quanting of **water by tanker within 1 km. lead** and all lifts including cost of water, finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)					
	Unit:-Per Cum					
	Assuming out put=100 Cum fill					
	(A). Watering for compaction					

	Assuming additional moisture required 7 % including 1 % loss. Quantity of water reqwired = 100 x 62.5x 35.3x7/10x100 =1544.38 gal for 100 cum fill	1544.38	for 100 cm fill			
	One Imp gail = 10 lbs					
	capacity of tanker	8000	gallon			
	Bound trip time for 8000 gal tankar =					
	Filling time	16	mts			
	Hauling (1 km) 16 km / hr	3.75	mts			
	Returning Time @ 24 kmh	2.5	mts			
	Sprinkling Timeat 500 gpm	16	mts			
	lost time	6	mts			
	Total time	44.25	mts			
	Quantity hauled per hour (50 mts)= 50 x 8000/44.25=9040 gallon	9040	gallon			
	Use Rate of tanker (vide item 3.29b)	**661.00**				
	Cost of water = Rs 500 / gallon	1.07	Per gallon			
	Rate per 100 cum fill=1544.38x Use rate of tanker/9040 gallom+cost of water per gallonx1544.38				1763.51	
	(B). Hire charge of **sheep foot roller** for 100 cum					
	Assuming 1755 cum to be rolled in 8 hrs **(Vide item no 3.16 d)**	0.46	hrs	**#VALUE!**	#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.30	Labour for Rolling and compacting the earth in layers of 225 mm thicl at O.M.C. by **road roller** to achieve **minimum 90 %** of maximum dry density including sprinking the required quanting of water **by tanker within 1 km. lead and** all lifts including cost of water, finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of					
	Unit:-Per Cum					
	Assuming out put=100 Cum fill					
	(A). Watering for compaction					
	Assuming additional moisture required 7 % including 1 % loss. Quantity of water reqwired = 100 x 62.5x 35.3x7/10x100 =1544.38 gal for 100 cum fill	1544.38	for 100 cm fill			
	One Imp gail = 10 lbs					
	capacity of tanker	8000	gallon			
	Bound trip time for 8000 gal tankar =					
	Filling time	16	mts			
	Hauling (1 km) 16 km / hr	3.75	mts			
	Returning Time @ 24 kmh	2.5	mts			
	Sprinkling Timeat 500 gpm	16	mts			
	lost time	6	mts			
	Total time	44.25	mts			
	Quantity hauled per hour (50 mts)= 50 x 8000/44.25=9040 gallon	9039.55	gallon			
	Use Rate of tanker (vide item 3.29b)	**661.00**				
	Cost of water = Rs 500 / gallon	1.07	Per gallon			
	Rate per 100 cum fill=1544.38x Use rate of tanker/9040 gallom+cost of water per gallonx1544.38				1763.51	
	(B). Hire charge of **Road roller** for 100 cum					
	Assuming 623 cum to be rolled in 8 hrs **(Vide item no 4.16a)**	1.28	hrs	**644.00**	824.32	
					2587.83	
	Add Overhead charge & C.P@15%				388.17	
					2976.00	
	Add 1% cess				29.76	

					3005.76	30.06
			Say Rs	**30.10**	Per M^3	
7.1.31	Labour for Rolling and compacting the earth in layers of 225 mm thick at O.M.C by **sheep foot roller** driven by tractor to achieve minmum 95 % of dry density including sprinking the required quanting of water making arragement for supply and carriage of water with all leads and lifts, finishing the surfaceas plan and drawing including hire charge of compaction, machine and other tools and plants etc. for lined canal all complete as per specifications and direction of E/I. (mode of measurement-sectional measurement of compacted earth)					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Bhisti for carriage of water and sprikling	3	nos	243.00	729.00	
	Cost of water				15.00	
	Hire charge of seep foot roller assuming 1450 cum to be rolled in 8 hr (vide item no 4.16 d)	0.16	hr	**#VALUE!**	#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess	1			#VALUE!	
					#VALUE!	#VALUE!
		Say	Rs	#VALUE!	Per M^3	
7.1.32	Labour for Rolling and compacting the earth in layers of 225 mm thicl at O.M.C. by **road roller** to achieve **minimum 95 %** of maximum dry density including sprinking the required quanting of water making arrangement for supply and carriage of water with all leads and lift finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Bhisti for carriage of water and sprikling	3.0	nos	243.00	729.00	
	Cost of water				15.00	
	(B). Hire charge of **road roller** for 100 cum					
	Assuming 566 cum to be rolled in 8 hrs (Vide item no 4.16a)	0.40	hrs	644.00	257.78	
					1001.78	
	Add Overhead charge & C.P@15%				150.27	
					1152.05	
	Add 1% cess				11.52	
					1163.57	41.09
			Say Rs	**41.10**	Per M^3	
7.1.33	Labour for Rolling and compacting the earth in layers of 225 mm thicl at O.M.C. by **sheep foot roller driven by tractor** to achieve minimum **90 %** of maximum dry density including sprinking the required quanting of water making arrangement for supply and carriage of water with all leads and lift finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					

	Bhisti for carriage of water and sprikling	3.0	nos	243.00	729.00	
	Cost of water				15.00	
	(B). Hire charge of **sheep foot roller** for 100 cum					
	Assuming **1755** cum to be rolled in 8 hrs **(Vide item no 4.16 d)**	0.13	hrs	**#VALUE!**	#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.34	Labour for Rolling and compacting the earth in layers of 225 mm thicl at O.M.C. by **road roller** to achieve minimum **90 %** of maximum dry density including sprinking the required quanting of water making arrangement for supply and carriage of water with all leads and lift finishing the surface with proper grade, camber or superelevation including, hire charges of compaction machine tanker and other tools and plants etc. all complete as per specifications and direction of E/I. .(Mode of measurement - Sectional measurement of compacted earth)					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
	Bhisti for carriage of water and sprikling	3.0	nos	243.00	729.00	
	Cost of water				15.00	
	(B). Hire charge of **road roller** for 100 cum					
	Assuming 623 cum to be rolled in 8 hrs **(Vide item no 4.16a)**	0.36	hrs	**644.00**	231.84	
					975.84	
	Add Overhead charge & C.P@15%				146.38	
					1122.22	
	Add 1% cess				11.22	
					1133.44	40.02
			Say Rs	**40.00**	Per M^3	
7.1.35	Close timbering in trenches including shuttering, shoring and packing cavities (wherever required) depth not exceeding 1.5 metre all complete as per specifications and direction of E/I. (Measurement to be taken of the face area timbered)					
	Unit:-Per Sqm					
	Assuming out put=90 Sqm					
	Assuming trench 30 metre long 1.5 metre deep					
	Area=2x30x1.5= 90 sqm.					
	Piling boards					
	Local wood 90x0.038	3.42	cum	33253.00	113725.26	
	Walings 100 mm x 100 mm					
	Local wood4 x30 x0.1 x0.1	1.2	cum	33253.00	39903.60	
	Ball struts					
	Sal ballah (125 mm dia 1.5 metre long)					
	2 x17 x 1.5	51	metre	28.60	1458.60	
	Carriage					
	Cost of carriage of material including loading, unloading and stacking 1 % of total cot of materials				1550.87	
					156038.33	A
	Deduct credit for materials 75 % of the cost of materials. This can be used four times (Ax0.75)			(-)	117478.75	
					39159.58	B
	Therefore cost of use =B/4				9789.90	
	Labour					
	Carpenter Gr II	0.5	nos	295.00	147.50	
	Unskilled mazdoor	1	nos	242.00	242.00	
					10179.40	
	Add Overhead charge & C.P@15%				1526.91	
					11706.31	

	Add 1% cess				117.06	
					11823.37	131.37
			Say Rs	131.40	Per M^2	
7.1.36	Close timbering in trenches including shuttering, shoring and packing cavities (wherever required) depth not exceeding 1.5 metre but upto 3.0 metre all complete as per specifications and direction of E/I. (Measurement to be taken of the face area timbered)					
	Unit:-Per Sqm					
	Assuming out put=90 Sqm					
	Assuming trench 30 metre long 1.5 metre deep					
	Area=2x30x1.5= 90 sqm.					
	Piling boards					
	Local wood 90x0.038	3.42	cum	33253.00	113725.26	
	Walings 100 mm x 100 mm					
	Local wood4 x30 x0.1 x0.1	1.2	cum	33253.00	39903.60	
	Ball struts					
	Sal ballah (125 mm dia 1.5 metre long)					
	2 x17 x 1.5	51	metre	28.60	1458.60	
	Carriage					
	Cost of carriage of material including loading, unloading and stacking 1 % of total cot of materials				1550.87	
					156638.33	A
	Deduct credit for materials 75 % of the cost of materials. This can be used four times			(-)	117478.75	
					39159.58	B
	Therefore cost of use =B/4				9789.90	
	Labour					
	Carpenter Gr II	0.75	nos	295.00	221.25	
	Unskilled mazdoor	2	nos	242.00	484.00	
					10495.15	
	Add Overhead charge & C.P@15%				1574.27	
					12069.42	
	Add 1% cess				120.69	
					12190.11	135.45
			Say Rs	135.40	Per M^2	
7.1.37	Supply and laying 300 mm thick humous earth layer on slopes of dam with manual compaction and turfing the surface with approved dub grass with 1 k.m lead including watering and ramming till growth of grass all complete as per specifications and direction of E/I.					
	Unit:-Per Sqm					
	Assuming out put=100 Sqm					
	Unskilled mazdoor for cutting humous earth and dub grass	6	nos	242.00	1452.00	
	Unskilled mazdoor for carrying earth to drm slope and laying in layers	8	nos	242.00	1936.00	
	Carriage of earth by truck with 1 km lead	28.32	cum	#NAME?	#NAME?	
	Unskilled mazdoor for ramming for proper consolidation	2	nos	242.00	484.00	
	Unskilled mazdoor for watering the surface including carriage of water	1	nos	242.00	242.00	
	Unskilled mazdoor for or carriage of grass sides on slope	2	nos	242.00	484.00	
	Unskilled mazdoor for watering the planted grass till gramination	2	nos	242.00	484.00	
	Mate	0.5	nos	266.00	133.00	
					#NAME?	
	Add Overhead charge & C.P@15%				#NAME?	
					#NAME?	
	Add 1% cess				#NAME?	
					#NAME?	#NAME?
			Say Rs	#NAME?	Per M^2	

7.1.38	Trimming an dressing the side slope of dam to proper section with all lead and lifts as per drawing, specifications and direction of E/I.					
	Unit:-Per Sqm					
	Assuming out put=100 Sqm					
	Mason Gr II	0.25	nos	295.00	73.75	
	Unskilled mazdoor for cutting slope	4	nos	242.00	968.00	
	Unskilled mazdoor for carrying the spoils	4	nos	242.00	968.00	
	Unskilled mazdoor for dressing the slope	1	nos	242.00	242.00	
	Mate	0.25	nos	266.00	66.50	
					2318.25	
	Add Overhead charge & C.P@15%				347.7375	
					2665.99	
	Add 1% cess				26.66	
					2692.65	26.93
			Say Rs	26.90	Per M^2	
7.1.39	Earth work in foundation excavation as per designed section in ordinary or soft rock (vide classification of soil item C) by **shovel** and its disposal upto 1 k.m by **dumper** with all lift including construction and mainttenance of haul roads, all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=1.0 Cum					
	Assuming Per cum					
	Average lead =	500	Metre			
	Diesel Shovel capacity	2	cum			
	Ideal production per hour=196 cum (Bank volume)	196	cum			
	Taking depth of cut and angle of swing factor =0.88	0.88				
	Production per hour=Ideal production per hour X depth of cut and angle of swing factor	172.48	cum			
	Taking efficiency factor	0.88				
	Job management factor	0.69				
	Out put of shovel per hour=Production per hr x efficiency factor x Job management factor	104.73	cum			
	Say	100	cum			
A..	Machinery charges					
	I. D-9 tractor dozer					
	Assuming that one Dozer will work one shovel out put of Tracter Dozer output of shovelper working hour =	100	cum			
	Use rate per working hour (vide item 3.11b)	#VALUE!				
	Rate per Cum= Use rate / out put				#VALUE!	
	ii.Shovel					
	Use rate per working hour (vide item 3.10a)	#VALUE!				
	Out put per working hour =	100	cum			
	Rate per Cum= Use rate of shovel / out put				#VALUE!	
	iii.Dumper 15 M.T					
	Average lead	500	M			
	Swell factor	0.67				
	Capacity	8.33				
	Body capicity= capacity x Swell factor	5.58	mpacted volume)			
	Handling Cycle time----					
	(a). Loading time per minute= Body capacity / shovel out put	3.35	minute			
	(b) spolting time=	0.30	minutes			
	(c). Turning and dumping time	2.00	minutes			
	(d). Empty haul @ 25 K.M per hour =Average Leadx60/25x1000	1.2	minutes			
	(e). Loaded haul @20 K.M per hour =Average Leadx60/20x1000	1.5	minutes			
	Total hauling cycle time=(a+b+c+d+e)	8.35	minutes			
	No of dumper trip per working hour of 50 minute = 50 / Total hauling time	5.99	Trips			

	Material carried=TripsxDumper capaicty =	33.43	Cum			
	Hourly use rate of Dumper (Vide item no 4.12c)	**#VALUE!**				
	Rate per cum=Use rate of Dumper/ Material carried				#VALUE!	
	Total Machinary charges (i+ii+iii)				#VALUE!	A
B.	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges				#VALUE!	B
	Total(A+B)				#VALUE!	
	Add Overhead charge & C.P@15%		%		#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	

7.1.40	Earth work in foundation excavation as per designed section in hard rock where blasting is needed and disposal of excavated rock with the combination of machines shovel, Dumper and Tractor - Dozer within one k.m with all lift including stacking properly in approved stack yard as well as construction and mainttenance of haul roads, all complete as per specifications and direction of E/I.							
	Unit:-Per Cum							
	Assuming out put=100 Cum							
A.	**Drilling and blasting**							
	(a). Drilling charges							
	Rock drilling for excavation will be carried out br jack hammers on the basis of the following table(Construction, planing, equipment and methods by R.L.Peurify page 259) Considering 1 ft hole sufficient for blasting 0.92 cu yd (0.92 cum) of rock.							
	(Ref.Report of committee on cost control of River vally projects vol II. Jan. 1981)							
	Size of hole in mm	Hole patter meter	Area per hole cum	Quantity of rock per linear m. of hole cum	Kg. Of explosives per linear m. of hole	Kg of esplosive per cum of rock @ of hole filled		
						100%	75%	50%
	1	2	3	4	5	6	7	8
	38	1.52x1.52	2.31	2.31	1.34	0.58	0.43	0.28
	Depth of drilling per 100 cum of rock=100/2.31=43.29 m	43.29	M					
	Horizontal drilling and pull effect @ 50 %	21.65	M					
	Total drilling per 100 cum of rock	64.94	M					
	Say	65.00	M					
	Cost of drilling							
	Rate of drilling per hour 2.3 m	2.3	M					
	Hourly use rate (vide item 3.19)	**436.00**			**12321.74**			

	Cost of compracssed air= Total drilling per 100 cum of rockx hourly use rate (vide item 4.19)/rate of drilling per hour					
	Hourly use rate (vide item 3.2)	844.00				
	Cost of drilling by jack hammer=Total drilling per 100 cum of rockx hourly use rate (vide item 4.2)/rate of drilling per hour				23852.17	
B.	**Use rate of drilling steel per mt (Vide item no 4.2 a)**	**#VALUE!**				
	Cost of drill steel 65 m	65	mtr		#VALUE!	
C.	Blasting materials including excise, sales tax. Carriage from Gomia to worksite, storage etc.					
	(I). Cost of Gelatine					
	Assuming that the drill holes can be filled with dynamite upto 75 % of thick capacity. The quantity of explosive required per 100 cum of rock=0.43x100	43	Kg			
	Cost of Gelatine	43	Kg	1099.00	47257.00	
	(ii). Cost of Detonators					
	Average depth of hole	1.75	M			
	Quantity of rock per linear metre of hole	2.31	M			
	Quantity of rock per 1.75 m deep hole=	4.04				
	No of holes per 100 cum=	24.74				
	Say	25				
	Using one detenator per hole					
	Nos of detonators per 100 cum	25	nos	7.40	184.98	
	(iii). Blasting batteries, primer, primac rod and loading wire etc. per 100 cum @ 50 % of the cost of detonators				92.49	
	(iv). Stemming @ 40 % of the cost of detonators				73.99	
	Total (A+B+C)				#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
	Rate per cum				#VALUE!	
	Carriage of blasted rock upto 1 km.lead (vide item no 7.1.39)				Input	
					#VALUE!	
			Say Rs	#REF!	Per M^3	
7.1.41	Earth work in foundation excavation as per designed section in sand and slushes soil in river bed and disposal of the same upto 1/2 k.m with the combination of machines Dragline Dumper and Tractor - Dozer complete job including construction and mainttenance of haul roads, all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=1.0 Cum					
	Average lead =	250	Metre			
	Tata P and H , Dragline capacity	2	cum			
	Net output of Dragline/hr	115	cum			
	Dumper 15 M.T	15	M.T			
	Capacity 8.33 cum	8.33	cum			
	Swell factor= 0.75	0.75				
(A).	Machinery charges					
	I. Use rate of Dragline/hr (Vide item 3.37a)	**1722.60**				P&M-074
	Rate Per cum=Use rate / out put Rs	14.98	a			
	ii.Dumper 15 T					
	Average lead	250	M			
	Body capicity= capacity x Swell factor	6.25	(Bank volume)			
	Handling Cycle time----					
	(a). Loading time per minute= Body capacity / Dragline out put/minutes	3.26	minute			
	(b) spolting time=	0.30	minutes			
	(c). Turning and dumping time	2.00	minutes			

	(d). Empty haul @ 15 K.M per hour =Average Leadx60/15x1000	1	minutes			
	(e). Loaded haul @10 K.M per hour =Average Leadx60/10x1000	1.5	minutes			
	Total hauling cycle time=(a+b+c+d+e)	8.06	minutes			
	No of dumper trip per working hour of 50 minute = 50 / Total hauling time	6.20	Trips			
	Material carried=TripsxDumper capaicty =	38.76	Cum			
	Hourly use rate of Dumper (Vide item no 3.12c)	**#VALUE!**				
	Rate per cum=Use rate of Dumper/ Material carried	#VALUE!	**b**			
	(iii). D- 8 Tractor Dozer					
	Assuming that one Dozer will work with one Draglincs					
	Therefore out put of D-8 Tractor Dozer =	230	cum			
	Use Rate of D-8 Tractor Dozer (vide item 3.11a)	**5011.38**				
	Rate per cum of D-8=Use rate of / Out put	21.79	**c**			
	Total Machinary charges (a+b+c)	#VALUE!			#VALUE!	
B	Add for					
	I. Constuction and maintenance of haul road @ 5 % of machinery charges	#VALUE!			#VALUE!	
					#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
			Say Rs	#VALUE!	Per M^3	
7.1.42	**Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond initial lead of 150 mtr.but within 1.00 K.M and all lifts by Tipper and loading by Front end loader,including unloading and maintenance of haul roads as per specifications and direction of E/I.**					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
A.	**Labour**					
	Unskilled mazdoor for dagbelling	0.50	nos	242.00	121.00	
	Unskilled mazdoor for for cutting earth as well as removing organic materials etc.	6	nos	242.00	1452.00	
	Unskilled mazdoor for preparation of sheet	1	nos	242.00	242.00	
	Mate	0.25	nos	266.00	66.50	
					1881.50	
	Add Overhead charge & C.P@15%				282.225	
					2163.73	76.40
B.	**Carriage of earth by 5.5 cum capacity Tipper**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	**ead x H_{ka}**
					188.50	188.50
						264.90
	Add 1% cess					2.65
						267.55
	Say Rs			**267.60**	Per M^3	
7.1.43	**Earth work in stripping in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same along with all organic materials in country side beyond 1.00 K.M but up to 2 K.M away with all lifts by Tipper and loading by Front end loader,including unloading and maintenance of haul roads as per specifications and direction of E/I.**					

	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
A.	**Labour**					
	Unskilled mazdoor for dagbelling	0.50	nos	242.00	121.00	
	Unskilled mazdoor for for cutting earth as well as removing organic materials etc.	6	nos	242.00	1452.00	
	Unskilled mazdoor for preparation of sheet	1	nos	242.00	242.00	
	Mate	0.25	nos	266.00	66.50	
					1881.50	
	Add Overhead charge & C.P@15%				282.225	
					2163.73	76.40
B.	Carriage of earth by 5.5 cum capacity Tipper					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	66.80	66.80	ead x H_{ka}
					221.90	221.90
						298.30
	Add 1% cess					2.98
						301.29
	Say Rs			**301.30**	Per M^3	
7.1.44	Earth work in excavation of cut -off trenches as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150 mtr but up to1 K.M away with all lifts by Tipper and loading by Front end loader,including unloading, construction and maintenance of haul roads as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Assuming out put=28.32 Cum					
A.	**Labour**					
	Unskilled mazdoor for cutting earth	7.00	nos	242.00	1694.00	
	Unskilled mazdoor for profilling dressing and making edge straight	1.00	nos	242.00	242.00	
	Mason Gr I	0.25	nos	330.00	82.50	
					2018.50	
	Add Overhead charge & C.P@15%				302.775	
					2321.28	81.97
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	ead x H_{ka}
					188.50	188.50
	Rate (A+B)					270.47
	Add 1% cess					2.70
						273.17
				273.20	Per M^3	
7.1.45.1*	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150 mtr from the Toe of the dam but within 1 k.m with all lifts by Tipper and loading by Front end loader,including unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by conccerned Chief Engineer)					
	Assuming 10cum					
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work	4.00	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	

	Blaster	0.33	nos	408.00	134.64	
	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.00	Kg	1099.00	2198.00	
	Detonator	10	nos	7.40	63.14	
	Fuse coil	1	nos	15.61	15.61	
	Tools and Plants					
	Cost of hire charge of compressor, drilling equpment and other accessories				15.00	
					4212.79	
	Add Overhead charge & C.P@15%				631.92	
					4844.71	484.47
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	**ead x H_{ka}**
					188.50	188.50
	Rate (A+B)					672.97
	Add 1% cess					6.73
						679.70
		Say Rs		**679.70**	Per M^3	
7.1.45.2	Earth work in excavation of cut -off trenches as per designed section in soft rock or ordinary rock, (Where blasting is not required) (vide classification of soil item C) with disposal of soil beyond 150 mtr from the Toe of the dam but within 1 k.m with all lifts by Tipper and loading by Front end loader,including unloading, construction and maintenance of haul roads as per specifications and direction of E/I					
	Assuming 10cum					
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work	4.00	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	
					2008.30	
	Add Overhead charge & C.P@15%				301.25	
					2309.55	230.95
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	**ead x H_{ka}**
					188.50	188.50
	Rate (A+B)					419.45
	Add 1% cess					4.19
						423.65
		Say Rs		**423.60**	Per M^3	
7.1.46	Earth work in excavation of cut -off trenches as per designed section in hard rock and stacking properly in approved stack size in approved stack yard beyond initial lead of 150 mtr but upto 1 k.m in country side with all lifts by Tipper and loading by Front end loader,including unloading, stacking properly in approved stack yards,construction and maintenance of haul roads as per specifications and direction of E/I.					
	Taking out put=10 Cum					
A.	**For Excavation**					
	Hammer man	10.50	nos	258.00	2709.00	
	Unskilled mazdoor for all work	10.00	nos	242.00	2420.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.67	nos	408.00	273.36	

	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.75	Kg	1099.00	3022.25	
	Detonator	18	nos	7.40	133.18	
	Fuse coil	3	nos	15.61	46.83	
	Tools and Plants					
	Cost of hire charge of compressor, drilling equpment and other accessories				26.50	
					8740.02	
	Add Overhead charge & C.P@15%				1311.00	
					10051.03	1005.10
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	**ead x H_{ka}**
					188.50	188.50
	Rate (A+B)					1193.60
	Add 1% cess					11.94
						1205.54
		Say Rs		**1205.50**	Per M^3	
7.1.47	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in all kinds of soil including moorum soil, soil mixed with kanker, pebbles, and boulder upto 300 mm size and disposal of the same in country side beyond initial lead of 150 mtr but up to 1 K.M away with all lifts by Tipper and loading by Front end loader,including unloading, construction and maintenance of haul roads as per specifications and direction of E/I.					
	Assuming 28.32 cum					
A.	**Labour**					
	Unskilled mazdoor for cutting foundation	7.00	nos	242.00	1694.00	
	Unskilled mazdoor for forming spoil	1.00	nos	242.00	242.00	
	Mason Gr I	0.25	nos	330.00	82.50	
					2018.50	
	Add Overhead charge & C.P@15%				302.78	
					2321.28	81.97
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	**ead x H_{ka}**
					188.50	188.50
	Rate (A+B)					270.47
	Add 1% cess					2.70
						273.17
		Say Rs		**273.20**	Per M^3	
7.1.48.1	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock (vide classification of soil item C) disposal of soil beyond 150 mtr but upto 1 k.m away from toe of the dam with all lifts by Tipper and loading by Front end loader,including unloading, construction and maintenance of haul roads as per specifications and direction of E/I. (Soft rock where blasting is required and approved by conccerned Chief Engineer)					
	Assuming 10cum					
A.	Labour					
	Hammer man	2.75	nos	258.00	709.50	

	Unskilled mazdoor for all work	4.00	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.33	nos	408.00	134.64	
	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.00	Kg	1099.00	2198.00	
	Detonator	10	nos	7.40	73.99	
	Fuse coil	1	nos	15.61	15.61	
	Tools and Plants					
	Cost of hire charge of compressor, drilling equpment and other accessories				15.00	
					4223.64	
	Add Overhead charge & C.P@15%				633.55	
					4857.19	485.72
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	**ead x H_{ka}**
					188.50	188.50
	Rate (A+B)					674.22
	Add 1% cess					6.74
						680.96
		Say Rs		681.00	Per M^3	
7.1.48.2	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in soft rock or ordinary rock(Where blasting is not required) (vide classification of soil item C) disposal of soil beyond 150 mtr but upto 1 k.m away from toe of the dam with all lifts by Tipper and loading by Front end loader,including unloading, construction and maintenance of haul roads as per specifications and direction of E/I.					
	Assuming 10cum					
A.	**Labour**					
	Hammer man	2.75	nos	258.00	709.50	
	Unskilled mazdoor for all work	4.00	nos	242.00	968.00	
	Mason Gr I	0.33	nos	330.00	108.90	
					2008.30	
	Add Overhead charge & C.P@15%				301.25	
					2309.55	230.95
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	**ead x H_{ka}**
					188.50	188.50
	Rate (A+B)					419.45
	Add 1% cess					4.19
						423.65
		Say Rs		423.60	Per M^3	
7.1.49	Earth work in excavation of foundation trenches of toe wall, spillway, head regulators, outlets, intake wells etc as per designed section in hard rock where blasting needed and disposal of excavated rock by Tipper and loading by Front end loader,including beyond initial lead of 150 mtr but upto 1 k.m away from toe of the dam with all lifts including loading, unloading, construction and maintenance of haul roads as per specifications and direction of E/I.					
	Assuming 10cum					

A.	Labour					
	Hammer man	10.50	nos	258.00	2709.00	
	Unskilled mazdoor for all work	10.00	nos	242.00	2420.00	
	Mason Gr I	0.33	nos	330.00	108.90	
	Blaster	0.67	nos	408.00	273.36	
	Blasting material including excise, sales tax, carriage from Gomia to work site, storage etc.					
	Special Gelatin	2.75	Kg	1099.00	3022.25	
	Detonator	18	nos	7.40	133.18	
	Fuse coil	3	nos	15.61	46.83	
	Tools and Plants					
	Cost of hire charge of compressor, drilling equpment and other accessories				26.50	
					8740.02	
	Add Overhead charge & C.P@15%				1311.00	
					10051.03	1005.10
B.	**Carriage of earth by 5.5 cum capacity Tipper and loading by front end loader**					
	Taking output = 1 cum.km					
	Loading of earth by Front end loader (Vide item no 4.1)	1	cum	155.10	155.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	ead x H_{ka}
					188.50	188.50
	Rate (A+B)					1193.60
	Add 1% cess					11.94
						1205.54
		Say Rs		**1205.50**	Per M^3	
7.1.50	Earth work in dam fill in semi previous or imprevious zone by manual excavation and carriage by Tipper and loading by manual labours including , making dam in proper design section including earth to be laid in layers of not more than 225 mm thick with all lift and breaking clods to maximum 63 mm cubsas well as construcion and mainttenance of haul roads, all complete as per specifications and direction of E/I. (Mode of measurment-sectional measurement of compacted earth).					
	Assuming 28.32cum					
7.1.50.1	**Lead beyound 150 mtr but upto 1/2 K.M**					
A.	**Labour**					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrpw area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1.00	nos	266.00	266.00	
					2928.00	
	Add Overhead charge & C.P@15%				439.20	
					3367.20	118.90
B.	**Carriage of earth by 5.5 cum capacity Tipper**					
	Taking output = 1 cum.km					
	Loading and Unloading of Earth By manuals means					
	Vide item no 4.2.	1	cum	194.10	194.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	16.70	16.70	ead x H_{ka}
					210.80	210.80
	Rate (A+B)					329.70
	Add Cess @1%					3.30
						333.00
		Say	Rs	**333.00**	Per M^3	
7.1.50.2	**Lead beyound 1/2 K.M but upto 1 K.M**					
A.	**Labour**					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrpw area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1.00	nos	266.00	266.00	

					2928.00	
	Add Overhead charge & C.P@15%				439.20	
					3367.20	118.90
B.	Carriage of earth by 5.5 cum capacity Tipper					
	Taking output = 1 cum.km					
	Loading and Unloading of Earth By manuals means					
	Vide item no 4.2.	1	cum	194.10	194.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	33.40	33.40	ead x H_{ka}
					227.50	227.50
	Rate (A+B)					346.40
	Add 1% cess					3.46
						349.86
		Say	Rs	**349.90**	Per M^3	
7.1.50.3	**Lead beyound 1 K.M but upto 2 K.M**					
A.	**Labour**					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrpw area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1.00	nos	266.00	266.00	
					2928.00	
	Add Overhead charge & C.P@15%				439.20	
					3367.20	118.90
B.	**Carriage of earth by 5.5 cum capacity Tipper**					
	Taking output = 1 cum.km					
	Loading and Unloading of Earth By manuals means					
	Vide item no 4.2.	1	cum	194.10	194.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	66.80	66.80	ead x H_{ka}
					260.90	260.90
	Rate (A+B)					379.80
	Add 1% cess					3.80
						383.60
		Say	Rs	**383.60**	Per M^3	
7.1.50.4	**Lead beyound 2 K.M but upto 3 K.M**					
A.	**Labour**					
	Unskilled mazdoor for stripping the borrow area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for throwing the stripped earth from borrpw area	0.75	nos	242.00	181.50	
	Unskilled mazdoor for cutting earth	9.50	nos	242.00	2299.00	
	Mate	1.00	nos	266.00	266.00	
					2928.00	
	Add Overhead charge & C.P@15%				439.20	
					3367.20	118.90
B.	Carriage of earth by 5.5 cum capacity Tipper					
	Taking output = 1 cum.km					
	Loading and Unloading of Earth By manuals means					
	Vide item no 4.2.	1	cum	194.10	194.10	
	Cost of Haulage vide item no 4.4(c)	1	cum.km	100.20	100.20	ead x H_{ka}
					294.30	294.30
	Rate (A+B)					413.20
	Add 1% cess					4.13
						417.33
		Say	Rs	**417.30**	Per M^3	

Sr.No.	Item	Rate	Unit

7.2 DRILLING WORK

Sr.No	Item	Rate	Unit
7.2.1.1	Core drilling of N x (53 mm To 75 mm) **(Internal dia To External dia)**size by Rotary core drilling machine upto 20 meters depth in all kinds of hard rock including finishing and maintenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	#REF!	Per M
7.2.1.2	Core drilling of N x **(Internal dia To External dia)** (53 mm To 75 mm) (Internal dia To External dia)size by Rotary core drilling machine upto 20 meters depth and upto 30 meters depth in all kinds of hard rock including finishing and maintenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	#REF!	Per M
7.2.2	Core drilling of 41mm To 75 mm (Internal dia To External dia) size by Rotary core drilling machine with T.C drill bit in all kinds of soil mixed with boulder, pebbles, shingles etc. including reamina (to facilitate smooth lowering of casing pipe) lowering of casing pipes and its extraction maintenance of core and sludge for foundation exploration only complete as per specifications and direction of E/I.	#REF!	Per M
7.2.3.1	Core drilling of B x (41 mm To 59 mm)(Internal dia To External dia) size by Rotary core drilling machine upto 20 meters depth and upto 30 meters depth in all kinds of hard rock including finishing and maintenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	#REF!	Per M
7.2.3.2	Core drilling of B x (Internal dia To External dia) (41 mm To 59 mm) size by Rotary core drilling machine upto 20 meters depth in all kinds of hard rock including finishing and maintenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	#REF!	Per M
7.2.4.	Drilling by Rotary core drilling machine of size 41 mm To 75 mm dia (Internal dia To External dia) with T.C drill bit for grout and test holes in all kinds of soil including moorum, hard soil mixed with pebbles, shingles and compacted soil upto 20 meter depth including reaming (to facilitate smooth lowering of casing pipe) lowering of casing pipes and its extraction finishing etc. till operation is completed as per specifications and direction of E/I.	#REF!	Per M
7.2.5	Drilling by Rotary drill machine of size 41 mm To 75 mm dia (Internal dia To External dia) with T.C drill BUT for grout and test holes in clay soft and decomposed rock upto 20 meter depth including reaming (to facilitate smooth lowering of casing pipe) lowering of casing pipes and its extraction finishing etc. till grouting, complete as per specifications and direction of E/I.	#REF!	Per M
7.2.6	Drilling B x (41 mm To 59 mm) (Internal dia To External dia) size dia test and grout holes in all kinds of hard rock including finishing etc. till grouting operation is completed as per specifications and direction of E/I.	#REF!	Per M
7.2.7	Drilling N x (53 mm To 75 mm) size dia test and grout holes in all kinds of hard rock including finishing etc. till grouting operation is completed as per specifications and direction of E/I.	#REF!	Per M

Sr.No.	Item	Rate	Unit
7.2.8.	Drilling Jack Hammer In hard of all kinds for grout holes upto 5 meter depth (for contact grouting) all complete including washing of holes for period not exceeding 10 minutes per hole as per specifications and direction of E/I.	#REF!	Per M
7.2.9	Drilling by wagon drill machine In hard of all kinds for grout holes upto 5 meter depth (for consolidation grouting) all complete including washing of holes for period not exceeding 10 minutes per hole as per specifications and direction of E/I.	#REF!	Per M

7.2 DRILLING WORK

Sl.No.	Description	Quantity	Unit	Rate	amount	Ref.
7.2.1.1	Core drilling of N x (53 mm to 75 mm) **(Internal dia To External dia)** size by Rotary core drilling machine upto 20 metres depth in all kinds of hard rock including finishing and maintaenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	**Analysis same as Item 6.2.1.1**				
7.2.1.2	Core drilling of N x **(Internal dia To External dia)** (53 mm to 75 mm) (Internal dia To External dia)size by Rotary core drilling machine upto 20 metres depth and upto 30 metres depth in all kinds of hard rock including finishing and maintaenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	**Analysis same as Item 6.2.1.2**				
7.2.2	Core drilling of 41mm To 75 mm (Internal dia To External dia) size by Rotary core drilling machine with T.C drill bit in all kinds of soil mixed with boulder, pebbles, shingles etc. including reamina (to fanilitate smooth lowering of casing pipe) lowering of casing pipes and its extraction maintenance of core and sludge for foundation exploration only complete as per specifications and direction of E/I.	**Analysis same as Item 6.2.2**				
7.2.3.1	Core drilling of B x (41 mm To 59 mm)(Internal dia To External dia) size by Rotary core drilling machine upto 20 metres depth and upto 30 metres depth in all kinds of hard rock including finishing and maintaenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	**Analysis same as Item 6.2.3.1**				
7.2.3.2	Core drilling of B x (Internal dia to External dia) (41 mm to 59 mm) size by Rotary core drilling machine upto 20 M depth in all kinds of hard rock including finishing and maintaenance of core (minimum 80 % core recovery in hard rock is essential) and sludge etc. for foundation exploration only complete as per specifications and direction of E/I.	**Analysis same as Item 6.2.3.2**				
7.2.4.	Drilling by Rotary core drilling machine of size 41 mm To 75 mm dia (Internal dia To External dia) with T.C drill bit for grout and test holes in all kinds of siol including moorum, hard soil mixed with pabbles, shingles and compacted soil upto 20 metre depth including reaming (to facilitate smooth lowering of casing pipe) lowering of casing pipes and its extraction finishing etc. till operation is completed as per specifications and direction of E/I.	**Analysis same as Item 6.2.4**				
7.2.5	Drilling by Rotary drill machine of size 41 mm To 75 mm dia (Internal dia To External dia) with T.C drill BUT for grout and test holes in clay soft and decomposed rock upto 20 metre depth including reaming (to facilitate smooth lowering of casing pipe) lowering of casing pipes and its extraction finishing etc. till grouting, complete as per specifications and direction of E/I.	**Analysis same as Item 6.2.5**				

7.2.6	Drilling B x (41 mm To 59 mm) (Internal dia To External dia) size dia test and grout holes in all kinds of hard rock including finishing etc. till grouting operation is completed as per specifications and direction of E/I.	**Analysis same as Item 6.2.6**
7.2.7	Drilling N x (53 mm To 75 mm) size dia test and grout holes in all kinds of hard rock including finishing etc. till grouting operation is completed as per specifications and direction of E/I.	**Analysis same as Item 6.2.7**
7.2.8	Drilling Jack Hammer in hard of all kinds for grout holes upto 5 metre depth (for contact grouting) all complete including washing of holes for period not exceeding 10 minutes per hole as per specifications and direction of E/I.	**Analysis same as Item 6.2.8**
7.2.9	Drilling by wagon drill machine in hard of all kinds for grout holes upto 5 metre depth (for consolidation grouting) all complete including washing of holes for period not exceeding 10 minutes per hole as per specifications and direction of E/I.	**Analysis same as Item 6.2.9**

Sr.No.	Item	Rate	Unit

7.3. CONCRETE WORK

Sr.No	Item	Rate	Unit
7.3.1	Providing and laying mass concrete of M-100 with nominal mix of (1:3:6) in flow and non-over flow of dam section with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)(Rate of Coarse aggregates Gr IV Taken)**		
	Patna Urban	#VALUE!	Per M^3
	Patna	#REF!	Per M^3
	Muzaffarpur	#REF!	Per M^3
	Darbhanga	#REF!	Per M^3
	Bhagalpur	#REF!	Per M^3
	Munger	#REF!	Per M^3
	Saharsa	#REF!	Per M^3
	Purnea	#REF!	Per M^3
	Gaya	#REF!	Per M^3
	Saran	#REF!	Per M^3
7.3.2	Providing and laying mass concrete of M-150 with nominal mix of (1:2:4) in over flow and non-over flow sectopm of dry intake, structures and bridges etc with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.**(Taking Rate of approved quality of aggregate as per Design)**(Rate of Coarse aggregates 20 mm To 10 mm Taken)		
	Patna Urban	#VALUE!	Per M^3
	Patna	#REF!	Per M^3
	Muzaffarpur	#REF!	Per M^3
	Darbhanga	#REF!	Per M^3
	Bhagalpur	#REF!	Per M^3
	Munger	#REF!	Per M^3
	Saharsa	#REF!	Per M^3
	Purnea	#REF!	Per M^3
	Gaya	#REF!	Per M^3
	Saran	#REF!	Per M^3
7.3.3	Providing and laying mass concrete of M-200 with nominal mix of (1:1.5 :3) in Dam and Spillways with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)(Rate of Coarse aggregates 20 mm To 10 mm Taken)**		
	Patna Urban	#VALUE!	Per M^3
	Patna	#REF!	Per M^3
	Muzaffarpur	#REF!	Per M^3
	Darbhanga	#REF!	Per M^3
	Bhagalpur	#REF!	Per M^3

Sr.No.	Item	Rate	Unit
	Munger	#REF!	Per M^3
	Saharsa	#REF!	Per M^3
	Purnea	#REF!	Per M^3
	Gaya	#REF!	Per M^3
	Saran	#REF!	Per M^3
			Per M^3
7.3.4	Providing and laying mass concrete of M-200 with nominal mix of (1:1:2) in Dam , Spillways and Head works with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)(** Rate of Coarse aggregates 20 mm To 10 mm Taken)		
	Patna Urban	#VALUE!	Per M^3
	Patna	#REF!	Per M^3
	Muzaffarpur	#REF!	Per M^3
	Darbhanga	#REF!	Per M^3
	Bhagalpur	#REF!	Per M^3
	Munger	#REF!	Per M^3
	Saharsa	#REF!	Per M^3
	Purnea	#REF!	Per M^3
	Gaya	#REF!	Per M^3
	Saran	#REF!	Per M^3
7.3.5	Providing and laying P.C.C M-100 with nominal mix of (1: 3 : 6) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design))(Rate of Coarse aggregates Gr IV Taken)**		
	Patna Urban	3884.80	Per M^3
	Patna	3884.80	Per M^3
	Muzaffarpur	3884.80	Per M^3
	Darbhanga	3884.80	Per M^3
	Bhagalpur	3858.10	Per M^3
	Munger	3858.10	Per M^3
	Saharsa	3884.80	Per M^3
	Purnea	3884.80	Per M^3
	Gaya	3799.30	Per M^3
	Saran	3858.10	Per M^3
7.3.6	Providing and laying P.C.C or R.C.C M-150 with nominal mix of (1:2:4) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)(** Rate of Coarse aggregates 20 mm To 10 mm Taken)		

Sr.No.	Item	Rate	Unit
	Patna Urban	4769.60	Per M^3
	Patna	4769.60	Per M^3
	Muzaffarpur	4769.60	Per M^3
	Darbhanga	4769.60	Per M^3
	Bhagalpur	4731.20	Per M^3
	Munger	4731.20	Per M^3
	Saharsa	4769.60	Per M^3
	Purnea	4769.60	Per M^3
	Gaya	4646.60	Per M^3
	Saran	4731.20	Per M^3
7.3.7	Providing and laying P.C.C or R.C.C M-200 with nominal mix of (1:1.5:3) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)**(Rate of Coarse aggregates 20 mm To 10 mm Taken)		
	Patna Urban	5389.00	Per M^3
	Patna	5389.00	Per M^3
	Muzaffarpur	5389.00	Per M^3
	Darbhanga	5389.00	Per M^3
	Bhagalpur	5340.00	Per M^3
	Munger	5340.00	Per M^3
	Saharsa	5389.00	Per M^3
	Purnea	5389.00	Per M^3
	Gaya	5232.10	Per M^3
	Saran	5340.00	Per M^3
7.3.8	Providing and laying P.C.C or R.C.C M-250 with nominal mix of (1:1 : 2) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)**(Rate of Coarse aggregates 20 mm To 10 mm Taken)		
	Patna Urban	6828.70	Per M^3
	Patna	6828.70	Per M^3
	Muzaffarpur	6828.70	Per M^3
	Darbhanga	6828.70	Per M^3
	Bhagalpur	6756.30	Per M^3
	Munger	6756.30	Per M^3
	Saharsa	6828.70	Per M^3
	Purnea	6828.70	Per M^3
	Gaya	6596.80	Per M^3
	Saran	6756.30	Per M^3

Sr.No.	Item	Rate	Unit
7.3.9	Providing and laying P.C.CM-100 with nominal mix of (1: 3 : 6) in various components of dam superstructure with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design))(Rate of Coarse aggregates Gr IV Taken)**		
	Patna Urban	3915.10	Per M^3
	Patna	3915.10	Per M^3
	Muzaffarpur	3915.10	Per M^3
	Darbhanga	3915.10	Per M^3
	Bhagalpur	3888.40	Per M^3
	Munger	3888.40	Per M^3
	Saharsa	3915.10	Per M^3
	Purnea	3915.10	Per M^3
	Gaya	3829.50	Per M^3
	Saran	3888.40	Per M^3
7.3.10	Providing and laying P.C.C or R.C.C M-150 with nominal mix of (1: 2 :4) in various components of dam superstructure with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)(** Rate of Coarse aggregates 20 mm To 10 mm Taken)		
	Patna Urban	4799.90	Per M^3
	Patna	4799.90	Per M^3
	Muzaffarpur	4799.90	Per M^3
	Darbhanga	4799.90	Per M^3
	Bhagalpur	4761.50	Per M^3
	Munger	4761.50	Per M^3
	Saharsa	4799.90	Per M^3
	Purnea	4799.90	Per M^3
	Gaya	4676.80	Per M^3
	Saran	4761.50	Per M^3
7.3.11	Providing and laying P.C.C or R.C.C M-200 with nominal mix of (1: 1.5:3) in various components of dam superstructure with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)(Rate of Coarse aggregates 20 mm To 10 mm Taken)**		
	Patna Urban	5419.20	Per M^3
	Patna	5419.20	Per M^3
	Muzaffarpur	5419.20	Per M^3
	Darbhanga	5419.20	Per M^3
	Bhagalpur	5370.30	Per M^3

Sr.No.	Item	Rate	Unit
	Munger	5370.30	Per M^3
	Saharsa	5419.20	Per M^3
	Purnea	5419.20	Per M^3
	Gaya	5262.40	Per M^3
	Saran	5370.30	Per M^3
7.3.12	Providing and laying P.C.C or R.C.C M-250 with nominal mix of (1: 1 : 2) in various components of dam superstructure with approved quality of graded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of reinforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty and all taxes etc. all complete as per specifications and direction of E/I. **(Taking Rate of approved quality of aggregate as per Design)**(Rate of Coarse aggregates 20 mm To 10 mm Taken)		
	Patna Urban	6858.90	Per M^3
	Patna	6858.90	Per M^3
	Muzaffarpur	6858.90	Per M^3
	Darbhanga	6858.90	Per M^3
	Bhagalpur	6786.60	Per M^3
	Munger	6786.60	Per M^3
	Saharsa	6858.90	Per M^3
	Purnea	6858.90	Per M^3
	Gaya	6627.10	Per M^3
	Saran	6786.60	Per M^3
7.3.13	Grouting for Dam foundation per bags of cement all complete as per specifications and direction of E/I.		
	Patna Urban	400.80	Bags of ceme
	Patna	400.80	Bags of ceme
	Muzaffarpur	400.80	Bags of ceme
	Darbhanga	400.80	Bags of ceme
	Bhagalpur	394.80	Bags of ceme
	Munger	394.80	Bags of ceme
	Saharsa	400.80	Bags of ceme
	Purnea	400.80	Bags of ceme
	Gaya	381.30	Bags of ceme
	Saran	394.80	Bags of ceme
7.3.14	Providing M.S reinforcement(Plain steel) as per approved design , drawing, removal of rust, cutting, bending, binding, including supplying annealed wire, placing M.S rods in position complete job as per specifications and direction of E/I.		
	(a).Dia of bar 6 mm	65203.00	Per M.T
	(B).Dia of bar above 6 mm to 12 mm	65203.00	Per M.T
	(B).Dia of bar above 14 mm to 50 mm	65203.00	Per M.T
7.3.15	Providing M.S reinforcement (Tor steel) as per approved design , drawing, removal of rust, cutting, bending, binding, including supplying annealed wire, placing M.S rods in position complete job as per specifications and direction of E/I.		
(a)	T.M.T. Fe-415- 8 mm	#VALUE!	Per M.T
(b).	T.M.T. Fe-415- 10 mm	#VALUE!	Per M.T
(c).	T.M.T. Fe-415- 12 mm	#VALUE!	Per M.T
(d).	T.M.T. Fe-415- 16 mm	#VALUE!	Per M.T
(e).	T.M.T. Fe-415- 20 mm	#VALUE!	Per M.T
(f).	T.M.T. Fe-415- 25 mm	#VALUE!	Per M.T
(g).	T.M.T. Fe-415- 28 mm	#VALUE!	Per M.T
(h).	T.M.T. Fe-415- 32 mm	#VALUE!	Per M.T
(i).	T.M.T. Fe-500- 8 mm	58358.10	Per M.T

Sr.No.	Item	Rate	Unit
(j).	T.M.T. Fe-500- 10 mm	57077.60	Per M.T
(k).	T.M.T. Fe-500- 12 mm	56430.00	Per M.T
(l).	T.M.T. Fe-500- 16 mm	56819.00	Per M.T
(m).	T.M.T. Fe-500- 20 mm	56430.00	Per M.T
(n).	T.M.T. Fe-500- 25 mm	56430.00	Per M.T
(o).	T.M.T. Fe-500- 28 mm	56430.00	Per M.T
(p).	T.M.T. Fe-500- 32 mm	56430.00	Per M.T
(q).	T.M.T. Fe-500- 36 mm	#VALUE!	Per M.T
7.3.16	Centering and shuttering in major dam work involving mass concrete including cost of form work, their carriage from work shop to work site, errection with the help of suitable crane and stripping etc. complete job as per specifications and direction of E/I.	#VALUE!	Per M^2
7.3.17	Providing shuttering including strutting. Propping etc. and its removal after use in foundation work as per specifications and direction of E/I.	587.20	Per M^2
7.3.18	Providing shuttering including strutting. Propping etc. and its removal after use in superstructure portion of various components of dam work as per specifications and direction of E/I.	587.20	Per M^2
7.3.19	Providing centering including strutting. Propping etc. and removing after use in deck slab as per specifications and direction of E/I.	674.80	Per M^2
7.3.20	Providing and laying mass concrete of M-100 with nominal mix of (1:3:6) in flow and non-over flow of dam section with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I. **(With Batching Plant, Transit Mixer Lead up to 1 K.M And Concrete Pump)** (Taking Rate of approved quality of aggregate as per Design)) **(Rate of Coarse aggregates Gr IV Taken)**		
	Patna Urban	2989.00	Per M^3
	Patna	2989.00	Per M^3
	Muzaffarpur	2989.00	Per M^3
	Darbhanga	2989.00	Per M^3
	Bhagalpur	2962.20	Per M^3
	Munger	2962.20	Per M^3
	Saharsa	2989.00	Per M^3
	Purnea	2989.00	Per M^3
	Gaya	2903.20	Per M^3
	Saran	2962.20	Per M^3
7.3.21	Providing and laying mass concrete of M-150 with nominal mix of (1:2 :4) in over flow and non-over flow sectopm of dry intake, structures and bridges etc with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I. **(With Batching Plant, Transit Mixer And Concrete Pump)(Taking Rate of approved quality of aggregate as per Design))(Rate of Coarse aggregates 20 mm To 10 mm Taken)**		
	Patna Urban	3868.30	Per M^3
	Patna	3868.30	Per M^3
	Muzaffarpur	3868.30	Per M^3
	Darbhanga	3868.30	Per M^3
	Bhagalpur	3829.90	Per M^3
	Munger	3829.90	Per M^3
	Saharsa	3868.30	Per M^3

Sr.No.	Item	Rate	Unit
	Purnea	3868.30	Per M^3
	Gaya	3745.20	Per M^3
	Saran	3829.90	Per M^3
7.3.22	Providing and laying mass concrete of M-200 with nominal mix of (1:1.5 :3) in Dam and Spillways with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I. **(With Batching Plant, Transit Mixer And Concrete Pump)(Taking Rate of approved quality of aggregate as per Design)(Rate of Coarse aggregates 20 mm To 10 mm Taken)**		
	Patna Urban	4489.40	Per M^3
	Patna	4489.40	Per M^3
	Muzaffarpur	4489.40	Per M^3
	Darbhanga	4489.40	Per M^3
	Bhagalpur	4440.40	Per M^3
	Munger	4440.40	Per M^3
	Saharsa	4489.40	Per M^3
	Purnea	4489.40	Per M^3
	Gaya	4332.40	Per M^3
	Saran	4440.40	Per M^3
7.3.23	Providing and laying mass concrete of M-250 with nominal mix of (1:1:2) in Dam , Spillways and Head works with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I. **(With Batching Plant, Transit Mixer And Concrete Pump)(Taking Rate of approved quality of aggregate as per Design)(Rate of Coarse aggregates 20mm To 10 mm Taken)**		
	Patna Urban	5880.20	Per M^3
	Patna	5880.20	Per M^3
	Muzaffarpur	5880.20	Per M^3
	Darbhanga	5880.20	Per M^3
	Bhagalpur	5808.50	Per M^3
	Munger	5808.50	Per M^3
	Saharsa	5880.20	Per M^3
	Purnea	5880.20	Per M^3
	Gaya	5650.40	Per M^3
	Saran	5808.50	Per M^3

7.3. CONCRETE WORK

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref.
7.3.1	Providing and laying mass concrete of M-100 with nominal mix of (1:3:6) in flow and non-over flow of dam section with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.13**				
7.3.2	Providing and laying mass concrete of M-150 with nominal mix of (1:2 :4) in over flow and non-over flow sectopm of dry intake, structures and bridges etc with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.14**				
7.3.3	Providing and laying mass concrete of M-200 with nominal mix of (1:1.5 :3) in Dam and Spillways with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.15**				
7.3.4	Providing and laying mass concrete of M-200 with nominal mix of (1:1:2) In Dam , Spillways and Head works with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.16**				
7.3.5	Providing and laying P.C.C M-100 with nominal mix of (1: 3 : 6) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.	**Analysis same as Item 5.3.3**				
7.3.6	Providing and laying P.C.C or R.C.C M-150 with nominal mix of (1: 2 : 4) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.	**Analysis same as Item 5.3.4**				

7.3.7	Providing and laying P.C.C or R.C.C M-200 with nominal mix of (1: 1.5 : 3) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.	**Analysis same as Item 5.3.5**					
7.3.8	Providing and laying P.C.C or R.C.C M-250 with nominal mix of (1: 1 : 2) in various components of dam foundation with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.	**Analysis same as Item 5.3.6**					
7.3.9	Providing and laying P.C.C or R.C.C M-100 with nominal mix of (1: 3 : 6) in various components of dam superstructure with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.						
	Unit:-Per Cum						
	Taking Out put=2.832 Cum						
	MATERIALS						
	Coarse aggregates Gr IV **(Rate of approved quality of aggregate as per Design)**	2.66	M^3	513.10	1364.85		
	Sand	1.330	M^3	145.20	193.12		
	Cement	0.443	M^3	9118.00	4039.27		
	Labour						
	Head mason	0.5	nos	330.00	165.00		
	Mason Gr II	1.25	nos	295.00	368.75		
	Unskilled mazdoor	12	nos	242.00	2904.00		
	Bhisti	1	nos	243.00	243.00		
	HIRE CHARGES OF MACHINE						
	(i)Concrete mixer (10 H.P) for 2.832 cum consists on the basic of mixer production capacity 1.98 M^3 per hour. **(vide item 3.25)**	**80.00**					
	= Used rate per hourx2.832/1.98				114.42		
	(ii) Vibrator 1no. To vibrate 2.832 cum on thebasic of vibrator capacity 1.98 cum per hour.**(Vide iten no 3.22)**	**107.27**					
	= Used rate per hourx2.832/1.98				153.43		
					9545.84		
	Add Overhead charge & C.P@15%				1431.88		
					10977.71		
	Add 1% cess				109.78		
					11087.49	3915.07	
		Say Rs		**3915.10**	Per M^3		

7.3.10	Providing and laying P.C.C or R.C.C M-150 with nominal mix of (1: 2 : 4) in various components of dam superstructure with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.	**Analysis same as Item 5.3.9**
7.3.11	Providing and laying P.C.C or R.C.C M-200 with nominal mix of (1: 1.5 : 3) in various components of dam superstructure with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.	**Analysis same as Item 5.3.13**
7.3.12	Providing and laying P.C.C or R.C.C M-250 with nominal mix of (1: 1 : 2) in various components of dam superstructure with approved quality of qraded coarse aggregate and approved quality sand of requisite F.M washed and screened including vibrating,precooling etc. as well as royalty and all taxes etc.but excluding cost of form work as well as of renforcement, its cutting, bending, and placing but including necessary tools, plants and vibrating, curing, royalty andall taxes etc. all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.10**
7.3.13	Grouting for Dam foundation per bags of cement all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.25**
7.3.14	Providing M.S reinforcement(Plain steel) as per approved design , drawing, removal of rust, cutting, bending, binding, including supplying annealed wire, placing M.S rods in position complete job as per specifications and direction of E/I.	**Analysis same as Item 5.3.21**
7.3.15	Providing M.S reinforcement (Tor steel) as per approved design , drawing, removal of rust, cutting, bending, binding, including supplying annealed wire, placing M.S rods in position complete job as per specifications and direction of E/I.	**Analysis same as Item 5.3.22**
7.3.16	Centring and shuttering in major dam work involving mass concrete including cost of form work, their carriage from work shop to work site, errection with the help of suitable crane and stripping etc. complete job as per specifications and direction of E/I.	**Analysis same as Item 6.3.19**
7.3.17	Providing shuttering including structting. Proping etc. and its removal after use in foundation work as per specifications and direction of E/I.	**Analysis same as Item 5.3.18**
7.3.18	Providing shuttering including structting. Proping etc. and its removal after use in superstructure portion of various components of dam work as per specifications and direction of E/I.	**Analysis same as Item 5.3.19**
7.3.19	Providing centering including strutting. Proping etc. and removing after use in dock slab as per specifications and direction of E/I.	**Analysis same as Item 6.3.22**

7.3.20	Providing and laying mass concrete of M-100 with nominal mix of (1:3:6) in Barrage with approved quality of raded coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened including vibrating,curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.26**
7.3.21	Providing and laying mass concrete of M-150 with nominal mix of (1:2:4) in Barrage with approved quality of raded coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened including vibrating,curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.27**
7.3.22	Providing and laying mass concrete of M-200 with nominal mix of (1:1.5:3) in Barrage with approved quality of raded coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened including vibrating,curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.28**
7.3.23	Providing and laying mass concrete of M-250 with nominal mix of (1:1:2) in Barrage with approved quality of raded coarse aggregate of required qrades as per design and approved quality sand of requisite F.M washed and screened including vibrating,curing etc. as well as royalty and all taxes etc.but excluding the cost of form work etc. wherever provided and removed after use, all complete as per specifications and direction of E/I.	**Analysis same as Item 6.3.29**

Sr.No.	Item	Rate	Unit

7.4 MASONARY WORK

Sr.No	Item	Rate	Unit
7.4.1	Brick work in designation 100 A Brick with cement motar (1 : 3) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5418.70	Per M^3
	Patna	4848.00	Per M^3
	Muzaffarpur	4886.20	Per M^3
	Darbhanga	4886.20	Per M^3
	Bhagalpur	4869.30	Per M^3
	Munger	4869.30	Per M^3
	Saharsa	4964.50	Per M^3
	Purnea	5120.60	Per M^3
	Gaya	4677.00	Per M^3
	Saran	4714.20	Per M^3
7.4.2	Brick work in designation 100 A Brick with cement motar (1 : 4) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5236.50	Per M^3
	Patna	4665.80	Per M^3
	Muzaffarpur	4704.00	Per M^3
	Darbhanga	4704.00	Per M^3
	Bhagalpur	4690.10	Per M^3
	Munger	4690.10	Per M^3
	Saharsa	4782.30	Per M^3
	Purnea	4938.40	Per M^3
	Gaya	4504.40	Per M^3
	Saran	4535.00	Per M^3
7.4.3	Brick work in designation 100 A Brick with cement motar (1 : 5) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5088.70	Per M^3
	Patna	4518.00	Per M^3
	Muzaffarpur	4556.20	Per M^3
	Darbhanga	4556.20	Per M^3
	Bhagalpur	4544.80	Per M^3
	Munger	4544.80	Per M^3
	Saharsa	4634.50	Per M^3
	Purnea	4790.60	Per M^3
	Gaya	4364.30	Per M^3
	Saran	4389.60	Per M^3
7.4.4	Brick work in designation 100 A Brick with cement motar (1:3) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		

Sr.No.	Item	Rate	Unit
	Patna Urban	5518.00	Per M^3
	Patna	4947.30	Per M^3
	Muzaffarpur	4985.50	Per M^3
	Darbhanga	4985.50	Per M^3
	Bhagalpur	4968.60	Per M^3
	Munger	4968.60	Per M^3
	Saharsa	5063.80	Per M^3
	Purnea	5219.90	Per M^3
	Gaya	4776.20	Per M^3
	Saran	4813.40	Per M^3
7.4.5	Brick work in designation 100 A Brick with cement motar (1 : 4) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5335.80	Per M^3
	Patna	4765.10	Per M^3
	Muzaffarpur	4803.30	Per M^3
	Darbhanga	4803.30	Per M^3
	Bhagalpur	4789.40	Per M^3
	Munger	4789.40	Per M^3
	Saharsa	4881.50	Per M^3
	Purnea	5037.70	Per M^3
	Gaya	4603.70	Per M^3
	Saran	4634.20	Per M^3
7.4.6	Brick work in designation 100 A Brick with cement motar (1 : 5) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curing, scaffolding and its removal wherever required including royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	5188.00	Per M^3
	Patna	4617.30	Per M^3
	Muzaffarpur	4655.50	Per M^3
	Darbhanga	4655.50	Per M^3
	Bhagalpur	4644.00	Per M^3
	Munger	4644.00	Per M^3
	Saharsa	4733.80	Per M^3
	Purnea	4889.90	Per M^3
	Gaya	4463.60	Per M^3
	Saran	4488.80	Per M^3
7.4.7	Providing rough dressed random rubble stone masonry in cement mortar (1:3) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc. all complete job as per specification and direction of E / I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3

Sr.No.	Item	Rate	Unit
	Saran	#VALUE!	Per M^3
7.4.8	Providing rough dressed random rubble stone masonry in cement mortar (1:4) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E/I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
7.4.9	Providing rough dressed random rubble stone masonry in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal, wherever required, including royalty and all taxes etc. all complete job as per specification and direction of E / I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
7.4.10	Providing rough dressed random rubble/coursed stone masonry in cement mortar (1:3) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
7.4.11	Providing rough dressed random rubble/coursed stone masonry in cement mortar (1 : 4) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal, wherever required ,including royalty and all taxes etc.complete job as per specification and direction of E / I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3

Sr.No.	Item	Rate	Unit
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
7.4.12	Providing rough dressed random rubble/coursed stone masonry in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curing, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E/I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3

7. 4 MASONARY WORK

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref.
7.4.1	Brick work in designation 100 A Brick with cement motar (1 : 3) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curring, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.1**				
7.4.2	Brick work in designation 100 A Brick with cement motar (1 : 4) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curring, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.2**				
7.4.3	Brick work in designation 100 A Brick with cement motar (1 : 5) in foundation with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curring, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.3**				
7.4.4	Brick work in designation 100 A Brick with cement motar (1 : 3) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curring, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.5**				
7.4.5	Brick work in designation 100 A Brick with cement motar(1 : 4) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curring, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.6**				
7.4.6	Brick work in designation 100 A Brick with cement motar (1 : 5) in superstructure with approved quality coarse sand of requisite F.M. washed and screened with raking out joints to 12 mm depth, curring, scaffolding and its removal wherever required including royaliy and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.7**				
7.4.7	Providing rough dressed random rubble stone masonary in cement mortar (1:3) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curring, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.9**				
7.4.8	Providing rough dressed random rubble stone masonary in cement mortar (1:4) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curring, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.10**				

7.4.9	Providing rough dressed random rubble stone masonary in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curring, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.11**
7.4.10	Providing rough dressed random rubble/coursed stone masonary in cement mortar (1:3) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curring, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.12**
7.4.11	Providing rough dressed random rubble/coursed stone masonary in cement mortar (1:4) in superstructure with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curring, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.13**
7.4.12	Providing rough dressed random rubble/coursed stone masonary in cement mortar (1:5) in foundation with approved quality of coarse sand of requisite F.M. washed and screened with raking out joints, curring, scaffolding and its removal wherever required including royalty and all taxes etc.complete job as per specification and direction of E / I.	**Analysis same as Item 5.4.14**

Sr.No.	Item	Rate	Unit

7.5. PLASTER WORK

Sr.No	Item	Rate	Unit
7.5.1	Providing 12 mm thick cement plaster (1:3) with approved quality sand of requisite F.M ,washed and screened including curing, scaffolding, wherever required, and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	148.70	Per M^2
	Patna	148.70	Per M^2
	Muzaffarpur	148.70	Per M^2
	Darbhanga	148.70	Per M^2
	Bhagalpur	147.90	Per M^2
	Munger	147.90	Per M^2
	Saharsa	148.70	Per M^2
	Purnea	148.70	Per M^2
	Gaya	146.10	Per M^2
	Saran	147.90	Per M^2
7.5.2	Providing 12 mm thick cement plaster (1: 4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	138.50	Per M^2
	Patna	138.50	Per M^2
	Muzaffarpur	138.50	Per M^2
	Darbhanga	138.50	Per M^2
	Bhagalpur	137.90	Per M^2
	Munger	137.90	Per M^2
	Saharsa	138.50	Per M^2
	Purnea	602.00	Per M^2
	Gaya	136.50	Per M^2
	Saran	137.90	Per M^2
7.5.3	Providing 12 mm thick cement plaster (1: 5) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	131.80	Per M^2
	Patna	131.80	Per M^2
	Muzzaffarpur	131.80	Per M^2
	Darbhanga	131.80	Per M^2
	Bhagalpur	131.30	Per M^2
	Munger	131.30	Per M^2
	Saharsa	131.80	Per M^2
	Purnea	131.80	Per M^2
	Gaya	130.10	Per M^2
	Saran	131.30	Per M^2
7.5.4	Providing 25 mm thick cement plaster (1: 3) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	247.30	Per M^2
	Patna	247.30	Per M^2

Sr.No.	Item	Rate	Unit
	Muzaffarpur	247.30	Per M^2
	Darbhanga	247.30	Per M^2
	Bhagalpur	245.80	Per M^2
	Munger	245.80	Per M^2
	Saharsa	247.30	Per M^2
	Purnea	247.30	Per M^2
	Gaya	242.30	Per M^2
	Saran	245.80	Per M^2
7.5.5	Providing 25 mm thick cement plaster (1: 4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	228.40	Per M^2
	Patna	228.40	Per M^2
	Muzzafferpur	228.40	Per M^2
	Darbhanga	228.40	Per M^2
	Bhagalpur	227.10	Per M^2
	Munger	227.10	Per M^2
	Saharsa	228.40	Per M^2
	Purnea	228.40	Per M^2
	Gaya	224.40	Per M^2
	Saran	227.10	Per M^2
7.5.6	Providing 25 mm thick cement plaster (1: 5) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	213.40	Per M^2
	Patna	213.40	Per M^2
	Muzaffarpur	213.40	Per M^2
	Darbhanga	213.40	Per M^2
	Bhagalpur	212.40	Per M^2
	Munger	212.40	Per M^2
	Saharsa	213.40	Per M^2
	Purnea	213.40	Per M^2
	Gaya	210.10	Per M^2
	Saran	212.40	Per M^2
7.5.7	Providing 12 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	158.60	Per M^2
	Patna	158.60	Per M^2
	Muzaffarpur	158.60	Per M^2
	Darbhanga	158.60	Per M^2
	Bhagalpur	157.90	Per M^2
	Munger	157.90	Per M^2
	Saharsa	158.60	Per M^2
	Purnea	158.60	Per M^2
	Gaya	156.10	Per M^2
	Saran	157.90	Per M^2

Sr.No.	Item	Rate	Unit
7.5.8	Providing 25 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	267.30	Per M^2
	Patna	267.30	Per M^2
	Muzaffarpur	267.30	Per M^2
	Darbhanga	267.30	Per M^2
	Bhagalpur	265.70	Per M^2
	Munger	265.70	Per M^2
	Saharsa	267.30	Per M^2
	Purnea	267.30	Per M^2
	Gaya	262.30	Per M^2
	Saran	265.70	Per M^2
7.5.9	Providing 25 mm thick water proof cement plaster (1:4) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	248.30	Per M^2
	Patna	248.30	Per M^2
	Muzaffarpur	248.30	Per M^2
	Darbhanga	248.30	Per M^2
	Bhagalpur	247.10	Per M^2
	Munger	247.10	Per M^2
	Saharsa	248.30	Per M^2
	Purnea	248.30	Per M^2
	Gaya	244.30	Per M^2
	Saran	247.10	Per M^2
7.5.10	Providing 1.5 mm thick cement punning including curing, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	44.50	Per M^2
	Patna	44.50	Per M^2
	Muzaffarpur	44.50	Per M^2
	Darbhanga	44.50	Per M^2
	Bhagalpur	44.20	Per M^2
	Munger	44.20	Per M^2
	Saharsa	44.50	Per M^2
	Purnea	44.50	Per M^2
	Gaya	43.70	Per M^2
	Saran	44.20	Per M^2
7.5.11	Providing cement ruled pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	132.50	Per M^2
	Patna	132.50	Per M^2
	Muzaffarpur	132.50	Per M^2
	Darbhanga	132.50	Per M^2
	Bhagalpur	132.20	Per M^2
	Munger	132.20	Per M^2

Sr.No.	Item	Rate	Unit
	Saharsa	132.50	Per M^2
	Purnea	132.50	Per M^2
	Gaya	131.70	Per M^2
	Saran	132.20	Per M^2
7.5.12	Providing cement flush pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	98.90	Per M^2
	Patna	98.90	Per M^2
	Muzaffarpur	98.90	Per M^2
	Darbhanga	98.90	Per M^2
	Bhagalpur	98.70	Per M^2
	Munger	98.70	Per M^2
	Saharsa	98.90	Per M^2
	Purnea	98.90	Per M^2
	Gaya	98.10	Per M^2
	Saran	98.70	Per M^2
7.5.13	Providing cement truck pointing (1:3) on Brick work with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	146.00	Per M^2
	Patna	146.00	Per M^2
	Muzaffarpur	146.00	Per M^2
	Darbhanga	146.00	Per M^2
	Bhagalpur	145.60	Per M^2
	Munger	145.60	Per M^2
	Saharsa	146.00	Per M^2
	Purnea	146.00	Per M^2
	Gaya	144.70	Per M^2
	Saran	145.60	Per M^2
7.5.14	Providing cement truck pointing (1:3) on stone masonry with approved quality sand of requisite F.M , washed and screened and stander water proofing compound including curing, scaffolding wherever required, and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.		
	Patna Urban	190.80	Per M^2
	Patna	190.80	Per M^2
	Muzaffarpur	190.80	Per M^2
	Darbhanga	190.80	Per M^2
	Bhagalpur	190.20	Per M^2
	Munger	190.20	Per M^2
	Saharsa	190.80	Per M^2
	Purnea	190.80	Per M^2
	Gaya	188.90	Per M^2
	Saran	190.20	Per M^2

7.5 PLASTER WORK

Sl.No	Desciption	Quantity	Unit	Rate	Amount	Ref
7.5.1	Providing 12 mm thick cement plaster (1: 3) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.1**				
7.5.2	Providing 12 mm thick cement plaster (1: 4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.2**				
7.5.3	Providing 12 mm thick cement plaster (1:5) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.3**				
7.5.4	Providing 25 mm thick cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever required and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.4**				
7.5.5	Providing 25 mm thick cement plaster (1:4) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.5**				
7.5.6	Providing 25 mm thick cement plaster (1:5) with approved quality sand of requisite F.M . Washed and screened including curing, scaffolding wherever and its removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.6**				
7.5.7	Providing 12 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.7**				
7.5.8	Providing 25 mm thick water proof cement plaster (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.8**				
7.5.9	Providing 25 mm thick water proof cement plaster (1:4) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.9**				
7.5.10	Providing 1.5 mm thick cement punning including curing, , royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.10**				
7.5.11	Providing cement ruled pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.11**				

7.5.12	Providing cement flush pointing (1:3) with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.12**
7.5.13	Providing cement truck pointing (1:3) on Brick work with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.13**
7.5.14	Providing cement truck pointing (1:3) on stone masonary with approved quality sand of requisite F.M . Washed and screened and stander water proofing compound including curing, scaffolding wherever required and their removal, royalty and all taxes etc. complete job as per specification and direction of E / I.	**Analysis same as Item 5.5.14**

Sr.No.	Item	Rate	Unit

7.6 PITCHING AND PILING

Sr.No	Item	Rate	Unit
7.6.1	Supplying and laying and filter blanketing in horizontal portion of the dam as per design and drawing with watering, compaction including cost of sand, royalty, taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.	741.80	Per M^3
7.6.2	Supplying and laying gravel filter (size 5 mm to 15 mm) in filter blanket in the toe drain (in horizontal portion) of the dam as per design and drawing including cost of materials, royalty and all taxes etc.but excluding the cost of carriage all complete job as per specification and direction of E / I.	1171.10	Per M^3
7.6.3	Supplying and laying good quality of stone filter (size 20 mm to 63 mm size) in rock toe, heal trench, toe drain as per design and drawing including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.	894.50	Per M^3
7.6.4	Supplying and laying boulder in rock toe heal trench of the dam as per design and drawing including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.	927.90	Per M^3
7.6.5	Supplying and laying sand filter on slope of the dam as per design and drawing, with watering and compaction including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E/I.	890.70	Per M^3
7.6.6	Supplying and laying gravel filter (size 5 mm to 15 mm)on slope of the dam as per design and drawing including cost of materials, royalty and all taxes etc.but excluding the cost of carriage all complete job as per specification and direction of E / I.	1419.20	Per M^3
7.6.7	Supplying and laying good quality of stone filter (size 20 mm to 63 mm size) on slope of the dam as per design and drawing including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.	1142.60	Per M^3
7.6.8	Supplying and laying (properly as per design and drawing) riprap with good quality of boulder duly packed including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E/I.	1126.40	Per M^3

7.6 PITCHING AND PILING

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref
7.6.1	Supplying and laying and filter blanketing in horizontal portion of the dam as per design and drawing with watering, compaction including cost of sand, royalty, taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Sand	2.832	cum	145.20	411.21	
	Labour					
	Unskilled mazdoor for placing	2	nos	242.00	484.00	
	Unskilled mazdoor for spreading	1.5	nos	242.00	363.00	
	Unskilled mazdoor for watering and ramming	2	nos	242.00	484.00	
	Mate	0.25	nos	266.00	66.50	
					1808.71	493.47
	Add Overhead charge & C.P@15%				271.31	
					2080.01	
	Add 1% cess				20.80	
					2100.81	741.81
	Say Rs			**741.80**	Per M^3	
7.6.2	Supplying and laying gravel filter (size 5 mm to 15 mm) in filter blanket in the toe drian (in horizontal portion) of the dam as per design and drawing including cost of materials, royalty and all taxes etc.but excluding the cost of carriage all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Cost of gravel filter (5 mm to 15 mm)	2.832	cum	728.39	2062.80	
	Labour					
	Unskilled mazdoor for placing	2	nos	242.00	484.00	
	Unskilled mazdoor for spreading	0.5	nos	242.00	121.00	
	Unskilled mazdoor for loght compaction	0.5	nos	242.00	121.00	
	Mate	0.25	nos	266.00	66.50	
					2855.30	279.84
	Add Overhead charge & C.P@15%				428.30	
					3283.60	
	Add 1% cess				32.84	
					3316.43	1171.06
	Say Rs			**1171.10**	Per M^3	
7.6.3	Supplying and laying good quality of stone filter (size 20 mm to 63 mm size) in rock toe, heal trench, toe drian as per design and drawing including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Cost of stone metal (20 mm to 63 mm)	2.832	cum	490.30	1388.53	
	Labour					
	Unskilled mazdoor for placing	2	nos	242.00	484.00	
	Unskilled mazdoor for spreading	0.5	nos	242.00	121.00	
	Unskilled mazdoor for loght compaction	0.5	nos	242.00	121.00	
	Mate	0.25	nos	266.00	66.50	
					2181.03	

	Add Overhead charge & C.P15%				327.15	
					2508.18	
	Add 1% cess				25.08	
					2533.27	894.51
	Say Rs			894.50	Per M^3	
7.6.4	Supplying and laying boulder in rock toe heal trench of the dam as per design and drawing including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Cost of boulder	2.832	cum	322.10	912.19	
	Labour					
	Mason Gr II	0.25	nos	295.00	73.75	
	Unskilled mazdoor	5	nos	242.00	1210.00	
	Mate	0.25	nos	266.00	66.50	
					2262.44	476.78
	Add Overhead charge & C.P@15%				339.37	
					2601.80	
	Add 1% cess				26.02	
					2627.82	927.90
	Say Rs			927.90	Per M^3	
7.6.5	Supplying and laying sand filter on slope of the dam as per design and drawing, with watering and compaction including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Cost of sand	2.832	cum	145.20	411.21	
	Labour					
	Unskilled mazdoor for carrying	3	nos	242.00	726.00	
	Unskilled mazdoor for spreading	2	nos	242.00	484.00	
	Unskilled mazdoor for watering and ramming	2	nos	242.00	484.00	
	Mate	0.25	nos	266.00	66.50	
					2171.71	
	Add Overhead charge & C.P@15%				325.76	
					2497.46	
	Add 1% cess				24.97	
					2522.44	890.69
	Say Rs			890.70	Per M^3	
7.6.6	Supplying and laying gravel filter (size 5 mm to 15 mm)on slope of the dam as per design and drawing including cost of materials, royalty and all taxes etc.but excluding the cost of carriage all complete job as per specification and direction of E / I.					
	Unit:-Per Cum	Per M^3				
	Taking Out put=2.832 Cum	2.832	Cum			
	Materials					
	Cost of gravel filter (5 mm to 15 mm)	2.832	cum	728.39	2062.80	
	Labour					
	Unskilled mazdoor for carrying	3	nos	242.00	726.00	
	Unskilled mazdoor for spreading	2	nos	242.00	484.00	
	Unskilled mazdoor for loght compaction	0.5	nos	242.00	121.00	
	Mate	0.25	nos	266.00	66.50	
					3460.30	
	Add Overhead charge & C.P@15%				519.05	
					3979.35	
	Add 1% cess				39.79	
					4019.14	1419.19
	Say Rs			1419.20	Per M^3	

7.6.7	Supplying and laying good quality of stone filter (size 20 mm to 63 mm size) on slope of the dam as per design and drawing including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Cost of stone metal (20 mm to 63 mm)	2.832	cum	490.30	1388.53	
	Labour					
	Unskilled mazdoor for placing	3	nos	242.00	726.00	
	Unskilled mazdoor for spreading	2	nos	242.00	484.00	
	Unskilled mazdoor for loght compaction	0.5	nos	242.00	121.00	
	Mate	0.25	nos	266.00	66.50	
					2786.03	
	Add Overhead charge & C.P@15%				417.90	
					3203.93	
	Add 1% cess				32.04	
					3235.97	1142.65
	Say Rs			1142.60	Per M^3	
7.6.8	Supplying and laying (properly as per design and drawing) riprap with good quality of boulder duly packed including the cost of materials, royalty and all taxes etc. but excluding the cost of carriage, all complete job as per specification and direction of E / I.					
	Unit:-Per Cum					
	Taking Out put=2.832 Cum					
	Materials					
	Cost of boulder	2.832	cum	322.10	912.19	
	Labour					
	Mason Gr II	0.25	nos	295.00	73.75	
	Unskilled mazdoor	7	nos	242.00	1694.00	
	Mate	0.25	nos	266.00	66.50	
					2746.44	
	Add Overhead charge & C.P@15%				411.97	
					3158.40	
	Add 1% cess				31.58	
					3189.99	1126.41
	Say Rs			1126.40	Per M^3	

Sr.No.	Item	Rate	Unit

7.7 TUNNEL WORK

Sr.No	Item	Rate	Unit
7.7.1	Excavation of Tunnel portion in hard rock by blasting with all lead and lift, including dressing providing temporary support (steel or timber) wherever necessary, removal of spoil to dump site by truck within 1 km. lead from portal face all complete as per specifications and direction of E/I.	#VALUE!	Per M^3
7.7.2	Providing shot crete in arch portion of tunnel including cost of wire mesh (150 mm x 150 mm) all complete as per specifications and direction of E/I.		
	Patna Urban	#VALUE!	Per M^3
	Patna	#VALUE!	Per M^3
	Muzaffarpur	#VALUE!	Per M^3
	Darbhanga	#VALUE!	Per M^3
	Bhagalpur	#VALUE!	Per M^3
	Munger	#VALUE!	Per M^3
	Saharsa	#VALUE!	Per M^3
	Purnea	#VALUE!	Per M^3
	Gaya	#VALUE!	Per M^3
	Saran	#VALUE!	Per M^3
7.7.3	Providing arrangement by pumping and disposal of surface water from the area of under ground excavation all complete as per specifications and direction of E/I.	#VALUE!	Per H.P Per Hour
7.7.4	Supplying, fabricating and errection of steel portal including steel lagging in concrete in live and grade all complete as per specifications and direction of E/I.	87676.10	Per M.T
7.7.5	Grouting in tunnel per bag cement consumption all complete as per specifications and direction of E/I.		
	Patna Urban	412.10	per bag of cement
	Patna	412.10	per bag of cement
	Muzaffarpur	412.10	per bag of cement
	Darbhanga	412.10	per bag of cement
	Bhagalpur	406.00	per bag of cement
	Munger	406.00	per bag of cement
	Saharsa	412.10	per bag of cement
	Purnea	412.10	per bag of cement
	Gaya	392.50	per bag of cement
	Saran	406.00	per bag of cement
7.7.6	Excavation of vertical shaft for (Intake structure) in hard rock with all lift and disposal of the same by truck upto 1 Km lead from shaft face all complete as per specifications and direction of E/I.	#VALUE!	Per M^3
7.7.7	Drilling holes upto 38 mm dia rock including supplying and fixing 25 mm dia rock bolts slotted at one end and threaded at the other and with bearing plates, bolts, nuts etc. complete including clearing holes before fixing rods as per drawing, specifications and direction of E/I.	#VALUE!	Per M^2

7.7 TUNNEL WORK

Sl.No	Description	Quantity	Unit	Rate	Amount	Ref.
7.7.1	Excavation of Tunnel portion in hard rock by blasting with all lead and lift, including dressing providing temporary support (steel or timber) wherever necessary, removal of spoil to dump site by truck within 1 km. lead from portal face all complete as per specifications and direction of F/I.					
	Unit:-Per Cum					
	Taking Out put=1.0 Cum					
	Assuming					
	Formate for tunnel diameter	7	metre			
	Thickness of linings	0.5	metre			
	Length of Tunnel= as per requirement		metre			
	Excavated dia of tunnel =Finished dia of tunnel+2 x thickness of lining+2x Aistance of pay lines =7.00+2x0.5+2x0.15 = 8.30 metre	8.3	metre			
	Sectional area of tunnel $=22d^2/(7 \times 4) = 22/7 \times (8.3)^2/4$	54.13	sqm			
	Add for over break @ 20 %	10.83	sqm			
	Cross sectional area of tunnel	64.95	sqm			
	Quantity of excavation per metre length of tunnel	64.95	cum			
	Say	65	cum			
	Assume progress per face (This includes drilling, blasting, mucking, riboing and packing etc. 0= 3 Metre per day	3	Mtr/day			
	Hence Quantity of excavation per day	195	cum			
	No of working shift of 8 hours.					
	Each.....	3	nos			
	Quantity of excavation	65	orrow measure)			
	Cycle of operations					
	Drilling and shifting working platform	6	hours			
	Charging and blasting	1	hours			
	Defusing	1	hours			
	Mucking	4	hours			
	Rock bolting, rib eraction and concreting	12	hours			
	(A).Direct labour					
	Junior formen	1	nos/shift	370.00	370.00	
	Sr. Formen Spl. Drilling	1	nos/shift	354.00	354.00	
	Supervisor (Diploma holder)	1	nos/shift	399.00	399.00	
	Electrician Gr I	1	nos/shift	312.00	312.00	
	Blaster	2	nos/shift	408.00	816.00	
	Hole cleaner	2	nos/shift	250.00	500.00	
	Helper to Electrician	1	nos/shift	258.00	258.00	
	Unskilled mazdoor	12	nos/shift	242.00	2904.00	
	Semi skilled mazdoor	12	nos/shift	252.00	3024.00	
	Wiremen for Blasting	1	nos/shift	284.00	284.00	
					9221.00	
	Rate of labour per cum = Total wage/Quantity of excavation per day				**47.29**	**A**
	(B). Machinary charges					

SL no	Equipment	Nos	Working hr/ day	Total Working hr/ day	Use rate per hr vide item no	Rate		
1	Drill jumbo	1	6	6	**3.1**	#VALUE!	#VALUE!	
2.	Trolley	16	4	64	**3.31**	input	#VALUE!	
3.	Jack hammer (48 nos)	10	5	50	**3.2**	INPUT	#VALUE!	
4.	Scalling hammer	2	4	8	**3.3**	#VALUE!	#VALUE!	
5.	Drill excavattors	2	1	2	**3.32a**	#VALUE!	#VALUE!	
6.	Grinder	2	1	2	**3.33**	#VALUE!	#VALUE!	

	7.Convey muckers (1 cyd) 1 5	5	**3.9**	#VALUE!	#VALUE!	
	8. Battery Locomotive 4 5	20	**3.17b**	#VALUE!	#VALUE!	
	9. D.8 Tractor Dozer 1 6	6	**3.11a**	5062	30372	
	Total Machinary charges				#VALUE!	
	Rate per cum = Total Machinary charges/Quantity of excavation per day				**#VALUE!**	**B**
	(C). Material charges					
	1. DRILLING AND BLASTING					
	(a) It is proposed that to obtain 3 mtr progress per day face metre deep holes will be drilled .					
	Gross section area of tunnel	54.11	**Sqm**			
	Assuming average spacing of hole 0.75 m c/ c					
	Area of rock Gross section per face = 54.11/0.562	96	nos			
	Total depth of drilling 96 x 3.3 = 316.80 metre					
	Cost of drill steel for 316.80 metre =	#VALUE!				
	Quantity of rock excavated per day	195	cum			
	Rate for drill steel per cum= Total cost of drill steel / Quantity of rock excavated				#VALUE!	
	(b). Explosives					
	(i) Gelatine required per cum	1	Kg	1099.00	1099.00	
	(ii). Detonators @ one per hole per face	96	nos	7.40	710.30	
	(iii). Fuse coils @ one per hole per face	96	nos	15.61	1498.56	
	Quantity of rock excavated per day	195	cum			
	Hence Rate of explosive per cum= Cost of detonators+Fuse coils)/Quantity of rock excavated				16.96	
	(iii). Other consumable petty stores such as blasting batteries, galvano metres and blasting wires etc. 50 % of item (i)				549.50	
	Total explosive charge =i+ii+iii				1665.46	
	Total Drilling and blasting charge (a+b)				#VALUE!	**C**
	(D). Charge for ventilator blowers.					
	Use rate of ventilation blower vide item 3.14	**#VALUE!**				
	Total blower charge/ shift= use rate/8	#VALUE!				
	Rock excavated per shift=	65	cum			
	Rate per cum=Total blower charge per shif / Rock excavated per shift	#VALUE!			#VALUE!	**D**
	(E). Shop charge					
	(i).Machine shop including foundary and smithy structural shop, steel metal shop, Air and water shop and foundary @ 40 % of machinary charges (B)				#VALUE!	**E**
	(F).Electrical materials charges @ 10 % of item (C)				#VALUE!	**F**
	G). Compressed air charge @ 20 % of item ©				#VALUE!	**G**
	(H). Water charge @ 4 % of item (C)				#VALUE!	**H**
	(I). Carriage of excavated rocks by truck upto 1 km from portal face					
	Average lead=575 M	575	M			
	Truck capicty 8 MT =6 cum (swell factor0.67)	6	Cum			
	Net capacity 6 x 0.67 = 4.02 cum	4.02	cum			
	Cycle time----	16	k.m/hr			
	(a) Hauling time @ 16 KM (Average)speed per hours =575x60x2/1000x16=4.31 minutes	4.31	minutes			
	(b) Loading unloding turning and spoltting time=60 minutes	60	minutes			
	Total hauling cycle time=64.31 minutes	64.31	minutes			
	No of trip per working hour = 60 / 64.31=0.93 trips	0.93	Trips			
	Material carried=0.93x4.02 =3.74M^3	3.75	Cum			
	Hourly use rate of truck (vide item no 3.26)	**843**	hr			
	Rate per cum=Use rate of truck/3.74 =192.60 /3.74	225.40		Rs	225.40	
	Constuction and maintenance of haul road Add @ 5 % of Item (b)			Rs	11.27	
	Add 2 % for electric charge				4.51	
					241.18	
	Total of A+B+C+D+E+F+G+H+I+J				#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	

	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
	Rate per cum=			#VALUE!	Per M^3	
7.7.2	Providing shot crete in arch portion of tunnel including cost of wire mesh (150 mm x 150 mm) all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=1.0 Cum					
	A.Materials					
	Cement	0.034	cum	9118.00	310.01	
	Coarse aggregate	0.033	cum	513.10	16.93	
	Sand	0.1	cum	145.20	14.52	
					341.46	A
(B)	B. Batching and mixing charge per bag					
	Use rate of Batching and mixing plant (vide item 3.13a)	**2775.00**				
	Batching and mixing plant capacity 26.76 cum (35 cuyd)	26.76	cum			
	(Taking job management factor as 0.69)	0.69				
	Rate of mass concrete per cum= Use rate/(26.76*0.69	71.55				
	Charge for mixing of materials per bag= Rate of mass concrete per cum/7.5				9.54	B
	(C) Transport of concrete by 3.06 cum (4 cuyd) buckets hauled by 5 T Diesel Locomotive from batching and mixing plant to pick up point	3.06	cum			
	Average lead= 1.0 Km	1.00	Km			
	Hauling Cycle time					
	Ideal production at Batching plant=57.34 cum (75 cuyd)	57.34	cum			
	Actual production with 0.69 x 57.34=39.56 cum	39.56	cum			
	I.Loading time of a Train =3.06 x2 x60/39.56 =9.28 minutes	9.28	minute			
	ii.spolting time and waiting time =	1.50	minutes			
	iii.Turning and unloading time	9.28	minutes			
	iv.Empty haul @6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	v.Loaded haul @ 6.00 K.M per hour =Average Leadx60/6	10.00	minutes			
	Total hauling cycle time=(i +ii+iii+iv+v)	40.06	minutes			
	No of trips in 50 cum in working	1.25				
	Output of one trian with 2 buckets per hr	7.65	cum			
	Use rate of Diesel Locomotive (Vide item no 3.17a)	**#VALUE!**				
	Use rate of concrete buckets 2.nos (Vide item no 3.30a)	**22.00**				
	Total use rate	#VALUE!				
	Transport rate off mass concrete per cum = Total use rate/7.65	#VALUE!				
	Charge for transport of mix to site per bag= Transport Rate of mass concrete per cum / 7.5				#VALUE!	C
	(D). Placement charges					
	Use rate of shot crete Machine (vide item no 3.8)	**349.00**				
	Capacity	1	cum			
	Considering no of shots by shot creting Machine per hr	6				
	Output of per hr	6	cum			
	Use rate of shot crete Machine per bag of cement consumption with 80 % efficiency = Use rate of short crete machine per hour / 0.8 x 6 x7.5				9.69	D
	(E). Lighting, work shop charge and other miscelleneous item @ 100 % of use rate of shout crete machine per bag				9.69	E
	Rate per bag of cement constructed=A+B+C+D+E				#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	

					#VALUE!	#VALUE!
				#VALUE!	Per M^3	
7.7.3	Providing arrangement by pumping and disposal of surface water from the area of under ground excavation all complete as per specifications and direction of E/I.					
	Unit:-	H.P. Per Hour				
	(A) Pump charge					
	Use rate of --- H.P pump per hour (vide item no3.15c)	15	H.P		**#VALUE!**	**A**
	(B).Pipe and Accessories					
	(a). Depreciation charge					
	i. 250 mm dia pipe	3	Mtr	#VALUE!	#VALUE!	
	ii. M.S Bends	5	nos	#VALUE!	#VALUE!	
	iii. Foot valve	1	nos	#VALUE!	#VALUE!	
	iv. Sluice valve	1	nos	#VALUE!	#VALUE!	
	v. Vacaum pumping set 5 H.P (vide item no 3.15n)	1	nos	**#VALUE!**	#VALUE!	
	vi. Reflex valve	1	nos	#VALUE!	#VALUE!	
	Total				#VALUE!	
	Rated lift = 20000hrs					
	Depreciation charge per hr = 0.734 x total cost of material/(0.75x20000)				#VALUE!	**a**
	(REF Report of committee on cost control of River vally project, Voi II Jan. 81)					
	(b).Repair and maintenance charge					
	Total repair provision @ 50 % of Depreciation					
	.Repair and maintenance charge per hour=				#VALUE!	**b**
	(c). P.O.L. charge					
	Engergy consumed in 5 H.P vacum pumping set = 5 x 0.746= 3.73 kwh					
	Cost of 3.73 kwh @ Rs	3.73	kwh	#VALUE!	#VALUE!	**c**
	(d). Labour charge					
	Plumber	1	nos	312.00	312.00	
	Helper	1	nos	258.00	258.00	
	Mechnanic Gr II	0.5	nos	352.00	176.00	
	Total				746.00	
	Labour charge per hr=Total labour charge/8				93.25	**d**
	Total charge of Pipe and Accessories=a+b+c+d				#VALUE!	**B**
	(C). Making sumps for placing pipe					
	Labour					
	Semi skilled mazdoor	4	nos	252.00	1008.00	
	Labour charge per hr= Labour charge/8				126.00	**C**
	(D). Misc. charge and making platform etc. for pumps					
	Add @ 10 % of the total charges A+B+C				#VALUE!	**D**
					#VALUE!	
	Rate per H.P per Hr=(A+B+C+D)/15				#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
	Rate per H.P per hour			#VALUE!	r H.P Per Hour	
7.7.4	Supplying, fabricating and errection of steel portal including steel lagging in concrete in live and grade all complete as per specifications and direction of E/I.					
	Unit:-Per M.T					
	Taking Out put=1.0 M.T					
	(REF Report of committee on cost control of River vally project, Voi II Jan. 81 page)					
	A.Materials					
	1.025 M.T. cost of structual steel at project store (2.5 % wastage and incidental to work)	1.025	M.T	47666.10	48857.75	A
	B. Fabrication					

	I. Making roller section 2.5 % of the cost of stock A. above				1221.44	
	ii. Cutting 3 % 0f A.above				1465.7326	
	iii. Bending of rolled section @ 6% of A above				2931.47	
	iv. Welding					
	a. Cost of electricity including 20% reject @ 8 % of A. above				3908.62	
	b. Labour and electric charge @ 10 % of A				4885.7753	
	c. Handling of material during febrication @ 5 % of A				2442.8876	
	d. Temporary fixture @ 8 % of A				3908.62	
	Total welding charge				15145.903	
	Total of fabrication i to iv				20764.545	B
	C. Eraction					
	Transport of material out of work shop operation, handling final matching and field welding etc. @ 12 % of A				5862.93	C
	Total cost A+B+C				75485.228	
	Add Overhead charge & C.P@15%				11322.78	
					86808.01	
	Add 1% cess				868.08012	
					87676.09	87676.09
	Rate per M.T			87676.10	per M.T	
7.7.5	Grouting in tunnel per bag cement consumption all complete as per specifications and direction of E/I.					
	Unit:-	Bag of cement				
	Taking Out put:-	1	Bags			
	(A). Cost of 1.05 bag of cement at site including 5 % wastage and incidental charge	0.0357	Cum	9118.00	325.51	
	(B). Grouting					
	I. Hourly use rate of grouting machine	**175.60**				
	Taking progress of grouting 6 bags of cement per hour	6	Bags			
	Cost of Grouting= use rate/ 6				29.27	
					354.78	
	Add Overhead charge & C.P@15%				53.22	
					408.00	
	Add 1% cess				4.08	
					412.08	412.08
		Say Rs		412.10	Bag of cement	
7.7.6	Excavation of vertical shaft for (Intake structure) in hard rock with all lift and disposal of the same by truck upto 1 Km lead from shaft face all complete as per specifications and direction of E/I.					
	Unit:-Per Cum					
	Taking Out put=1.0 Cum					
	Assuming					
	Formate diameter of shaft	13	metre			
	Av.Thickness of linings (Taking1.5 mtr at bottom land 0.5 mtr at top as thickness of lining)Including pay line of 0.15 mtr	1.15	metre			
	Excavated dia of vertical shaft =Finished dia of shaft +2 x thickness of lining+2x Aistance of pay lines =13.00+2x(1+0.15) = 15.30 metre	15.3	metre			
	Sectional area of shaft =$22d^2/(7 \times 4)$ = 22/7 x$(8.3)^2$ /4	183.93	sqm			
	Add for over break @ 10 %	18.39	sqm			
	Cross sectional area of shaft	202.32	sqm			
	Quantity of excavation per metre height of shaft	202.32	cum			
	Say	202	cum			
	Assume progress per face (This includes drilling, blasting, mucking, riboing and packing etc. 0= 1 Metre per day	1	Mtr/day			
	Hence Quantity of excavation per day	202	cum			
	No of working shift of 8 hours.					
	Each.....	3	nos			
	Quantity of excavation	67.33	orrow measure)			

	Cycle of operations					
	Drilling and shifting working platform	2.5	hours			
	Charging and blasting	0.5	hours			
	Defusing	0.5	hours			
	Mucking	3	hours			
	Rock bolting, rib eraction and concreting	1.5	hours			
	Total	8	hours			
	(A).Direct labour					
	Sr. Formen Spl. Drilling	1	nos	354.00	354.00	
	Supervisor (Diploma holder)	1	nos	399.00	399.00	
	Electrician Gr II	2	nos	295.00	590.00	
	Blaster	3	nos	408.00	1224.00	
	Hole cleaner	5	nos	250.00	1250.00	
	Helper to Electrician	3	nos	258.00	774.00	
	Unskilled mazdoor	24	nos	242.00	5808.00	
	Semi skilled mazdoor	24	nos	252.00	6048.00	
	Wiremen for Blasting	5	nos	284.00	1420.00	
	Stone men	1	nos	250.00	250.00	
	Total labour				18117.00	
	Rate of labour per cum = Total wage/Quantity of excavation per day				**269.06**	A
	(B). Machinary charges					
	SL no Equipment Nos Working hr/ day	Total Working hr/ day	Use rate per hr vide item no	Rate		
	1 D.8 Tractor Dozer 1 1	1	**3.11a**	**5062**	5062	
	2 Convey mucker 20 3	60	**3.9**	**#VALUE!**	#VALUE!	
	3. Jack hammer (52 lb) 24 2.5	60	**3.2**	**input**	#VALUE!	
	4.Scalling hammer 3 1	3	**3.3**	**#VALUE!**	#VALUE!	
	5. Drill excavattors 2 1/2	1	**3.32**	**#VALUE!**	#VALUE!	
	6. Grinder 1 1	1	**3.33**	**#VALUE!**	#VALUE!	
	7. 30.T.Hoist 1 3	3	**3.7b**	**1161.00**	3483	
	8. Loader 1 3	3	**3.35 a**	**1199.00**	3597.00	
	Total Machinary charges				#VALUE!	
	Rate per cum = Total Machinary charges/Quantity of excavation per day				**#VALUE!**	B
	(C). Material charges					
	1. DRILLING AND BLASTING					
	(a) It is proposed that to obtain 1 mtr progress per day 1.25mtr. deep holes will be drilled Gross section area of shaft 22x4 $(13+1.25)^2$ /(7x4)	177	Sqm			
	Assuming average spacing of hole 0.80 m c/ c					
	Area of Cross section per hole =0.8x0.8	0.64	sqm			
	No of hole required=Gross section area of shaft/Area of Cross section per hole	274.00			175.04	
	Total depth of drilling	342.50				
	Cost of drill steel for per metre =	**IINPUT**				
	Cost of drill steel for 342.5 metre =	#VALUE!				
	Quantity of rock excavated per day	202.0	cum			
	Rate for drill steel per cum= Total cost of drill steel / Quantity of rock excavated	#VALUE!			#VALUE!	a
	(b). Explosives					
	(i) Gelatine required per cum	1	Kg	1099.00	1099.00	
	(ii). Detonators @ one per hole per face	274	nos	7.40	2027.33	
	Fuse coils @ one per hole per face	274	nos	15.61	4277.14	
	Quantity of rock excavated per day	202	cum			
	Hence Rate of explosive per cum= Cost of detonators+Fuse coils)/Quantity of rock excavated				31.21	
	(iii). Other consumable petty stores such as blasting batteries, galvano metres and blasting wires etc. 50 % of item (i)				549.50	
	Total explosive charge =i+ii+iii				1679.71	b
	1.Total explosive charge and blasting charge (a+b)				#VALUE!	

	2.Provision of pipe lines for air and water for wet drilling rate per cum@ 4 % of 1				#VALUE!	
	3. Timber for supperts packing rate per cum @ 5 % of 1				#VALUE!	
	4. Missscellaneous suplies such as safety hates, gunboots, rain coats, wire ropes, manila rops, v-clampes, rubber gloves, shackles and artifical respirators rate per cum @ 4 % of 1				#VALUE!	
	Total material charge 1+2.+3+4				#VALUE!	C
	(D). Charge for ventilator blowers.					
	Use rate of ventilation blower vide item 3.14	**#VALUE!**				
	Total blower charge/ shift= use ratex8	#VALUE!				
	Rock excavated per shift=	67.33	cum			
	Rate per cum=Total blower charge per shif / Rock excavated per shift	#VALUE!			#VALUE!	D
	(E). Shop charge					
	(i).Machine shop including foundary and smithy structural shop, steel metal shop, Air and water shop and foundary @ 40 % of machinary charges (B)				#VALUE!	E
	(F).Electrical materials charges @ 10 % of item (C)				#VALUE!	F
	(G) Trolly Track charge Per M3 @ 5% of (C)				#VALUE!	G
	(H). Compressed air charge @ 20 % of item C				#VALUE!	H
	(I). Water charge @ 4 % of item (C)				#VALUE!	I
	(J). Carriage of excavated rocks by truck upto 1 km from portal face					
	Average lead=575 M	575				
	Truck capicty 8 MT =6 cum (swell factor0.67)	6				
	Net capacity 6 x 0.67 = 4.02 cum	4.02				
	Cycle time----	16				
	(a) Hauling time @ 16 KM (Average)speed per hours =575x60x2/1000x16=4.31 minutes	4.31				
	(b) Loading unloding turning and spollting time=60 minutes	60				
	Total hauling cycle time=64.31 minutes	64.31				
	No of trip per working hour = 60 / 64.31=0.93 trips	0.93				
	Material carried=0.93x4.02 =3.74M^3	3.75				
	Hourly use rate of truck	**843**				
	Total Rate per cum=Use rate of truck/3.74 =192.60 /3.74			Rs	224.77	
	Constuction and maintenance of haul road Add @ 5 % of Item (b)	5	%	Rs	0.45	
	Add 2 % for electric charge	2	%		4.50	
					229.72	J
	Total of A+B+C+D+E+F+G+H+I+J+K				#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
	Rate per cum=			#VALUE!	per cum	
7.7.7	Drilling holes upto 38 mm dia rock including supplying and fixing 25 mm dia rock bolts slorted at one end and threaded at the other and with bearing plates, bolts, nuts etc. complete including clearing holes before fixing rods as per drawing, specifications and direction of E/I.					
	Unit:-Per M					
	Taking Out put=1.0 M					
	A. Drilling					
	i.Cost of drilling use rate of Jack hammer	**INPUT**				
	average rate of drilling 35 mm dia metre hole per hour	2.3	mtr			
	Hence rate of drilling per metre= Use rate of Jack hammer/2.3	#VALUE!				
	ii. Cost of drill rod per mtr of drilling	1	mtr	#VALUE!	#VALUE!	
	B. Supply and making the bolts					
	i. Rock bolt 25 mm dia metre	1	mtr	#VALUE!	#VALUE!	
	ii. Wastage in cutting 2.5 % of B (i)	2.5	%		#VALUE!	

	Sub-Total				#VALUE!		
	Grand Total				#VALUE!		
	Add Overhead charge & C.P@15%				#VALUE!		
					#VALUE!		
	Add 1% cess				#VALUE!		
					#VALUE!	#VALUE!	
	Rate per metre=			#VALUE!	per metre		

Sr.No.	Item	Rate	Unit

7.8 MISCELLANEOUS

Sr.No	Item	Unit	Rate
7.8.1	Supplying, fitting and fixing in position mild steel trash rack and trash rack covering wherever needed in dam and allied works complete job as per drawing, specifications and direction of E/I.	#VALUE!	Per M.T
7.8.2	Supplying, fitting and fixing in position mild steel stop leg gates wherever needed in dam and allied works complete job as per drawing, specifications and direction of E/I.	#VALUE!	Per M.T
7.8.3	Supplying, fitting and fixing copper strip of 16 gauge of approved quality (with 99 % purity) in expansion joints complete job as per drawing, specifications and direction of E/I.	982.10	Per kg
7.8.4	Supplying, fitting and fixing rubber seal of (water stop) of approved quality for construction joints expansion joints complete job as per drawing, specifications and direction of E/I.	#VALUE!	Per Meter
7.8.5	Supplying, and fixing in position 25 mm thick Bituminous board (Shalitex or equivalent) in expansion or construction joint in dam and its allied works all complete as per approved design, specifications and direction of E/I	#VALUE!	Per M^2
7.8.6	Supplying, and fixing Bitumen filter (Bitumen, cement and sand) in construction joints in dam and its allied works all complete as per approved design, specifications and direction of E/I		
	Patna Urban	175.70	Per cm width Per cm depth Per 100 mtr length
	Patna	175.70	
	Muzaffarpur	175.70	
	Darbhanga	175.70	
	Bhagalpur	175.60	
	Munger	175.60	
	Saharsa	175.70	
	Purnea	175.70	
	Gaya	175.30	
	Saran	175.60	
7.8.7	Providing slope drain with boulder duly cement grouted in (1 : 10) over layers of sand, gravel filter as per approved design, specifications and direction of E/I		
	Urban Patna	750.50	Per Meter
	Patna	750.50	
	Muzaffarpur	750.50	
	Darbhanga	750.50	
	Bhagalpur	748.90	
	Munger	748.90	
	Saharsa	750.50	
	Purnea	750.50	
	Gaya	745.40	
	saran	748.90	
7.8.8	Construction slope drain and cross drain and berm drain with cement plaster (1 : 3) including the cost of all materials as per specifications and direction of E/I		
	Urban Patna	12777.00	
	Patna	12777.00	
	Muzaffarpur	12777.00	
	Darbhanga	12777.00	

Sr.No.	Item	Rate	Unit
	Bhagalpur	12775.60	Per Meter
	Munger	12775.60	
	Saharsa	12777.00	
	Purnea	12777.00	
	Gaya	12772.40	
	saran	12775.60	
7.8.9.1	Providing and driving steel sheet piles on specified alignment and upto designed levels including painting the sheet piles with two coats of anti-corrosive bitumen paint (portion of sheet pile inside concrete shell not be painted) including cost of sheet piles and hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I . (For the purpose of payment of sheet pile driving, measurement of sheet pile duly driven shall be taken only)	#VALUE!	Per M.T
7.8.9.2	Labour rate for extracting steel sheet piles on specified alignment with hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I . (For the purpose of payment of sheet pile extracting, measurement of sheet pile duly extracted shall be taken only)	#VALUE!	Per M.T
7.8.10	Unloading cement , light stacking materials steel materials from Railway wagon and stacking the same in Railway yard for verification within a distance of 150 mtr. From Railway track all complete job as per direction of E/I	117.10	Per M.T
7.8.11	Unloading heavy structural steel materials of all categories (Not required the use of crane) from Railway wagon and stacking the same in Railway yard for verification within a distance of 150 mtr. From Railway track all complete job as per direction of E/I	146.40	Per M.T
7.8.12	Carriage of cement, steel and other materials from departmental godown to site or vice-versa by head load and stacking the same beyond 45 M and upto 165 M including the cost of all labours all complete as per direction of E/I.	175.70	Per M.T
7.8.13	Extra for each additional lead of 45 M or a part there of beyond the initial lead of 165 M as per direction of E/I.	52.70	Per M.T
7.8.14	Labour rate for reshuffling and restacking of cement bage including restacking in Godaown as per direction of E/I	7.00	Per bag

7.8 MISCELLANEOUS

Sl.No.	Description	Quantity	Unit	Rate	Amount	Ref.
7.8.1	Supplying, fitting and fixing in position mild steel trash rack and trash rack covering wherever needed in dam and allied works complete job as per drawing, specifications and direction of E/I.					
	Unit:-Per M.T					
	Taking Out put=1.0 M.T					
	(REF Report of committee on cost control of River vally project, Voi II Jan. 81)					
	A.Materials					
	i.Mild steel in shape of structurals such as beams, angle, flate, rods and plates(adopt average effective rate of all structurals)	1	M.T			
	Add wastage (During various operation and handling) @ 2.5 %	0.025	M.T			
	Sub-Total	1.025	M.T	Input	#VALUE!	
	ii.Acetylene	3.8	cum	input	#VALUE!	
	iii. Oxygen	16	cum	#VALUE!	#VALUE!	
	iv. M.S Electrodes	330	nos	#VALUE!	#VALUE!	
	v. Miscellaneous items like oil and paints @ 2 % of the cost of mild steel /M.T				#VALUE!	
	Sub-Total (A)				#VALUE!	A
	B.Labour					
	i.Fabrication including cutting, welding and making @ 40 % of the cost of mild steel / M.T				#VALUE!	
	ii. Straightening and black smithy charges @ 15 % of the cost of mils steel / M.T				#VALUE!	
	iii. Miscellaneous labour charges i.e handling of job to different shops @ 3 % of cost of mild steel /M.T				#VALUE!	
	Sub-Total(B)				#VALUE!	B
	C.Transportation and erection charge					
	i.Transpotrtation and positioning of the trash rack at site of work @ 10 % of cost of mild steel /M.T				#VALUE!	
	ii. Erection of embaded parts and trash rack @ 40 % of cost of mild steel /M.T				#VALUE!	
	Sub-Total©				#VALUE!	C
	Grand Total				#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
				#VALUE!	Per MT	
7.8.2	Supplying, fitting and fixing in position mild steel stop log gates wherever needed in dam and allied works complete job as per drawing, specifications and direction of E/I.					
	Unit:-Per M.T					
	Taking Out put=1.0 M.T					
	(REF Report of committee on cost control of River vally project, Voi II Jan. 81)					
	A.Materials					
	i.Mild steel in shape of structurals such as beams, angle, flate, rods and plates(adopt average effective rate of all structurals)	1	M.T			
	Add wastage (During various operation and handling) @ 2.5 %	0.025	M.T			
		1.025	M.T	Input	#VALUE!	
	ii.Acetylene	3.8	cum	input	#VALUE!	
	iii. Oxygen	8.6	cum	#VALUE!	#VALUE!	
	iv. M.S Electrodes	200	nos	#VALUE!	#VALUE!	
	v. Gun metal in gate	12	Kg	#VALUE!	#VALUE!	

	vi. Rubber seal	2.5	metre	#VALUE!	#VALUE!	
	vii. Miscellaneous materials as screw bolts, paints, black leads, crucible pattern wood and hard coke paints @ 5 % of the cost of mild steel /M.T				#VALUE!	
	Sub-Total (A)				#VALUE!	A
	B.Labour					
	i.Fabrication including cutting, welding and making @ 30 % of the cost of mild steel / M.T				#VALUE!	
	ii.Maching including Eurning, drilling, threading, boring and teeth cutting @ 20 % of cost of mild steel / M.T				#VALUE!	
	iii. Casting @ 20 % of the cost of mils steel / M.T				#VALUE!	
	iv. Black smithyand forging charges @ 15 % of the cost of mils steel / M.T				#VALUE!	
	v. Miscellaneous labour charges I.e handling of job to different shops @ 5 % of cost of mild steel /M.T				#VALUE!	
	Sub-Total(B)				#VALUE!	B
	C.Transportation and erection charge					
	i.Transpotrtation and positioning of the trash rack at site of work @ 10 % of cost of mild steel /M.T				#VALUE!	
	ii. Erection of embaded parts and trash rack @ 15 % of cost of mild steel /M.T				#VALUE!	
	Sub-Total©				#VALUE!	C
	Grand Total				#VALUE!	
	Add Overhead charge & C.P@15%				#VALUE!	
					#VALUE!	
	Add 1% cess				#VALUE!	
					#VALUE!	#VALUE!
				#VALUE!	Per MT	
7.8.3	Supplying, fitting and fixing copper strip of 16 gauge of approved quality (with 99 % purity) in expansion joints complete job as per drawing, specifications and direction of E/I.	**Analysis same as item 5.8.1**				
7.8.4	Supplying, fitting and fixing rubber seal of (water stop) of approved quality for construction joints expansion joints complete job as per drawing, specifications and direction of E/I.	**Analysis same as item 5.8.2**				
7.8.5	Supplying, and fixing in position 25 mm thick Bituminous board (Shalitex or equivalent) in expansion or construction joint in dam and its allied works all complete as per approved design, specifications and direction of E/I	**Analysis same as item 5.8.3**				
7.8.6	Supplying, and fixing Bitumen filter (Bitumen, cement and sand) in construction joints in dam and its allied works all complete as per approved design, specifications and direction of E/I	**Analysis same as item 5.8.4**				
7.8.7	Providing slope drian with boulder duly cement grouted in (1 : 10) over layers of sand, gravel filter as per approved design, specifications and direction of E/I					
	Unit:-Per M					
	Taking Out put=15.24 M	15.24	mtr			
	Taking 15.24 mtr length of drain					
	Materials					
	Sand for filter 1.98 cum+ for Grouting 1.42 cum	3.4	cum	145.20	493.68	
	Gravel	1.98		322.10	637.76	
	Boulder	4.39		322.10	1414.02	
	Cement	0.142		9118.00	1294.76	
					3840.21	(A)
	Labour					
	ii. Labour for sand filter (vide item no 7.6.1)	1.98	cum	493.47	**977.07**	(B)
	(Labour For 2.832 cum)					
	Unskilled mazdoor for placing	2	nos	242.00	484.00	
	Unskilled mazdoor for spreading	1.5	nos	242.00	363.00	
	Unskilled mazdoor for watering and ramming	2	nos	242.00	484.00	
	Mate	0.25	nos	266.00	66.50	
					1397.50	493.47

	ii. Labour for Gravel filter (vide item no 7.6.2)	1.98	cum	279.84	**554.08**	(C)
	(Labour For 2.832 cum)					
	Unskilled mazdoor for placing	2	nos	242.00	484.00	
	Unskilled mazdoor for spreading	0.5	nos	242.00	121.00	
	Unskilled mazdoor for loght compaction	0.5	nos	242.00	121.00	
	Mate	0.25	nos	266.00	66.50	
					792.50	279.84
	iii. Labour for boulder laying (vide item no 7.6.4)	4.39	cum	476.78	**2093.08**	(D)
	(Labour For 2.832 cum)					
	Mason Gr II	0.25	nos	295.00	73.75	
	Unskilled mazdoor	5	nos	242.00	1210.00	
	Mate	0.25	nos	266.00	66.50	
					1350.25	476.78
	iv. Labour for Earth work in foundation (vide item no 5.1.27)	22.65	cum	96.91	**2195.02**	(E)
	v. Labour for grouting					
	Unskilled mazdoor for carrying the soil	0.25	nos	242.00	60.50	
	Unskilled mazdoor for dressing the slope	0.25	nos	242.00	60.50	
	Mate	0.25	nos	266.00	66.50	
					187.50	(F)
	Total (A+B+C+D+E+F)				9846.95	
	Add Overhead charge & C.P On(A+B+C+D+F)@15%				1477.04	
					11324.00	
	Add 1% cess				113.24	
					11437.24	750.47
				750.50	Per M	
7.8.8	Construction slope drain and cross drain and berm drain with cement plaster (1 : 3) including the cost of all materials as per specifications and direction of E/I					
	Unit:-Per M					
	Taking Out put=1.0 M					
	1.Earth work (vide item no 5.1.27)	100	cum	112.60	11260.00	
	2.Supply and placing gravel or stone chips (20 mm to 40 mm)	0.42	cum	1169.10	491.02	
	3.Supply and placing of sand (vide item 7.6.5)	0.42	cum	890.70	374.09	
	4.Supply and placing of Stone boulder(vide item 7.6.4)	0.46	cum	927.90	426.83	
	5.Cement plaster (1 : 3)(vide item 7.5.4)	0.91	sqm	247.30	225.04	
					12776.99	12776.99
				12777.00	Per mtr	
Note:-	Rate anaylisis for Supply and placing gravel or stone chips (20 mm to 40 mm)					
	(Assuming 2.832 cum)					
	Materials					
	Cost of stone metal (20 mm to 40 mm)	2.832	cum	513.10	1453.10	
	Labour					
	Unskilled mazdoor for placing	3	nos	242.00	726.00	
	Unskilled mazdoor for spreading	2	nos	242.00	484.00	
	Unskilled mazdoor for light compaction	0.5	nos	242.00	121.00	
	Mate	0.25	nos	266.00	66.50	
					2850.60	
	Add Overhead charge & C.P@15%				427.59	
					3278.19	
	Add 1% cess				32.78	
					3310.97	1169.13
			say,Rs	1169.10	per Cum	
7.8.9.1	Providing and driving steel sheet piles on specified alignment and upto designed levels including painting the sheet piles with two coats of anti- corrosive bitumen paint (portion of sheet pile inside concrete shell not be painted) including cost of sheet piles and hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I . (For the purpose of payment of sheet pile driving, measurement of sheet pile duly driven shall be taken only)	**Analysis same as item 5.8.5.1**				

7.8.9.2	Labour rate for extracting steel sheet piles on specified alignment with hire charges of sheet pile driving plant etc. all complete as per specifications and direction of E/I . (For the purpose of payment of sheet pile extracting, measurement of sheet pile duly extraced shall be taken only)	**Analysis same as item 5.8.5.2**				
7.8.10	Unloading cement , light stacking materials steel materials from Railway wagon and stacking the same in Railway yard for verification within a distance of 150 mtr. From Railway track all complete job as per direction of E/I					
	Vide T.E.C no 54E dated 12.12.89					
	Unit:-Per M.T					
	Taking Out put=48.0 M.T					
	(Assuming unloadin one wagon Load 48.00 M.T)					
	Unskilled mazdoor	20.00	nos	242.00	4840.00	
					4840.00	
	Add Overhead charge & C.P@15%				726.00	
					5566.00	
	Add 1% cess				55.66	
					5621.66	117.12
			Say Rs	117.10	Per M.T	
7.8.11	Unloading heavy structural steel materials of all categories (Not required the use of crane) from Railway wagon and stacking the same in Railway yard for verification within a distance of 150 mtr. From Railway track all complete job as per direction of E/I					
	Vide T.E.C no 54E dated 12.12.89					
	Unit:-Per M.T					
	Taking Out put=48.0 M.T					
	(Assuming unloadin one wagon Load 48.00 M.T)					
	Unskilled mazdoor	25.00	nos	242.00	6050.00	
					6050.00	
	Add Overhead charge & C.P@15%				907.50	
					6957.50	
	Add 1% cess				69.575	
					7027.08	146.40
			Say Rs	146.40	Per M.T	
7.8.12	Carriage of cement, steel and other materials from departmental godown to site or vice-versa by head load and stacking the same beyound 45 M and upto 165 M including the cost of all labours all complete as per direction of E/I.					
	Vide T.E.C no 104E dated 24.10.90					
	Unit:-Per M.T					
	Taking Out put=4.0 M.T					
	(Applicable only for departmental work not for general contract work)					
	Considering 4 M.T					
	Unskilled mazdoor	2.50	nos	242.00	605.00	
					605.00	
	Add Overhead charge & C.P@15%				90.75	
					695.75	
	Add 1% cess				6.9575	
					702.71	175.68
			Say Rs	175.70	Per M.T	
7.8.13	Extra for each additional lead of 45 M or a part there of beyound the initial lead of 165 M as per direction of E/I.					
	Vide T.E.C no 104E dated 24.10.90					
	Unit:-Per M.T					
	Taking Out put=4.0 M.T					
	(Applicable only for departmental work not for general contract work)					
	Considering 4 M.T					

	Unskilled mazdoor	0.75	nos	242.00	181.50	
					181.50	
	Add Overhead charge & C.P@15%				27.23	
					208.73	
	Add 1% cess				2.09	
					210.81	52.70
			Say Rs	**52.70**	Per M.T	
7.8.14	Labour rate for reshuffling and restacking of cement bage including restacking in Godaown as per direction of E/I					
	Vide T.E.C no 104E dated 24.10.90					
	Unit:-Per Bag					
	Taking Out put=100 Bags					
	(Applicable only for departmental work not for general contract work)					
	Consider 100 bags (5 M.T)					
	Unskiiled labour for taking out cement bags, reshuffling properly in order to brock lumps and restacking the same in proper place	2.50	nos	242.00	605.00	
					605.00	
	Add Overhead charge & C.P@15%				90.75	
					695.75	
	Add 1% cess				6.9575	
					702.71	7.03
			Say Rs	**7.00**	Per bag	

Annexure-I

SPECIFICATION OF OLD EMPTY CEMENT BAGS

Supply of Old Empty Cement Bags (Synthetic), of 1.2 cft Capacity in good condition. On one side of the bag in almost central portion (in 12 cm. x 10 cm. Size) W.R.D ,Name of Chief Engineer Zone and FLOOD FIGHTING YEAER should be written clearly in permanent red paint. The paint should not be washed away with water.

Annexure –II

SPECIFICATION OF NYLON CRATES

Supply of Nylon Crate of size one cubic meter (1mx1mx1m) with 20 cms. mesh of specification 1260/3/4/29 (i.e having 24 nos. of threads) of weight 165 Grams(±) 5 Grams.

Annexure-III

Specification of Non Woven Geo bag of size (1Mx0.7M)

< **Material & Make:** Needle punched, staple fiber, high elongation, Non Woven PET Geo Textile should resist Ultraviolet, rooting & biological degradation, naturally encountered acid and alkalis.

<**Mass (GSM)** as per ASTM D 5261 =300 gm/m^2

<**Wide Width Tensile Strength** (Both Direction) as per ASTM D4595 =9.00 KN/M

<**Elongation** (Both Direction) as per ASTM D 4595= 50%

<**Static Puncture Strength** as per ASTM D 6241=1400 N

< AOS as per ASTM D 4751 =100 micron.

<**Permittivity** as per ASTM D 4491 =1.25

<**UV resistance** @500 hrs. as per ASTM D 4355 (TYP)=70%

<**Trapezoidal Tear Strength** as per ASTM D 4533 =340 N

< Volume of filled Bag =0.07M^3

<Weight of filled Bag =126 Kg.

<**Stitching**: Ring Spun Yarn stitches with 2500-3500 denier (PET/PP):double line chain stitch with overlap with stitches along the edges @ minimum 15 stitches /100 mm

Non Woven Geo Bag should be made of virgin material and should not be made of recycle material.

Annexure-IV

Specification of Non 'Woven Mega Geo bag of size (2Mx1.5M)

< **Material & Make:** Needle punched, staple fiber, high elongation, non Woven PET Geo Textile should resist Ultraviolet, rooting & biological degradation, naturally encountered acid and alkalis.

<**Mass (GSM)** as per ASTM D 5261 (TYP) =600 gm/m^2

<**Wide Strip Tensile Strength** (MD/XD) as per ASTM D4595 (TYP) =18/33 KN/M

<**Trapezoidal Tear Strength** (MD/XD) as per ASTM D 4533 (TYP) =400/800 N

<**CBR Burst Strength** as per ASTM D 6241 (TYP)=4700 N

<**CBR Burst Elongation** as per ASTM D 6241 (TYP) =70 %

< **AOS**(Apparent opening size) as per ASTM D 4751 (Max ARV) =75 micron.

<**UV resistance** @500 hrs. as per ASTM D 4355 (TYP)=80%

<**Abrasion resistance** as per BAW Rotating Drum (TYP) =75%

< Volume of filled Bag =0.75 M^3

<Weight of filled Bag =1350 Kg.

<**Stitching** : Ring Spun Yarn stitches with =5000-6000 denier (PET/PP):double line chain stitch with overlap with stitches along the edges @ minimum 15 stitches /100 mm

(Non Woven Mega geo bags should be made of virgin material i.e Not made of recycle materials)

ANNEXURE-V

SPECIFICATION OF P.P ROPE GABION OF SIZE(1.8Mx1.2Mx0.5M)

PROPERTIES	9 mm x 4 Strand P P Gabion ±1mm, 150 mm x150 mm Mesh Size
SIZE OF GABION	1.8 mx1.2mx0.5m With Lid and Slings
SIZE OF THE BODY & BORDER ROPE	9 mmx4 Strand having a weight of 42 gm/m ± 8% As per IS 5175 :1992 (Re-affirmed -1997)
MATERIAL OF ROPE	Polypropylene (With adequate UV stabilizer)
MESH OPENING	150 mm x 150 mm.
TETHSILE STRENGTH	(a)ROPE- 1560 Kg Breaking Strength(Min) As per IS 7071(PART 4):1986 (Reaffirmed- 1999) (b) ROPE NET- 10,000 Kg/m Breaking Strength
STRUCRURE OF ROPE	Four strand shroud laid.
CONSTRUCTION OF ROPE NET	Woven joint at intersection of Ropes.

ANNEXURE-VI

SPECIFICATION OF P.P ROPE GABION OF SIZE(1.8Mx1.8Mx0.5M)

PROPERTIES	9 mm x 4 Strand Gabion ±1mm, 150 mm x150 mm Mesh Size
SIZE OF GABION	1.8 mx1.8mx0.5m With Lid and Slings
SIZE OF THE BODY & BORDER ROPE	9 mmx4 Strand having a weight of 42 gm/m ± 8% As per IS 5175 :1992 (Re-affirmed -1997)
MATERIAL OF ROPE	Polypropylene (With adequate UV stabilizer)
MESH OPENING	150 mm x 150 mm.
TETHSILE STRENGTH	(a)ROPE- 1560 Kg Breaking Strength(Min) As per IS 7071(PART 4):1986 (Reaffirmed- 1999) (b) ROPE NET- 10,000 Kg/m Breaking Strength
STRUCRURE OF ROPE	Four strand shroud laid.
CONSTRUCTION OF ROPE NET	Woven joint at intersection of Ropes.