SEWERAGE SYSTEM FOR GAYA CITY- PHASE 1

I. Statement of Materials for Sand, Coarse Aggregate for RCC Manhole

Sr. no	Manholes		Type	Concrete (C:S:A)				Cement		Sand		Aggregate		High Alumina Cement Plastering			MID			SOUTH			North		
	Dia (mm)	Depth (m)		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M25 (1:1:2)	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Volume (m3)	Wt (MT) 1870kg/m 3	25 thk m2 (1:3)	Volume (m3)	Sand Wt (MT) 1840kg/m3	No. of MH	Sand (MT)	Aggregate (MT)	No. of MH	Sand (MT)	Aggregate (MT)	No. of MH	Sand (MT)	Aggregate (MT)
1	900	2.0	D		1.19	2.82		0.68	0.98	1.11	2.04	2.22	4.15	2.69	0.07	0.10		0.00	0.00		0.00	0.00		0.00	0.00
2	900	2.5	D		1.19	3.26		0.76	1.09	1.23	2.26	2.46	4.60	4.18	0.10	0.14		0.00	0.00		0.00	0.00		0.00	0.00
3	900	3.0	D		1.19	4.12		0.92	1.32	1.46	2.69	2.92	5.46	5.67	0.14	0.19		0.00	0.00		0.00	0.00		0.00	0.00
4	900	3.5	D		1.19	4.14		0.92	1.32	1.47	2.70	2.93	5.48	7.17	0.18	0.25		0.00	0.00		0.00	0.00		0.00	0.00
5	900	4.0	D		1.19	4.31		0.95	1.37	1.51	2.78	3.03	5.67	8.66	0.22	0.30		0.00	0.00		0.00	0.00		0.00	0.00
6	900	4.5	D		1.19	4.74		1.03	1.48	1.63	3.00	3.27	6.11	10.15	0.25	0.35		0.00	0.00		0.00	0.00		0.00	0.00
7	900	5.0	D		1.19	5.18		1.11	1.60	1.75	3.22	3.50	6.55	11.64	0.29	0.40		0.00	0.00		0.00	0.00		0.00	0.00
8	900	5.5	D		1.19	5.62		1.19	1.71	1.87	3.44	3.74	6.99	13.14	0.33	0.46		0.0	0.00		0.0	0.00		0.00	0.00
9	900	6.0	D		1.19	6.06		1.27	1.83	1.99	3.66	3.98	7.44	14.63	0.37	0.51		0.00	0.00		0.00	0.00		0.00	0.00
10	900	6.5	D		1.19	6.50		1.35	1.94	2.11	3.88	4.22	7.89	16.12	0.40	0.55		0.00	0.00		0.00	0.00		0.00	0.00
11	900	7.0	D		1.19	6.93		1.43	2.06	2.23	4.10	4.46	8.34	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
12	900	7.5	D		1.19	7.37		1.51	2.17	2.35	4.32	4.70	8.79	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
13	900	8.0	D		1.19	7.81		1.59	2.29	2.47	4.54	4.94	9.24	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
14	900	8.5	D		1.19	8.25		1.67	2.40	2.59	4.77	5.18	9.69	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
15	900	9.0	D		1.19	8.69		1.75	2.52	2.71	4.99	5.42	10.14	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.0	0.00
16	900	9.5	D		1.19	9.12		1.83	2.64	2.83	5.21	5.65	10.57	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
17	1000/1100	2.0	E		1.51	3.21		0.80	1.15	1.31	2.41	2.62	4.90	2.60	0.07	0.10		0.00	0.00		0.00	0.00		0.00	0.00
18	1000/1100	2.5	E		1.51	3.70		0.89	1.28	1.44	2.65	2.88	5.39	4.41	0.11	0.15	1	2.80	5.39		0.00	0.00		0.00	0.00
19	1000/1100	3.0	E		1.51	4.73		1.08	1.56	1.72	3.16	3.44	6.43	6.22	0.16	0.22	3	10.14	19.29		0.00	0.00		0.00	0.00
20	1000/1100	3.5	E		1.51	4.67		1.06	1.53	1.71	3.15	3.41	6.38	8.02	0.20	0.28	10	34.30	63.80		0.00	0.00		0.00	0.00
21	1000/1100	4.0	E		1.51	4.83		1.09	1.57	1.75	3.22	3.50	6.55	9.83	0.25	0.35	10	35.70	65.50		0.00	0.00		0.00	0.00
22	1000/1100	4.5	E		1.51	5.31		1.18	1.70	1.88	3.46	3.76	7.03	11.64	0.29	0.40	2	7.72	14.06		0.00	0.00		0.00	0.00
23	1000/1100	5.0	E		1.51	5.80		1.27	1.83	2.01	3.70	4.03	7.54	13.45	0.34	0.47		0.00	0.00		0.00	0.00		0.00	0.00
24	1000/1100	5.5	E		1.51	6.28		1.36	1.96	2.14	3.94	4.29	8.02	15.25	0.38	0.52	1	4.46	8.02		0.00	0.00		0.00	0.00
25	1000/1100	6.0	E		1.51	6.77		1.45	2.09	2.28	4.20	4.55	8.51	17.06	0.43	0.59	2	9.58	17.02		0.00	0.00		0.00	0.00
26	1000/1100	6.5	E		1.51	7.25		1.53	2.20	2.41	4.43	4.82	9.01	18.87	0.47	0.65	1	5.08	9.01		0.00	0.00		0.00	0.00
27	1000/1100	7.0	E		1.51	7.74		1.62	2.33	2.54	4.67	5.08	9.50	20.67	0.52	0.72		0.00	0.00		0.00	0.00		0.00	0.00
28	1000/1100	8.0	E		1.51	8.71		1.80	2.59	2.81	5.17	5.61	10.49	20.67	0.52	0.72		0.00	0.00		0.00	0.00		0.00	0.00
29	1000/1100	8.5	E		1.51	9.19		1.89	2.72	2.94	5.41	5.88	11.00	20.67	0.52	0.72		0.00	0.00		0.00	0.00		0.00	0.00

No. of MH	Sand (MT)	Aggregate (MT)	(MT= 1000 kg)
	0.00	0.00	
	0.00	0.00	
	0.00	0.00

0	**0**	**0**	

	pipe thk
200	30
250	30
300	40
350	75
400	75
450	75
500	75
600	85
700	85
800	95
900	100
1000	115
1100	115

Rate Analysis for RCC Manhole

DATA

Out going sewer outer dia from manhole in 'mm'	**1100**	**1000**	**1200**	**1400**
Internal dia of manhole in 'mm'	**1550**	**1750**	**2000**	**2200**
Wall Width in 'm'	**0.6**			

RCC M 20 Manholes - Open excavation Type

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
S.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.10	5.19		259.70	1346.75
						12.26	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
4	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.34	0.15	1.80	1.44			
		1	0.15	0.50	0.65	0.05			
						2.71	Cum.	4533.30	12298.30
5	**Reinforcement Steel**	1	-	-	-	**298.00**	Kg	53.60	15972.80
6	**Shuttering**								
	For foundation	1.00	6.44		0.35	2.25			
	For RCC - wall	2.00	5.34		1.80	19.23			
	For coverslab	1.00	1.89			1.89			
	Total					**23.37**	Sqm.	169.00	3949.12
7	**CI Steps-5 Kg**	3	-	-	-	**3.00**	No's	201.7	605.10
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	8.26			8.26	Cum	263.2	2172.76
9	**Cost of SFRC Manholeframe and Cover**								**1528.10**
10	**Internal Lining by High Alumina Cement (1:3)**		2.69				Sqm	330	**886.80**
11	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		4.00				Cum	74.5	**298.16**
	Total Cost								**45036.73**

Detailed Estimate : RCC M 20 Manholes for Sewers= 900 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
S.No.	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		0.10	**0.47**		288.9	136.20
						14.61	Cum		
2	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	**0.22**			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
3	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	**-0.05**			
						0.11	Cum	3741.30	407.26
4	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.34	0.15	2.30	1.84			
		1	0.15	0.50	1.15	**0.09**			
						3.15	Cum.	4533.30	14284.12
5	**Reinforcement Steel**	1.00	-	-	-	**347.00**	Kg	53.6	18599.20
6	Shuttering								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.30	24.57			
	For coverslab	1.00	1.89			**1.89**			
	Total					**28.39**	Sqm.	169	4797.28
7	**CI Steps-5 Kg**	4	-	-	-	4.00	No's	201.7	806.80
8	Disposal of Surplus earth upto 8km lead beyond 50m intitial lead	1.00	9.27			9.27	Cum	263.2	**2439.43**
9	**Cost of SFRC Manholeframe and Cover**								**1528.10**
10	**Internal Lining by High Alumina Cement (1:3)**		4.18				Sqm	330	**1379.46**
11	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		5.35				Cum	74.5	**398.29**
	Total Cost								**51785.92**

Detailed Estimate : RCC M 20 Manholes for Sewers=900 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		0.60	**2.83**		288.9	817.19
						16.97	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		0.60	2.83		120	339.43
						2.83	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	**0.74**			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	2.69		0.20	**0.54**			
	For circular opening	-1	0.25	-	0.20	**-0.05**			
	For walls	1.00	5.34	0.15	2.80	**2.24**			
		1.00	0.15	0.50	1.65	0.12			
						4.01	Cum.	4533.30	18180.41
6	Reinforcement Steel	1.00	-	-	-	401.00	Kg	53.6	21493.60
7	Shuttering								
	For foundation	1	6.44		0.30	**1.93**			
	For RCC - wall	2	5.34		2.80	29.91			
	For coverslab	1.00	1.89			1.89			
	Total					33.73	Sqm.	169	**5699.86**
8	**CI Steps-5 Kg**	6.00	-	-	-	6.00	No's	201.7	**1210.20**
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1.00	10.28			10.28	Cum	263.2	**2706.09**
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**		**5.67**				Sqm	330	1872.13
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		**6.69**				**Cum**	**74.5**	**498.42**
	Total Cost								62160.75

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.10	**5.19**		288.9	1498.17
						19.33	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.10	5.19		120	622.29
						5.19	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	**0.74**			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	**0.12**			
	For circular opening	-1	0.25	-	0.20	**-0.05**			
	For walls	1.00	5.34	0.15	3.30	**2.64**			
		1.00	0.15	0.50	2.15	0.16			
						4.03	Cum.	4533.30	18255.77
6	Reinforcement Steel	1.00	-	-	-	443.00	Kg	53.6	23744.80
7	Shuttering								
	For foundation	1	6.44		0.30	**1.93**			
	For RCC - wall	2	5.34		3.30	35.25			
	For coverslab	1.00	1.89			1.89			
	Total					39.07	Sqm.	169	**6602.44**
8	**CI Steps-5 Kg**	8.00	-	-	-	8.00	No's	201.7	**1613.60**
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1.00	11.29			11.29	Cum	263.2	**2972.76**
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**		**7.17**				Sqm	330	2364.79
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		8.03				Cum	74.5	598.55
	Total Cost								**67616.60**

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -F)									
	DEPTH - D=4 m							4	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	**7.07**		288.9	2042.96
	4.5m to 6.0m	1	4.71		0.10	0.47		318.1	149.96
						21.69	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.50	**7.07**		120	848.58
	4.5m to6.0m	1	4.71		0.10	0.47		128.2	60.44
						7.54	Sqm.		
3	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	**0.22**			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	**0.94**			
						1.67			
						1.19	Cum	3323.10	3941.60
4	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	**1.16**			
	walls for conical portion	1.00	3.79	0.15	1.80	**1.02**			
	For walls	1.00	5.34	0.15	2.25	1.80			
		1.00	0.15	0.50	2.90	0.22			
						4.20	Cum.	4533.30	19027.75
6	Reinforcement Steel	1.00	-	-	-	**462.00**	Kg	53.60	24763.20
7	**Shuttering**								
	For foundation	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.25	24.03			
	walls for conical portion	2.00	3.79		1.80	13.63			
	Total					39.59	Sqm.	169	**6691.30**
8	**CI Steps-5 Kg**	9.00	-	-	-	9.00	No's	201.7	**1815.30**
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1.00	13.43			13.43	Cum	263.2	**3533.71**
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**		8.66				Sqm	330	2857.46
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		**8.26**				**Cum**	**74.5**	**615.38**
	Total Cost								**71749.47**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=4.5 m							4.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		0.60	2.83		318.1	899.78
						24.04	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		0.60	2.83		128.2	362.63
						9.90	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	2.75	2.20			
		1	0.15	0.50	3.40	0.26			
						4.64	Cum.	4533.30	21013.58
6	**Reinforcement Steel**	1	-	-	-	**510.00**	Kg	53.60	27336.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.75	29.37			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**44.93**	Sqm.	169.00	7593.88
8	**CI Steps-5 Kg**	11	-	-	-	**11.00**	No's	201.7	2218.70
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	14.44			14.44	Cum	263.2	3800.37
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**		10.15				Sqm	330	**3350.12**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.60				Cum	74.5	**715.50**
	Total Cost								**79525.54**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=5.0 m							5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.10	5.19		318.1	1649.60
						26.40	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.10	5.19		128.2	664.82
						12.26	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	3.25	2.60			
		1	0.15	0.50	3.90	0.29			
						5.07	Cum.	4533.30	22999.40
6	**Reinforcement Steel**	1	-	-	-	**558.00**	Kg	53.60	29908.80
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		3.25	34.71			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**50.27**	Sqm.	169.00	8496.46
8	**CI Steps-5 Kg**	13	-	-	-	**13.00**	No's	201.7	2622.10
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	15.45			15.45	Cum	263.2	4067.04
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**		11.64				Sqm	330	**3842.79**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		10.95				Cum	74.5	**815.63**
	Total Cost								**87301.61**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=5.5 m							5.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		0.10	**0.47**		347.3	163.73
						28.76	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	**7.07**		128.2	906.57
	6m to 7.5m	1	4.71		0.10	0.47		136.4	64.30
						14.61	Sqm.		
3	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	**2.64**			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	**1.55**	0.55	**0.94**			
						1.67			
						1.19	Cum	3323.10	3941.60
4	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	**0.16**			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	3.75	**3.00**			
		1	0.15	0.50	4.40	**0.33**			
						5.51	Cum.	4533.30	24985.23
6	Reinforcement Steel	1.00	-	-	-	551.00	Kg	53.6	29533.60
7	Shuttering								
	For foundation	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		3.75	**40.06**			
	walls for conical portion	2	3.79		1.80	**13.63**			
	Total					55.62	Sqm.	169	9399.04
8	CI Steps-5 Kg	14.00	-	-	-	14.00	No's	201.7	**2823.80**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1.00	16.47			16.47	Cum	263.2	**4333.70**
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	13.14				Sqm		330	**4335.45**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		12.29				Cum	74.5	**915.76**
	Total Cost								**91945.62**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=6.0 m							6	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		0.60	2.83		347.3	982.38
						31.11	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		0.60	2.83		136.4	385.82
						16.97	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	4.25	3.40			
		1	0.15	0.50	4.90	0.37			
						5.95	Cum.	4533.30	26971.05
6	**Reinforcement Steel**	1	-	-	-	**595.00**	Kg	53.60	31892.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		4.25	45.40			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**60.96**	Sqm.	169.00	10301.62
8	**CI Steps-5 Kg**	16	-	-	-	**16.00**	No's	201.7	3227.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	17.48			17.48	Cum	263.2	4600.37
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	14.63				Sqm		330	**4828.12**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		13.64				Cum	74.5	**1015.89**
	Total Cost								**99595.45**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=6.5 m							6.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		1.10	5.19		347.3	1801.02
						33.47	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		1.10	5.19		136.4	707.34
						19.33	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	4.75	3.81			
		1	0.15	0.50	5.40	0.41			
						6.39	Cum.	4533.30	28956.88
6	**Reinforcement Steel**	1	-	-	-	**703.00**	Kg	53.60	37680.80
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		4.75	50.74			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**66.30**	Sqm.	169.00	11204.20
8	**CI Steps-5 Kg**	18	-	-	-	**18.00**	No's	201.7	3630.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	18.49			18.49	Cum	263.2	4867.03
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	16.12				Sqm		330	**5320.78**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.98				Cum	74.5	**1116.02**
	Total Cost								**110675.68**
Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=7.0 m							7	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		1.50	7.07		347.3	2455.94
	7.5m to 9.0m	1	4.71		0.10	0.47		376.50	177.50
						35.83	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		1.50	7.07		136.4	964.56
	7.5m to 9.0m	1	4.71		0.10	0.47		144.60	68.17
						21.69	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	5.25	4.21			
		1	0.15	0.50	5.90	0.44			
						6.83	Cum.	4533.30	30942.70
6	**Reinforcement Steel**	1	-	-	-	**751.00**	Kg	53.60	40253.60
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		5.25	56.08			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**71.64**	Sqm.	169.00	12106.78
8	**CI Steps-5 Kg**	19	-	-	-	**19.00**	No's	201.7	3832.30
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.50			19.50	Cum	263.2	5133.70
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		330	**5813.45**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.32				Cum	74.5	**1216.15**
	Total Cost								**118355.84**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=7.5 m							7.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		1.50	7.07		347.3	2455.94
	7.5m to 9.0m	1	4.71		0.60	2.83		376.50	1064.97
						38.19	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		1.50	7.07		136.4	964.56
	7.5m to 9.0m	1	4.71		0.60	2.83		144.60	409.02
						24.04	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	5.75	4.61			
		1	0.15	0.50	6.40	0.48			
						7.26	Cum.	4533.30	32928.53
6	**Reinforcement Steel**	1	-	-	-	**799.00**	Kg	53.60	42826.40
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		5.75	61.42			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**76.98**	Sqm.	169.00	13009.36
8	**CI Steps-5 Kg**	21	-	-	-	**21.00**	No's	201.7	4235.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.52			20.52	Cum	263.2	5400.36
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		330	**5813.45**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		17.67				Cum	74.5	**1316.28**
	Total Cost								**125815.57**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=8.0 m							8	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		1.50	7.07		347.3	2455.94
	7.5m to 9.0m	1	4.71		1.10	5.19		376.50	1952.45
						40.54	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		1.50	7.07		136.4	964.56
	7.5m to 9.0m	1	4.71		1.10	5.19		144.60	749.86
						26.40	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	6.25	5.01			
		1	0.15	0.50	6.90	0.52			
						7.70	Cum.	4533.30	34914.36
6	**Reinforcement Steel**	1	-	-	-	**847.00**	Kg	53.60	45399.20
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		6.25	66.76			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**82.32**	Sqm.	169.00	13911.94
8	**CI Steps-5 Kg**	23	-	-	-	**23.00**	No's	201.7	4639.10
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	21.53			21.53	Cum	263.2	5667.03
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		330	**5813.45**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.01				Cum	74.5	**1416.41**
	Total Cost								**133275.29**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=8.5 m							8.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		1.50	7.07		347.3	2455.94
	7.5m to 9.0m	1	4.71		1.50	7.07		376.50	2662.43
	9.0m to 10.0m	1	4.71		0.15	0.71		405.70	286.89
						43.14	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		1.50	7.07		136.4	964.56
	7.5m to 9.0m	1	4.71		1.50	7.07		144.60	1022.54
	9.0m to 10.5m	1	4.71		0.15	0.71		152.80	108.05
						28.99	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	6.75	5.41			
		1	0.15	0.50	7.40	0.56			
						8.14	Cum.	4533.30	36900.18
6	**Reinforcement Steel**	1	-	-	-	**895.00**	Kg	53.60	47972.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		6.75	72.10			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**87.66**	Sqm.	169.00	14814.52
8	**CI Steps-5 Kg**	24	-	-	-	**24.00**	No's	201.7	4840.80
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.07			22.07	Cum	263.2	5809.61
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		330	**5813.45**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		21.06				Cum	74.5	**1569.22**
	Total Cost								**140611.19**

	DEPTH - D=9.0 m							9	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		1.50	7.07		347.3	2455.94
	7.5m to 9.0m	1	4.71		1.50	7.07		376.50	2662.43
	9.0m to 10.5m	1	4.71		0.65	3.06		405.70	1243.20
						45.49	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		1.50	7.07		136.4	964.56
	7.5m to 9.0m	1	4.71		1.50	7.07		144.60	1022.54
	9.0m to 10.5m	1	4.71		0.65	3.06		152.80	468.23
						31.35	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	7.25	5.81			
		1	0.15	0.50	7.90	0.59			
						8.58	Cum.	4533.30	38886.01
6	**Reinforcement Steel**	1	-	-	-	**944.00**	Kg	53.60	50598.40
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		7.25	77.44			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**93.00**	Sqm.	169.00	15717.10
8	**CI Steps-5 Kg**	26	-	-	-	**26.00**	No's	201.7	5244.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.73			20.73	Cum	263.2	5455.87
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		330	**5813.45**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		24.76				Cum	74.5	**1844.96**
	Total Cost								**147767.88**

	DEPTH - D=9.5m							9.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		230.50	1629.99
	1.5m to 3.0	1	4.71		1.50	7.07		259.70	1836.48
	3.0m to 4.5m	1	4.71		1.50	7.07		288.9	2042.96
	4.5m to 6.0m	1	4.71		1.50	7.07		318.1	2249.45
	6.0m to 7.5m	1	4.71		1.50	7.07		347.3	2455.94
	7.5m to 9.0m	1	4.71		1.50	7.07		376.50	2662.43
	9m to 10.5m	1	4.71		1.15	5.42		405.70	2199.50
						47.85	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		120	848.58
	4.5m to6.0m	1	4.71		1.50	7.07		128.2	906.57
	6m to 7.5m	1	4.71		1.50	7.07		136.4	964.56
	7.5m to 9.0m	1	4.71		1.50	7.07		144.60	1022.54
						28.29	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	3323.10	3941.60
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	7.75	6.21			
		1	0.15	0.50	8.40	0.63			
						9.02	Cum.	4533.30	40871.83
6	**Reinforcement Steel**	1	-	-	-	**992.00**	Kg	53.60	53171.20
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		7.75	82.78			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**98.34**	Sqm.	169.00	16619.68
8	**CI Steps-5 Kg**	28	-	-	-	**28.00**	No's	201.7	5647.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.38			19.38	Cum	263.2	5102.12
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		330	**5813.45**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		28.47				Cum	74.5	**2120.70**
	Total Cost								**154042.55**

Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.10	6.07		259.70	1575.60
						14.34	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
4	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	1.80	1.61			
		1	0.15	0.50	0.47	0.04			
						3.11	Cum.	4533.30	14077.85
5	**Reinforcement Steel**	1	-	-	-	**342.00**	Kg	53.60	18331.20
6	**Shuttering**								
	For foundation	1.00	7.07		0.35	2.47			
	For RCC - wall	2.00	5.97		1.80	21.49			
	For coverslab	1.00	2.41			2.41			
	Total					**26.37**	Sqm.	169.00	4456.15
7	**CI Steps-5 Kg**	2	-	-	-	**2.00**	No's	201.7	403.40
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	9.40			9.40	Cum	263.2	2474.36
9	**Cost of SFRC Manholeframe and Cover**								**1528.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
11	**Internal Lining by High Alumina Cement (1:3)**	2.60					Sqm	330	**858.79**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		4.94				Cum	74.5	**367.96**
	Total Cost								**54672.45**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		0.10	0.55		288.9	159.34
						17.10	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
4	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	2.30	2.06			
		1	0.15	0.50	0.97	0.07			
						3.59	Cum.	4533.30	16277.30
5	**Reinforcement Steel**	1	-	-	-	**395.00**	Kg	53.60	21172.00
6	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.30	27.46			
	For coverslab	1.00	2.41			2.41			
	Total					**31.98**	Sqm.	169.00	5405.19
7	**CI Steps-5 Kg**	4	-	-	-	**4.00**	No's	201.7	806.80
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	10.51			10.51	Cum	263.2	2765.83
9	**Cost of SFRC Manholeframe and Cover**								**1528.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
11	**Internal Lining by High Alumina Cement (1:3)**	4.41					Sqm	330	**1455.18**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		6.59				Cum	74.5	**490.91**
	Total Cost								**62808.23**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		0.60	3.31		288.9	956.05
						19.86	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		0.60	3.31		120	397.11
						3.31	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	3.30		0.20	0.66			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	2.80	2.51			
		1	0.15	0.50	1.47	0.11			
						4.62	Cum.	4533.30	20942.65
6	**Reinforcement Steel**	1	-	-	-	**508.00**	Kg	53.6	27228.80
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.80	33.43			
	For coverslab	1.00	2.41			2.41			
	Total					**37.95**	Sqm.	169.00	6413.96
8	**Cl Steps-5 Kg**	5	-	-	-	**5.00**	No's	201.7	1008.50
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	11.62			11.62	Cum	263.2	3057.30
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	6.22					Sqm	330	**2051.56**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		8.24				Cum	74.5	**613.86**
	Total Cost								**76945.46**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.10	6.07		288.9	1752.76
						22.61	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.10	6.07		120	728.04
						6.07	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	3.30	2.95			
		1	0.15	0.50	1.97	0.15			
						4.56	Cum.	4533.30	20676.21
6	**Reinforcement Steel**	1	-	-	-	**502.00**	Kg	53.6	26907.20
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.30	39.40			
	For coverslab	1.00	2.41			2.41			
	Total					**43.92**	Sqm.	169.00	7422.72
8	**Cl Steps-5 Kg**	7	-	-	-	**7.00**	No's	201.7	1411.90
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	12.72			12.72	Cum	263.2	3348.78
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	8.02					Sqm	330	**2647.95**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.89				Cum	74.5	**736.81**
	Total Cost								**79908.03**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=4 m							4	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		0.10	0.55		318.1	175.45
						25.37	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		0.10	0.55		128.2	70.71
						8.82	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	2.25	2.01			
		1	0.15	0.50	2.72	0.20			
						4.72	Cum.	4533.30	21384.09
6	**Reinforcement Steel**	1	-	-	-	**519.00**	Kg	53.60	27818.40
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.25	26.86			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**43.74**	Sqm.	169.00	7392.13
8	**CI Steps-5 Kg**	9	-	-	-	**9.00**	No's	201.7	1815.30
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	15.44			15.44	Cum	263.2	4064.97
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	9.83					Sqm	330	**3244.33**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.93				Cum	74.5	**739.54**
	Total Cost								**84363.49**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=4.5 m							4.5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		0.60	3.31		318.1	1052.68
						28.13	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		0.60	3.31		128.2	424.25
						11.58	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	2.75	2.46			
		1	0.15	0.50	3.22	0.24			
						5.20	Cum.	4533.30	23583.54
6	**Reinforcement Steel**	1	-	-	-	**572.00**	Kg	53.60	30659.20
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.75	32.83			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**49.71**	Sqm.	169.00	8400.89
8	**CI Steps-5 Kg**	10	-	-	-	**10.00**	No's	201.7	2017.00
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	16.55			16.55	Cum	263.2	4356.44
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	11.64					Sqm	330	**3840.71**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		11.58				Cum	74.5	**862.49**
	Total Cost								**92855.79**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=5.0 m							5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.10	6.07		318.1	1929.91
						30.89	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.10	6.07		128.2	777.79
						14.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	3.25	2.91			
		1	0.15	0.50	3.72	0.28			
						5.69	Cum.	4533.30	25783.00
6	**Reinforcement Steel**	1	-	-	-	**626.00**	Kg	53.60	33553.60
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.25	38.80			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**55.68**	Sqm.	169.00	9409.66
8	**CI Steps-5 Kg**	12	-	-	-	**12.00**	No's	201.7	2420.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	17.66			17.66	Cum	263.2	4647.91
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	13.45					Sqm	330	**4437.10**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		13.23				Cum	74.5	**985.44**
	Total Cost								**101603.38**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=5.5 m							5.5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.50	8.27		318.1	2631.70
	6.0m to 7.5m	1	5.52		0.10	0.55		347.3	191.55
						33.64	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.50	8.27		128.2	1060.62
	6m to 7.5m	1	5.52		0.10	0.55		136.4	75.23
						17.10	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	3.75	3.36			
		1	0.15	0.50	4.22	0.32			
						6.17	Cum.	4533.30	27982.45
6	**Reinforcement Steel**	1	-	-	-	**679.00**	Kg	53.60	36394.40
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.75	44.77			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**61.65**	Sqm.	169.00	10418.42
8	**CI Steps-5 Kg**	14	-	-	-	**14.00**	No's	201.7	2823.80
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	18.77			18.77	Cum	263.2	4939.38
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	15.25					Sqm	330	**5033.48**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.88				Cum	74.5	**1108.38**
	Total Cost								**110318.01**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=6.0 m							6	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.50	8.27		318.1	2631.70
	6.0m to 7.5m	1	5.52		0.60	3.31		347.3	1149.31
						36.40	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.50	8.27		128.2	1060.62
	6m to 7.5m	1	5.52		0.60	3.31		136.4	451.39
						19.86	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	4.25	3.81			
		1	0.15	0.50	4.72	0.35			
						6.66	Cum.	4533.30	30181.90
6	**Reinforcement Steel**	1	-	-	-	**732.00**	Kg	53.60	39235.20
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		4.25	50.74			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**67.62**	Sqm.	169.00	11427.19
8	**CI Steps-5 Kg**	15	-	-	-	**15.00**	No's	201.7	3025.50
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.87			19.87	Cum	263.2	5230.85
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	17.06					Sqm	330	**5629.87**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.53				Cum	74.5	**1231.33**
	Total Cost								**118913.44**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=6.5 m							6.5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.50	8.27		318.1	2631.70
	6.0m to 7.5m	1	5.52		1.10	6.07		347.3	2107.07
						39.16	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.50	8.27		128.2	1060.62
	6m to 7.5m	1	5.52		1.10	6.07		136.4	827.54
						22.61	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	4.75	4.25			
		1	0.15	0.50	5.22	0.39			
						7.14	Cum.	4533.30	32381.36
6	**Reinforcement Steel**	1	-	-	-	**786.00**	Kg	53.60	42129.60
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		4.75	56.71			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**73.59**	Sqm.	169.00	12435.95
8	**CI Steps-5 Kg**	17	-	-	-	**17.00**	No's	201.7	3428.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.98			20.98	Cum	263.2	5522.33
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	18.87				Sqm		330	**6226.25**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		18.18				Cum	74.5	**1354.28**
	Total Cost								**127764.18**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=7.0 m							7	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.50	8.27		318.1	2631.70
	6.0m to 7.5m	1	5.52		1.50	8.27		347.3	2873.28
	7.5m to 9.0m	1	5.52		0.10	0.55		376.50	207.66
						41.92	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.50	8.27		128.2	1060.62
	6m to 7.5m	1	5.52		1.50	8.27		136.4	1128.46
	7.5m to 9.0m	1	5.52		0.10	0.55		144.60	79.75
						25.37	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	5.25	4.70			
		1	0.15	0.50	5.72	0.43			
						7.63	Cum.	4533.30	34580.81
6	**Reinforcement Steel**	1	-	-	-	**839.00**	Kg	53.60	44970.40
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		5.25	62.67			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**79.55**	Sqm.	169.00	13444.72
8	**CI Steps-5 Kg**	19	-	-	-	**19.00**	No's	201.7	3832.30
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.09			22.09	Cum	263.2	5813.80
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67					Sqm	330	**6822.64**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.83				Cum	74.5	**1477.23**
	Total Cost								**136581.94**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=7.5 m							7.5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.50	8.27		318.1	2631.70
	6.0m to 7.5m	1	5.52		1.50	8.27		347.3	2873.28
	7.5m to 9.0m	1	5.52		0.60	3.31		376.50	1245.94
						44.68	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.50	8.27		128.2	1060.62
	6m to 7.5m	1	5.52		1.50	8.27		136.4	1128.46
	7.5m to 9.0m	1	5.52		0.60	3.31		144.60	478.52
						28.13	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	5.75	5.15			
		1	0.15	0.50	6.22	0.47			
						8.11	Cum.	4533.30	36780.26
6	**Reinforcement Steel**	1	-	-	-	**892.00**	Kg	53.60	47811.20
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		5.75	68.64			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**85.52**	Sqm.	169.00	14453.48
8	**CI Steps-5 Kg**	20	-	-	-	**20.00**	No's	201.7	4034.00
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	23.20			23.20	Cum	263.2	6105.27
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67					Sqm	330	**6822.64**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		21.48				Cum	74.5	**1600.18**
	Total Cost								**144684.13**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=8.0 m							8	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.50	8.27		318.1	2631.70
	6.0m to 7.5m	1	5.52		1.50	8.27		347.3	2873.28
	7.5m to 9.0m	1	5.52		1.10	6.07		376.50	2284.23
						47.43	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.50	8.27		128.2	1060.62
	6m to 7.5m	1	5.52		1.50	8.27		136.4	1128.46
	7.5m to 9.0m	1	5.52		1.10	6.07		144.60	877.29
						30.89	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	6.25	5.60			
		1	0.15	0.50	6.72	0.50			
						8.60	Cum.	4533.30	38979.71
6	**Reinforcement Steel**	1	-	-	-	**946.00**	Kg	53.60	50705.60
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		6.25	74.61			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**91.49**	Sqm.	169.00	15462.25
8	**CI Steps-5 Kg**	22	-	-	-	**22.00**	No's	201.7	4437.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	24.30			24.30	Cum	263.2	6396.74
10	**Cost of SFRC Manholeframe and**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67					Sqm	330	**6822.64**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		23.13				Cum	74.5	**1723.13**
	Total Cost								**153041.62**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=8.5 m							8.5	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate in Rs.**	**Amount in Rs.**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		230.50	1906.97
	1.5m to 3.0	1	5.52		1.50	8.27		259.70	2148.55
	3.0m to 4.5m	1	5.52		1.50	8.27		288.9	2390.12
	4.5m to 6.0m	1	5.52		1.50	8.27		318.1	2631.70
	6.0m to 7.5m	1	5.52		1.50	8.27		347.3	2873.28
	7.5m to 9.0m	1	5.52		1.50	8.27		376.50	3114.86
	9m to 10.5m	1	5.52		1.65	9.10		405.70	3692.08
						58.74	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		120	992.78
	4.5m to6.0m	1	5.52		1.50	8.27		128.2	1060.62
	6m to 7.5m	1	5.52		1.50	8.27		136.4	1128.46
	7.5m to 9.0m	1	5.52		1.50	8.27		144.60	1196.30
	9m to 10.5m	1	5.52		1.65	9.10		152.80	1390.56
						42.19	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	3323.10	5022.29
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	3741.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	6.75	6.04			
		1	0.15	0.50	7.22	0.54			
						9.08	Cum.	4533.30	41179.17
6	**Reinforcement Steel**	1	-	-	-	**999.00**	Kg	53.60	53546.40
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		6.75	80.58			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**97.46**	Sqm.	169.00	16471.02
8	**CI Steps-5 Kg**	24	-	-	-	**24.00**	No's	201.7	4840.80
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	24.86			24.86	Cum	263.2	6543.04
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	362.5	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67					Sqm	330	**6822.64**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		33.88				Cum	74.5	**2524.06**
	Total Cost								**166673.56**

Summary for Carriage of Material for Collection System

South								
Item	Brick MH	Road Side Chamber	Drop MH	Cement Concrete Pavement	Bedding & Road Restoration	High Alumina Cement	RCC MH	Total MT
Sand	5187.21	42.1	158.34	2664		0	0	8051.80
Aggregate	5708.45	44.1	327.60	5415	25978		0	37473.73
Bricks	17490.69	109.16					0	17599.85

Central								
Item	Brick MH	Road Side Chamber	Drop MH	Cement Concrete Pavement	Bedding & Road Restoration	High Alumina Cement	RCC MH	Total MT
Sand	3042.04	0	134.05	2994		501	109.78	6781.59
Aggregate	3465.01	0	271.93	6086	18003		202.09	28028.36
Bricks	9601.04	0					0	9601.04

North								
Item	Brick MH	Road Side Chamber	Drop MH	Cement Concrete Pavement	Bedding & Road Restoration	High Alumina Cement	RCC MH	Total MT
Sand	4632.63	0	150.49	2810		678	0	8271.28
Aggregate	5085.48	0	311.32	5712	23374		0	34482.76
Bricks	15730.32	0					0	15730.32

ANNEXURE – 2: COMPARATIVE STATEMENT OF VARIOUS PIPES FOR GRAVITY SEWERS

Sr. No.	Evaluation Criteria	Glazed Stoneware Pipes (IS:651-1980)	DI Pipes (IS:8329-2000)	RCC Pipes (IS:458-1988)	DWC HDPE Pipes (IS:16098, Part 2: 2013)
1	Available Length	0.6m	6m	2 to 2.5m	6 or 12m
2	Diameters Available	100 to 300mm for higher diameters it is not economical.	Up to 1000mm	150 to 2600mm	Available up to 1000mm
3	Type of Joint	S&S joint with caulking yarn soaked in cement slurry or tarred gasket. Joint is covered with cement mortar.	Tyton joint with rubber gasket	Available in both collar and S&S joints.	Butt fusion welding process.
4	Weight	Light	Heavy but lighter than R.C.C. pipes.	Heavy	Light
5	Handling	Easy due to shorter length and light weight	Difficult due to heavy weight in larger dia	Difficult due to heavy weight	Easy due to light weight
6	Roughness Coefficient of Pipe	0.012	0.011	0.011	0.011
7	Corrosion resistance	Not affected by Hydrogen sulphide gas. Highly Corrosion resistant	Protective layers are required to protect corrosion	Subject to H_2S corrosion due to acids, highly septic sewage and by highly acidic or high Sulphate soils and where velocities are not sufficient to prevent septic conditions. To prevent corrosion Sulphate resistant cement concrete to be used for pipe manufacture.	Highly corrosion resistant
8	Life	More than 50 years	More than 50 years	30 years	Life is more than 50 years due to highly Corrosion resistant.
9	Class of Pipes Available	Grade A & AA	K-7 to K-12	NP1, NP2, NP3, NP4	PN 2.5, PN4, PN6, PN10
10	Requirements of Special Equipments	Not required	Not required	Not required	Welding equipment required for jointing
11	Stacking the Pipe Materials	Can be stacked anywhere. Care should be taken while loading, unloading and stacking.	Can be stacked anywhere. Care should be taken while loading, unloading and stocking.	Can be stacked anywhere. Care should be taken while loading, unloading and stacking.	Same as uPVC
14	Remarks on Cost	Comparatively Cheaper	Costlier than other pipes but cheaper than HDPE pipes.	NP2 is Cheapest among all materials	Smaller diameter pipes are cheaper and higher diameter pipes are costlier. Concrete arch bedding is required to avoid the deflection of pipe due to burden of earth.
15	Requirement in Refilling the Trench Requirement in Refilling the Trench	No stone or rock to be filled while refilling.	No stones or rocks to be filled while refilling.	No stones or rocks to be filled while refilling.	Concrete arch bedding is required to avoid the deflection of pipe due to burden of earth.
16	Infiltration	If joints are weak/poor, chance of infiltration is high due to more number of joints.	Infiltration is very less	Infiltration is less if rubber joints are used but joints should be proper if collar joints are used.	Infiltration is very less
17	Workability	Light weight for easy handling.	Heavier than PVC and HDPE pipe	For larger diameter due to heavy weight handling to be done with care	Light weight for easy handling.
18	Effect of Radiation	Not affected	Not affected	Not affected	Affected by UV rays if stored for a long duration in open fields hence it should be kept covered.
19	Jointing Skill Requirements	Requires quality supervision	Jointing is easy in S&S pipes with rubber ring joints.	Jointing is easy in S&S pipes with rubber ring joints.	Jointing is expensive and jointing results in beeding which causes obstruction for solids in sewage
20	Protection to the Pipe	Depending upon the loading conditions, pipes should be protected with either sand or Cement Concrete bedding	Not required	Depending upon the loading conditions, pipes should be protected with either sand or Cement Concrete bedding	Pipe should be protected against deflection due to super imposed loads. Pipe embedded portion should be well compacted.
21	Maintenance	Almost nil if joints are properly made.	Minimum	Almost nil if proper velocity is maintained.	Pipe may get damaged due to rodding
22	Previous Experience/Performance	In use for long period and performance is satisfactory	It is durable pipe. Performance is yet to be proven	In use for long period and performance is Good	Recent use started in India. It is durable
23	Remarks	These pipes can be used for limited dia and upto specific depth.	The cost of these pipes is very high.	The advantages of concrete pipe is These shall be manufactured with sulphate resistant cement and with high alumina coating on the inside at the manufacturers works itself. Protective measures as outlined in corrosion protection in sewers shall be provided where excessive corrosion is likely to occur. The cost of the pipe is moderate.	The advantages of these pipes offering smooth interior surfaces and relatively offering highest resistance to corrosion are recognized and they are available in solid wall. When laid in straight gradients without humps or depressions, they can easily offer longer life cycle. Extra care id required to be taken for refilling due to flexibility of pipe. The cost of pipe is high.

ANNEXURE – 2: COMPARATIVE STATEMENT OF VARIOUS PIPES FOR GRAVITY SEWERS

Sr. No.	Evaluation Criteria	Glazed Stoneware Pipes (IS:651-1980)	DI Pipes (IS:8329-2000)	RCC Pipes (IS:458-1988)	DWC HDPE Pipes (IS:16098, Part 2: 2013)
24	Rate: Rs/RM				
	200 mm dia	539	2230	493	688
	300 mm dia	1110	3660	936	1612
	400 mm dia		5300	1730	2450
	500 mm dia		7340	2400	3871
	600 mm dia		9650	3030	6181
	700 mm dia		12200	3780	-
	800 mm dia		15100	4290	10453
	1000 mm dia		21700	5970	16806
	1200 mm dia			8750	
	1400 mm dia			10700	
	1600 mm dia			13400	

Notes: *The cost of RCC pipe is lower than that of the HDPE pipes, almost 2/3rd of HDPE cost. At higher dia the cost of HDPE is more than twice the cost of RCC pipe.*

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST SUMMARY - PUMPING STATION - IPS A1

Cost in Lakh

Sr. No.	Name of Sub-work	Pumping Station IPS A1
A	**Civil Works**	
1	Screen Chamber	4.92
2	Pump House (Wet well and Superstructure)	32.77
3	Manifold Chamber	1.92
4	Valve Chamber	1.48
5	Flowmeter Chamber	1.49
6	D.G. Room	11.31
7	Diesel Storage Room	5.30
8	Store Room	4.82
9	Metering Room	7.71
10	Internal Roads (3m wide)	1.85
11	Compound Wall	12.01
12	Toilet Block	3.19
13	Material Carrying Charges	1.17
	Total Cost of Civil Works	89.94

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

		Qty. from Estimate Sheet														RCC, Flooring and Sand Filling							Bricks				Plaster											
	Pumping Stations	Concrete (C:S:A)				Bricks (m3)	Plaster (m2)	Flooring (52 mm thk) M15		Sand Filling	Rubble Solling	Aggregate for Internal Road Works (m3)				Cement		Sand		Aggregate		Random Rubble Soling	Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand		Total Quantity in MT			Carriage Charges (In Lakh Rs.)				
		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (m2)	Volume (m3)	Volume (m3)	Volume (m3)	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ m3	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Volume (m3)	Wt (MT) 1870kg/ m3	Wt (MT) 1870kg/ m3	Wt (MT) 1920kg/ m3	MT	MT	MT	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Sand	Aggregate	Bricks	Sand (9.40 Rs./t.km)	Aggregate (9.40 Rs./t.km)	Bricks (9.40 Rs./t.km)	Rubble soling (9.40 Rs./t.km)	Total (Rs. in Lakhs)
1	IPS A1																																				
	Screen Chamber	5.00	-		30.00	-	-		-		2.02				-	8.00	11.52	9.00	16.56	18.00	33.66	3.77	-	-	-	-	-	-	-	-	16.56	33.66	-	0.02	0.03	-	-	0.05
	Wetwell & Superstructure	5.00	-		77.00	13.00	######	10.00	0.40		3.00				-	19.81	28.53	20.86	38.38	41.73	78.04	5.61	24.96	0.54	2.17	22.25	0.38	0.55	1.13	2.08	42.63	78.04	24.96	0.04	0.07	0.02	0.01	0.14
	Manifold Chamber	1.00	-		13.00	-	-		-		3.00				-	3.35	4.82	3.55	6.53	7.10	13.28	5.61	-	-	-	-	-	-	-	-	6.53	13.28	-	0.01	0.01	-	0.01	0.03
	Valve Chamber	1.00	-		7.00	-	-		-		2.00				-	1.85	2.66	2.05	3.77	4.10	7.67	3.74	-	-	-	-	-	-	-	-	3.77	7.67	-	-	0.01	-	-	0.01
	Flow Meter Chamber		-		-	-	-		-		2.00				-	-	-	-	-	-	-	3.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D.G. Room	13.00	-		44.00	27.00	375.00	50.00	2.00		24.00				-	12.59	18.13	15.47	28.46	30.94	57.86	44.88	51.84	1.13	4.51	46.21	1.13	1.63	3.38	6.22	39.19	57.86	51.84	0.04	0.05	-	0.04	0.13
	Diesel Storage Room	5.00	-		19.00	16.00	######	20.00	0.80		11.00				-	5.36	7.72	6.48	11.92	12.96	24.24	20.57	30.72	0.67	2.67	27.38	0.50	0.72	1.51	2.78	17.37	24.24	30.72	0.02	0.02	-	0.02	0.06
	Store Room	5.00	-		16.00	14.00	155.00	14.00	0.56		11.00				-	4.58	6.60	5.66	10.41	11.32	21.17	20.57	26.88	0.58	2.34	23.96	0.47	0.68	1.40	2.58	15.33	21.17	26.88	0.01	0.02	-	0.02	0.05
	Metering Room	8.00	-		27.00	23.00	245.00	24.00	0.82		11.00				-	7.67	11.04	9.38	17.26	18.77	35.10	20.57	44.16	0.96	3.84	39.36	0.74	1.07	2.21	4.07	25.17	35.10	44.16	0.02	0.03	-	0.02	0.07
	Internal Roads		-									72.00	32.00	11.00	215.05							-																
	Compound Wall	14.00	-	43.00		54.00	563.00		-						-	9.22	13.28	15.93	29.31	31.85	59.56	-	103.68	2.25	9.02	92.41	1.69	2.43	5.07	9.33	47.66	59.56	103.68	0.04	0.06	0.10	-	0.20
	Toilet Block	2.00	-		19.00	5.00	62.00	27.00	1.08		4.00				-	5.10	7.34	5.66	10.41	11.32	21.17	7.48	9.60	0.21	0.83	8.56	0.19	0.27	0.56	1.03	12.27	21.17	9.60	0.01	0.02	-	0.01	0.04
	Total	59.00	-	43.00	252.00	152.00	#######	145.00	5.66	-	73.02	72.00	32.00	11.00	215.05	77.53	111.64	94.04	173.03	188.09	351.73	136.54	291.84	6.34	25.38	260.12	5.08	7.32	15.25	28.06	226.47	566.78	291.84	0.21	0.53	0.30	0.13	1.17

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK-SCREEN CHEMBER IPS A1

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	21.00	360.70	7575.00
b)	From 1.5 m to 3.0 m	Cum	21.00	407.00	8547.00
c)	From 3.0 m to 4.5 m	Cum	21.00	453.30	9519.00
d)	From 4.5 m to 6 m	Cum	19.00	499.60	9492.00
e)	From 6 m to 7.5 m	Cum	5.00	545.90	2730.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	Excavation work in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock (Blasting Prohibited)				
a)	From 4.5 m to 6 m	Cum	1.00	901.00	901.00
b)	From 6 m to 7.5 m	Cum	1.00	984.10	984.10
	BSR-BCD-20-Item 2.9.1; Pg-93 & 2.27.2; Pg.-96				
	Hard rock (blasting prohibited)				
a)	From 4.5 m to 6 m	Cum	1.00	1500.50	1500.50
b)	From 6 m to 7.5 m	Cum	1.00	1583.60	1583.60
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93 & 2.27.2 pg 96				
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	37.00	116.50	4311.00
	BSR-BCD-20-Item 2.26; Pg-96				
4	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	55.00	270.30	14867.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520.00
	BSR-BCD-20-Item 2.25; Pg-96				
6	**PCC:** Providing and laying in position cement concrete of specified grade exluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
7	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	30.00	**5270.50**	158115.00
	For sulphate resisting cement	MT	11.00	**800.00**	8800.00
	RUIDP 2017, 3239 & 3237				
8	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT - FE-500**	MT	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	**Centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.00	203.00	812.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	169.00	356.40	60232.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	3.00	412.20	1237.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	35.00	241.20	8442.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
11	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	2.89	17.80	51.00
12	**Railing:** Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m centre to centre, complete as per approved drawings including all materi**al, labour. at walkway: Around platform**				
	RUIDP-2017, Item-10.20, Pg.-34	RM	7.28	2040.00	14851.00
13	**230mm thick Random rubble solling below PCC.**	Cum	2.02	191.14	386.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**492223.20**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Measurement Sheet Civil Work IPS A1

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		4.55	3.14	1.50	21.43	Cum
b)	From 1.5 m to 3.0 m		4.55	3.14	1.50	21.43	Cum
c)	From 3.0 m to 4.5 m		4.55	3.14	1.50	21.43	Cum
d)	From 4.5 m to 6.0 m		4.55	3.14	1.50	21.43	Cum
e)	From 6.0 m to 7.5 m		4.55	3.14	0.42	6.07	Cum
f)	From 7.5 m to 9.0 m		4.55	3.14	0.00	0.00	
g)	From 9.0 m to 10.5 m		4.55	3.14		0.00	
	Total					**91.79**	
2	Refilling					**36.76**	Cum
3	Disposal		4.20	1.84	6.43	49.65	Cum
	PCC					1.29	Cum
	Base slab					4.09	Cum
	Total					**55.03**	Cum
4	PCC: M15		4.70	2.74	0.10	1.29	Cum
	Approach, Screen and railing- Haunch		6.68	0.75	0.75	3.76	Cum
	Total					**5.05**	Cum
5	RCC Grade M -30						
	Footing (Base slab)		4.60	2.54	0.35	4.09	Cum
	Benching	2.00	1.00	0.42	0.70	0.59	Cum
	Outer walls		9.04	0.30	6.73	18.24	Cum
	Inner wall		0.94	0.30	5.63	1.59	Cum
	Partition wall		2.60	0.30	6.73	5.25	Cum
	RCC Slab		0.50	1.24	0.15	0.09	Cum
	Slab for bar screen		1.20	1.24	0.15	0.22	Cum
	Grand Total					**30.06**	Cum
	Sulphate resisting cement					**10.82**	Mt
6	**Shuttering**						
	Footing (Base slab)		14.28		0.35	5.00	Sqm
	Ramp	2.00	0.75		1.00	1.50	Sqm
	Outer walls	2	9.04		6.73	121.59	Sqm
	Inner wall	2	0.94		5.63	10.58	Sqm
	Partition wall	2	2.60		6.73	34.97	Sqm
	RCC Slab		0.80	1.24		0.99	Sqm
	Slab for bar screen		1.80	1.24		2.23	Sqm
	Grand Total					**176.86**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					4.09	Sqm
	Walls (any thickness) including attached plasters. Butteresses, plinth and string courses etc.					168.64	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					3.22	Sqm
7	Reinforcement- Fe 500 TMT					**2.4**	MT
8	Painting						
	Side wall	2.00	3.90	0.30		2.34	Sq m
	Front wall	1.00	1.84	0.30		0.55	Sq m
9	MS/CI foot rests	35				**35.00**	Nos.

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
10	Providing and fixing G.I. pipe railing					**7.28**	RM
11	Dewatering					**200.00**	KL
12	Rubble Soling	1	4.30	2.04	0.23	**2.01756**	Cum

Excavation

DATA		
	GL	107
	Invert	100.575
	Wall thk	0.3
	Base slab thk	0.35
	Footing proj	0.35
	Working space	0.3

6.425
6.875

6.405

PCC Projection	0.1
PCC Depth	0.1

Pipe dia	0.4
Plinth level above G	0.3
Sluice gate	1.1

175.95 0.91

Excavation

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- WETWELL IPS A1

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	**Clearing jungle** including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth upto 30 cm measured at a height of 1 m above ground level and removal of rubbish upto a distance of 50 m outside the periphery of the area cleared.	Sqm	1200.00	579.80	6958.00
	BSR-BCD-20- Item 2.32 pg 96				
2	**Earth work in excavation in foundation trenches or drains** (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	Upto 1.5 m	Cum	47.00	360.70	16953.00
b)	From 1.5 m to 3.0 m	Cum	47.00	407.00	19129.00
c)	From 3.0 m to 4.5 m	Cum	47.00	453.30	21305.00
d)	From 4.5 m to 6.0 m	Cum	42.00	499.60	20983.00
e)	From 6.0 m to 7.5 m	Cum	42.00	545.90	22928.00
f)	From 7.5 m to 9.0 m	Cum	42.00	592.20	24872.00
g)	From 9.0 m to 10.5 m	Cum	32.00	638.50	20432.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	Excavation work in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock				
a)	From 4.5 m to 6.0 m	Cum	2.00	901.00	1802.00
b)	From 6.0 m to 7.5 m	Cum	2.00	984.10	1968.00
c)	From 7.5 m to 9.0 m	Cum	2.00	1067.20	2134.00
d)	From 9.0 m to 10.5 m	Cum	2.00	1150.30	2301.00
	Hard Rock (Blasting prohibited)				
a)	From 4.5 m to 6.0 m	Cum	2.00	1500.50	3001.00
b)	From 6.0 m to 7.5 m	Cum	2.00	1449.00	2898.00
c)	From 7.5 m to 9.0 m	Cum	2.00	1532.10	3064.00
d)	From 9.0 m to 10.5 m	Cum	2.00	1615.20	3230.00
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	137.00	116.50	15961.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	180.00	270.30	48655.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000.00
	BSR-BCD-20-Item 2.25; Pg-96				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
7	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
a)	RCC Grade M-30	Cum	63.00	**5270.50**	332042.00
	For sulphate resisting cement	MT	23.00	800.00	18400.00
	RUIDP 2017, 3239 & 3237				
	All work above Plinth level upto floor V Level.				
b)	RCC Grade M -25	Cum	14.00	5704.70	79866.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	8.00	68500.00	548000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	**Centering & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.00	203.00	2233.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	287.00	356.40	102287.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	72.00	412.20	29678.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, Butteresses and cantilevers.	Sqm	52.00	362.90	18871.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	39.00	470.60	18353.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	13.00	5840.00	75920.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	**Plastering:** 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	126.00	157.40	19832.00
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	**Painting:** Distempering with **oil bound washable** distemper of approved brand and manufacture to give an even shade	Sq m	187.00	97.20	18176.00
	New work (two or more coats) over & including priming coat with cement primer.				
	BSR - BCD-20- Item- 13.77.2, P-206				
14	**52 mm thick cement concrete flooring** with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	10.00	456.50	4565.00
	BSR-BCD-20; Item-11.4; Pg-174				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
15	**Structural steel** work in single section fixed without connecting plate including cutting, hoisting,fixing in position and applying a priming coat of approved steel primer all complete.	M.T	1.00	65600.00	65600.00
	BSR-BCD-20; Item-10.1; Pg-168				
16	Water proofing: Providing and laying integral cement based water proofing treatment including preparatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	22.00	809.00	17798.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
17	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-incharge complete.	Sqm	10.00	3635.80	36358.00
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	0.00	241.20	0.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
19	Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m c/c, complete as per approved drawings including all material, labour: **Around Opening in the floor platform**	RM	6.00	2040.00	12240.00
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- **Rolling shutters** of approved made up of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arragements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	1106.50	8852.00
	80x1.25mm MS Laths with 1.25mm thick top cover				
	BSR-BCD-20; Item-10.8.1; Pg-169				
22	Providing and fixing in position **Lightening arrester** set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthling pit at 3.5 meter depth, G.I. strip of size 25mmx5mm thick from earthing plate to top of Over head tank, G.I. Final made of GI bar 25mm dia and 2m long fixed on top of OH tank and connected to GI strip. The earthling set shall comply of IS:3043 complete in all respect as per specification and the direction of the Engineer.	No.	1.00	12500.00	12500.00
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing **M.S. chequerred plate** flooring of following thickness supported on M.S. angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plates to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge. (6 mm Thick)	Sqm	2.00	3226.00	6452.00
	(Item No.6, (a) Section J, MJP Page 366 DSR 2017-18)				
24	**230mm thick Random rubble soling below PCC.**	Cum	5.00	191.14	956.00
	BSR - RCD-18- Item- M-148, P-35				
25	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per Litre	2000.00	8.80	17600.00
	BSR-BCD-20; Item-18.48, Pg-274				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
26	Providing and fixing 2HP centrifugal pump (6-20m head)	No	1.00	10000.00	10000.00
	Market Rate				
25	**Overflow Arrangement**				
i	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
a)	Upto 1.5 m	Cum	297.00	360.70	107128.00
b)	From 1.5 m to 3.0 m	Cum	126.00	407.00	51282.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	374.00	116.50	43571.00
	BSR-BCD-20-Item 2.26; Pg-96				
iii	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026.00
	BSR-BCD-20-Item 2.25; Pg-96				
iv	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	19.00	270.30	5136.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
v	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	400 mm dia.	m	140.00	5913.90	827946.00
	BSR-BCD-18-Item 18.72.21; Pg-231				
vi	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification.	cum	30.00	217.00	6510.00
	BSR - RCD-18- Item- 12.3, P-222				
vii	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with floating coat of neat cement, all complete as per standard drawing and as directed by Engineer Incharge				
	0.91 m deep with S.F.R.C cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out: with sewer bricks confirming to IS: 4885	Each	1.00	6970.60	6970.60
	BSR - BCD-18- Item- 19.9.1.2, P-243				
	Total				**3277490.00**

SEWERAGE SYSTEM FOR GAYA CITY

MEASUREMENT SHEET- WETWELL IPS A1

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Site Clearing		40.00	30.00		Sqm	1200.00
2	Excavation in soft or ordinary soil						
	Pump House						
a)	Upto 1.5 m			6.30	1.50	Cum	46.76
b)	From 1.5 m to 3.0 m			6.30	1.50	Cum	46.76
c)	From 3.0 m to 4.5 m			6.30	1.50	Cum	46.76
d)	From 4.5 m to 6.0 m			6.30	1.50	Cum	46.76
e)	From 6.0 m to 7.5 m			6.30	1.50	Cum	46.76
f)	From 7.5 m to 9.0 m			6.30	1.50	Cum	46.76
g)	From 9.0 m to 10.5 m			6.30	1.16	Cum	36.00
h)	From 10.5 m to 12.0 m			6.30	0.00	Cum	0.00
i)	From 12.0 m to 13.5 m			6.30	0.00	Cum	0.00
j)	From 13.5 m to 15.0 m			6.30	0.00	Cum	0.00
	Total					Cum	**316.56**
3	**Refilling of Earth**					Cum	**136.60**
4	**Disposal of Earth**						
	Base Raft	1					9.85
	Well	1		4.70	9.42	Cum	163.52
	PCC	1		4.90	0.10	Cum	1.89
	Rubble Soling			5.10	0.23	Cum	4.70
	Total					Cum	**179.96**
5	**Dewatering of water**					KL	5000.00
6	**PCC:** Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centering and shuttering- M15						
	Below Base Raft			4.90	0.10	Cum	1.89
	Additional sloped portion in Base Raft						3.35
	Total						**5.24**
7	**Reinforced cement concrete**						
a	M 30: up to Plinth level						
	Base Raft			5.60	0.40	Cum	9.85
	Wall		13.67	0.35	10.03	Cum	47.96
	Floor Slab Beams- Peripheral		13.67	0.30	0.40	Cum	1.64
	Floor Slab Beams	1	12.30	0.30	0.40	Cum	1.48
	Floor Slab			4.00	0.20	Cum	2.51
	For platform		1.20	1.20	0.15	Cum	0.22
	Deduction for Floor Slab opening		-2.10	1.00	0.20	Cum	-0.42
	Total					Cum	**63.24**
	Sulphate resisting cement						**22.77**
b	M 25: Above Plinth level						
	Columns	5	0.30	0.30	5.87	Cum	2.64
	Corbels	5	0.65	0.65	0.45	Cum	0.95
	Lintel Beams		13.67	0.30	0.40	Cum	1.64
	Chajja		8.40	0.45	0.100	Cum	0.38
	Roof Slab Beams- Peripheral		13.67	0.30	0.40	Cum	1.64
	Roof Slab Beams- Circular inner		6.83	0.30	0.40	Cum	0.82
	Roof Slab Beams	1	13.51	0.30	0.40	Cum	1.62
	Roof Slab			5.30	0.13	Cum	2.76
	Parapet wall		0.00	0.15	0.90	Cum	0.00
	Screen Lifting Platform Slab		1.94	0.80	0.20	Cum	0.31
	Ramp		1.50	2.50	0.60	Cum	1.13
	Total					Cum	**13.89**
8	**Shuttering**						

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
a	Foundations, Footings, Bases of Columns, etc for mass concrete						
	Wall- Outer		14.77		10.03	Sqm	148.07
	Wall- Inner		12.57		9.62	Sqm	120.99
	Floor Slab Beams- Peripheral		13.67		1.10	Sqm	15.04
	Floor Slab Beams	1	12.30		1.10	Sqm	13.53
	Floor Slab			4.00		Sqm	12.57
	Ramp		5.50		0.60	Sqm	3.30
	For platform		1.20	1.20		Sqm	1.44
	For Floor Slab opening Sides		6.20		0.20	Sqm	1.24
	Deduction for Floor Slab opening		2.10	1.00		Sqm	2.10
	Total						**318.00**
b	walls (any thickness), including attached pilasters, buttresses, plinth and string courses fillets etc.						
	Columns	5	1.20		5.87	Sqm	35.25
	Corbels	5	1.55		0.45	Sqm	3.49
	Lintel Beams		13.67		1.10	Sqm	15.03
	Chajja		8.40		0.55	Sqm	4.62
	Roof Slab Beams- Peripheral		13.67		1.10	Sqm	15.04
	Roof Slab Beams- Circular inner		6.83		1.10	Sqm	7.51
	Roof Slab Beams	1	13.51		1.10	Sqm	14.86
	Roof Slab			4.00		Sqm	12.57
	Roof Slab Projection		15.71	0.30		Sqm	4.71
	Parapet wall	2	16.16		0.90	Sqm	29.09
	Screen Lifting Platform Slab		2.14	1.00		Sqm	2.14
	Total						**144.31**
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					Sqm	10.74
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					Sqm	287.41
	Suspended floors, roofs, landings, balcnies and access platform.					Sqm	72.02
	Lintels, beams, plinth bams, griders, bressumers and cantilever.					Sqm	52.44
	Columns,Pillars, Piers, Abutments, Posts and Struts.					Sqm	38.74
9	**Type Item - Brick Work**						
	Brick wall		14.04	0.23	5.87	Cum	**18.98**
	Deduct opening						
	Rolling Shutter	-1	2.50	3.00	0.23		-1.73
	Windows	-4	1.50	1.20	0.23		-1.66
	Ventilator	-4	0.70	0.90	0.23		-0.58
	Deduct column	-5	0.30	5.87	0.23		-2.03
	Total					Cum	**12.98**
10	**Plaster work (Inner Face)**						
	Superstructure			12.57	5.87		73.85
	less opening					Sq m	-17.22
	Total					Sq m	**56.63**
11	**Plaster work (Outer Face)**						
	Superstructure			14.77	5.87		86.77
	less opening					Sq m	-17.22
	Total					Sq m	**69.55**
12	**Steel Reinforecement**					MT	**8.48**
13	**Painting:** Distempering with **oil bound was**hable distember of approved brand and manufacture to give an even shade					Sq m	**187.41**

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
14	**Cement concrete flooring**						
	Superstructure			12.57		Sq m	12.57
	deduct for opening						-2.10
	Total					Sq m	**10.47**
15	**Aluminium Window, door and ventilator**						
	Windows	4	1.50	1.20		Sqm	7.20
	Ventilator	4	0.70	0.90		Sqm	2.52
	Total					Sqm	**9.72**
16	MS/CI foot step	0				Nos.	0.00
17	Providing and fixing G.I. pipe railing				6.20	RM	**6.20**
18	Rolling Shutter	1	2.50	3.00		Sqm	**7.50**
19	Providing stuctural steel work in single stanchions composed of RSJ, channel, etc,					M.T	**1.00**
20	Providing and fixing in position copper lightening conductor					No.	**1.00**
21	**MS Chequerred Plate**						
	6 mm thk plate, 10 mm thk ISMC100 with epoxy painted	1	2.10	1.00		Sqm	**2.10**
22	Roof Water Proofing		5.30			Sqm	**22.06**
23	**Rubble Soling:** 230 thick rubble soling	1	20.43		0.23	Cum	**4.70**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- MANIFOLD CHAMBER IPS A1

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	Upto 1.5 m	Cum	28.00	360.70	10100.00
b)	From 1.5 m to 3.0 m	Cum	15.00	407.00	6105.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	22.00	116.50	2563.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.00	270.30	5947.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25: All works upto plinth level	Cum	13.00	4952.60	64384.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**Centering & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.00	203.00	812.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	45.00	356.40	16038.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and cantilever.	Sqm	2.00	362.50	725.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and cantilever.	Sqm	2.38	362.90	864.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
9	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	3.00	241.20	724.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	4.00	17.80	71.00
11	**230mm thick Random rubble soling below PCC.**	Cum	3.00	191.14	573.42
	BSR - RCD-18- Item- M-148, P-35				
	Total				**191619.42**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- MANIFOLD CHAMBER IPS A1

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		4.20	4.50	1.50	28.35	Cum
b)	From 1.5 m to 3.0 m		4.20	4.50	0.78	14.74	Cum
c)	From 3.0 m to 4.5 m		4.20	4.50	0.00	0.00	Cum
2	Refilling					**21.58**	Cum
3	Disposal		3.00	3.30	1.65	**16.34**	Cum
	PCC					1.40	Cum
	Base slab					3.77	Cum
	Total					**21.51**	Cum
4	PCC: M15		3.60	3.90	0.10	**1.40**	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		3.40	3.70	0.30	3.77	Cum
	Outer walls		11.60	0.25	1.95	5.66	Cum
	Roof slab beam	1	2.80	0.25	0.30	0.21	Cum
	Total					**11.35**	Cum
6	**Precast cover**	18	1.27	0.30	0.08	**1.71**	Cum
7	Shuttering						
	Footing (Base slab)		14.20		0.30	4.26	Sqm
	Outer walls	2	11.60		1.95	45.24	Sqm
	Roof slab beam	1	2.80		0.85	2.38	Sqm
	Total					**51.88**	Sqm
8	Reinforcement- Fe 500 TMT					**0.91**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	3.30	0.30		1.98	Sq m
	Total					**3.78**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Rubble solling	1	3.6	3.9	0.23	**3.2292**	Cum
						266	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- VALVE CHAMBER IPS A1

Sr. No.	Description	Unit	Qty.	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	Upto 1.5 m	Cum	19.00	360.70	6853.00
b)	From 1.5 m to 3.0 m	Cum	10.00	407.00	4070.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	17.00	116.50	1981.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	270.30	3514.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-18-Item 2.25; Pg-75				
5	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -25	Cum	7.00	4952.60	34668.00
	BSR-BCD-18; Item-5.33.1, Pg-88				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-18; Item-5.22.7, Pg-86				

Sr. No.	Description	Unit	Qty.	Rates in Rs.	Amount in Rs.
8	**Centering & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	34.00	356.40	12118.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
9	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	3.00	241.20	724.00
	BSR-BCD-18, Item-19.15.2, Pg.-245				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-18; Item-13.70.1; Pg-170	Sq m	3.00	17.80	53.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.28
	BSR - RCD-18- Item- M-148, P-35				
	Total				**147685.28**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- BUTTERFLY VALVE CHAMBER IPS A1

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		3.70	3.50	1.50	**19.43**	Cum
b)	From 1.5 m to 3.0 m		3.70	3.50	0.78	**10.10**	Cum
c)	From 3.0 m to 4.5 m		3.70	3.50	0.00	0.00	Cum
2	Refilling					**16.79**	Cum
3	Disposal		2.50	2.30	1.65	9.49	Cum
	PCC					0.90	Cum
	Base slab					2.35	Cum
	Total					**12.74**	Cum
4	PCC: M15		3.10	2.90	0.10	0.90	Cum
5	**RCC Grade M-25**						
	Footing (Base slab)		2.90	2.70	0.30	2.35	Cum
	Outer walls		8.60	0.25	1.95	4.19	Cum
	Total					**6.92**	Cum
6	**Precast cover**	6	1.94	0.33	0.10	**0.38**	Cum
7	**Shuttering**						
	Footing (Base slab)		11.20		0.30	3.36	Sqm
	Outer walls	2	8.60		1.95	33.54	Sqm
	Total					**36.90**	Sqm
8	**Reinforcement- Fe 500 TMT**					**0.55**	MT
9	**Painting**						
	Side wall	2.00	2.50	0.30		1.50	Sq m
	Front and back wall	2.00	2.30	0.30		1.38	Sq m
	Total					**2.88**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Rubble solling	1	2.9	3.1	0.23	**2.07**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- FLOW METER CHAMBER IPS A1

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	Upto 1.5 m	Cum	20.00	360.70	7214.00
b)	From 1.5 m to 3.0 m	Cum	10.00	407.00	4070.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	17.00	116.50	1981.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	270.30	3514.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	7.00	5018.60	35130.00
	BSR-BCD-20 Item-5.33.1 + Item- 5.34.1, Pg-108				
8	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	**Centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	35.00	356.40	12474.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
10	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	3.00	241.20	724.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
11	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
12	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.28
	BSR - RCD-18- Item- M-148, P-35				
	Total				**148864.28**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- FLOW METER CHAMBER IPS A1

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Qty.	Units.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		4.20	3.20	1.50	20.16	Cum
b)	From 1.5 m to 3.0 m		4.20	3.20	0.78	10.48	Cum
c)	From 3.0 m to 4.5 m		4.20	3.20	0.00	0.00	Cum
	Total					**30.64**	
2	Refilling					**17.35**	Cum
3	Disposal		3.00	2.00	1.65	9.90	Cum
	PCC					0.94	Cum
	Base slab					2.45	Cum
	Total					**13.29**	Cum
4	PCC: M15		3.60	2.60	0.10	0.94	Cum
5	RCC Grade M -25						
	Footing (Base slab)		3.40	2.40	0.30	2.45	Cum
	Outer walls		9.00	0.25	1.95	4.39	Cum
	Precast Cover	8	1.64	0.30	0.08	0.30	Cum
	Total					**7.14**	Cum
6	Shuttering						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		1.95	35.10	Sqm
	Total					**38.58**	Sqm
7	Reinforcement- Fe 500 TMT					**0.57**	MT
8	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	2.00	0.30		1.20	Sq m
	Total					**3.00**	Sqm
9	MS/CI foot rests	3				**3.00**	No.
10	Dewatering					**100.00**	KL
11	Rubble solling	1	2.6	3.6	0.23	**2.15**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- D.G. ROOM- IPS A1

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	117.00	360.70	42201.90
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	13.00	3953.40	51394.20
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	95.00	116.50	11067.50
	BSR-BCD-20-Item 2.26; Pg-96				
a)	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.00	270.30	5947.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 Upto Plinth	Cum	11.00	4952.60	54478.60
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	33.00	5704.70	188255.10
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	4.00	68500.00	274000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**Centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.00	203.00	3248.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	63.00	412.20	25968.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	133.00	362.90	48265.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	58.00	470.60	27294.80
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	27.00	5840.00	157680.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	375.00	157.40	59025.00

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	375.00	97.20	36450.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc.	Sqm	67.00	809.00	54203.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
11	**52 mm thick cement concrete flooring** with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	50.00	456.50	22825.00
	BSR-BCD-20; Item-11.4; Pg-174				
12	Providing and fixing double glazed hermetically sealed glazing in **aluminium windows,** ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in charge complete.	Sqm	13.00	3635.80	47265.40
	BSR-BCD-20; Item-21.10; Pg-307				
13	Supplying and fixing-**rolling shutters** of approved make. Made up of required size of M.S.Iaths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. **(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter**	Sqm	12.00	1106.50	13278.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
14	**Marble chips skirting** (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.18mm thick with under layer 12mm thick cement plaster 1:3 (1 cement : 3coarse sand)	Sqm	5.00	740.00	3700.00
15	**Filling upto floor finish level with Random rubble masonry.**	Cum	24.00	191.14	4587.36
	BSR - RCD-18- Item- M-148, P-35				
	Total				**1131135.16**

D G Room:

	Nos	L	B	H	
Inner dimension		10.00	5.00	5.00	
Outer dimension		10.46	5.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	8.00	1.70	1.70	0.30	
Total no of Columns	8				
C1	8	0.30	0.30	6.05	
Plinth beam		42.76	0.30	0.40	
Lintel beam		31.84	0.30	0.40	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0.00	0.00		0.00	
Windows size	7.00	1.50		1.20	
Ventilators size	0.00	0.75		0.90	
Rolling Shutter	1	3.00		4.00	
Roof beam		42.76	0.30	0.45	
Roof slab		11.06	6.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		112.60			
Existing GL		107.00			
Finished GL		107.000			
Plinth level		107.600			
Top of Footing		105.300			
Footing Level		104.900			

MEASUREMENT SHEET FOR D G ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	8	Cum	2.50	2.50	2.33	116.50	**116.50**
2	**PCC**							
	F1	8	Cum	1.90	1.90	0.10	2.89	
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth protection	1	Cum	31.84	1.00	0.05	1.59	**13.05**
3	**Back Filling**							
	Earth work qty		Cum				96.52	
	Deduction C1	-8	Cum	0.30	0.30	1.70	-1.22	**95.29**
4	**RCC M25**							
	Column foundation F1	8	Cum	1.70	1.70	0.30	6.94	
	Columns C1	8	Cum	0.30	0.30	6.05	4.36	**11.29**
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth Beam	1	Cum	42.76	0.30	0.40	5.13	
	Lintel Beam	1	Cum	31.84	0.30	0.40	3.82	
	Roof Beam	1	Cum	42.76	0.30	0.45	5.77	
	Chajja - For Doors	0	Cum	0.00	0.45	0.125	0.00	
	Chajja - For Windows	7	Cum	1.80	0.45	0.125	0.71	
	Chajja - For Ventilators	0	Cum	1.05	0.45	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	3.30	0.45	0.125	0.19	
	Ramp/Steps	1	Cum	3.00	1.00	0.600	0.90	
	Roof Slab	1	Cum	11.06	6.06	0.125	8.38	**33.47**
5	**Steel**		MT				4.48	**4.48**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	8	Sqm	6.80		0.30	16.32	**16.32**
	Columns: C1	8	Sqm	1.20		6.05	58.08	**58.08**
	Beams: Plinth Beam	1	Sqm	42.76		1.10	47.04	
	Lintel Beam	1	Sqm	31.84		1.10	35.02	
	Roof Beam	1	Sqm	42.76		1.20	51.31	**133.37**
	Roof slab	1	Sqm	10.46	5.46		57.11	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.50	0.45		4.73	
	Chajja - For Ventilators	0	Sqm	0.75	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.00	0.45		1.35	**63.19**
7	**Brick Work Wall**							
	Wall	1	Cum	31.84	0.23	5.0	36.62	
	Wall- upto plinth level	1	Cum	31.84	0.23	0.6	4.39	
	Parapet wall	0	Cum	16.52	0.00	0.00	0.00	
	Deduction- Lintel beam	-1	Cum	31.84	0.23	0.40	-2.93	
	Deduction- Floor PCC & floor slab	-1	Cum	31.84	0.23	0.25	-1.83	
	Deduction- Roof beam	-1	Cum	31.84	0.23	0.45	-3.30	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-7	Cum	1.50	0.23	1.20	-2.90	
	Deduction- Ventilator	0	Cum	0.75	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	3.00	0.23	4.00	-2.76	**27.30**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	31.84		5.00	159	
	Parapet wall	0	Sqm	16.52		0.00	0.00	
	Roof (Ceiling)	1	Sqm	10.00	5.00		50.00	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-7	Sqm	1.5		1.2	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3		4	-12.0	**184.60**
	External Plastering							
	Wall	1	Sqm	31.84		5.00	159.20	
	Wall- upto plinth level	1	Sqm	31.84		0.60	19.10	
	Parapet wall	1	Sqm	16.52		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.80	0.45		22.47	
	Chajja - For Ventilators	0	Sqm	1.05	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.30	0.45		3.89	
	Roof Slab Projection	1	Sqm	34.24	0.30		10.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-7	Sqm	1.50		1.20	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3.00		4.00	-12.00	**190.33**
9	**Painting**							
	Internal Painting							**184.6**
	External Painting							**190.33**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
10	**Flooring**	1	Sqm	10.00	5.00		50.00	**50.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	7	Sqm	1.50		1.20	12.60	
	Ventilators	0	Sqm	0.75		0.90	0.00	**12.60**
12	**Rolling Shutter**	1	Sqm	3.00		4.00	12.00	**12.00**
13	**Water proofing at top of roof**	1	Sqm	11.06	6.06		67.02	**67.02**
14	**Skirting**	1	Sqm	30.00		0.15	4.50	**4.50**
15	**Boulders for Floor area**	1	Sqm	10.46	5.46	0.30	17.13	**23.78**
	F1	8.00	Sqm	1.9	1.90	0.23	6.64	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- DIESEL STORE ROOM- IPS A1

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	Excavation				
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	58.00	360.70	20920.60
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	49.00	116.50	5708.50
	BSR-BCD-20-Item 2.26; Pg-96				
4	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.00	270.30	2433.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 Up to Plinth	Cum	5.00	4952.60	24763.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	14.00	5704.70	79865.80
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**Centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.00	203.00	1624.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	23.00	412.20	9480.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, ***bressumers*** and cantilevers.	Sqm	48.00	362.90	17419.20
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	24.00	470.60	11294.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level upto floor V	Cum	16.00	5840.00	93440.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	168.00	157.40	26443.20

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	168.00	97.20	16329.60
	BSR - BCD-20- Item- 13.77.2, P-206				
10	**52 mm thick cement concrete flooring** with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	20.00	456.50	9130.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in **aluminium windows,** ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	6.00	1106.50	6639.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	31.00	809.00	25079.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	**Marble chips skirting** (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	11.00	191.14	2102.54
	BSR - RCD-18- Item- M-148, P-35				
	Total				**530024.44**

Diesel Store Room:

	Nos	L	B	H	
Inner dimension		5.00	4.00	3.50	
Outer dimension		5.46	4.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	4	1.70	1.70	0.30	
Total no of Columns	4				
C1	4	0.30	0.30	5.00	4.93
Plinth beam		19.84	0.30	0.40	
Local lintel beam		7.70	0.23	0.20	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0	1.20		2.10	
Windows size	3	1.50		1.20	
Ventilators size	0	0.75		1.00	
Rolling Shutter	1	2.00		3.00	
Roof beam		19.84	0.30	0.40	
Roof slab		6.06	5.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		111.100			
Existing GL		107.000			
Finished GL		107.000			
Plinth level		107.600			
Top of Footing		105.300			
Footing Level		104.900			

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.50	2.50	2.33	58.25	**58.25**
2	**PCC**							
	F1	4	Cum	1.90	1.90	0.10	1.44	
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth protection	1	Cum	19.84	1.00	0.05	0.99	**5.43**
3	**Back Filling**							
	Earth work qty		Cum				49.35	
	Deduction C1	-4	Cum	0.30	0.30	1.70	-0.61	**48.74**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.70	1.70	0.30	3.47	
	Columns C1	4	Cum	0.30	0.30	5.00	1.80	**5.27**
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth Beam	1	Cum	19.84	0.30	0.40	2.38	
	Lintel Beam	3	Cum	7.70	0.23	0.20	1.06	
	Roof Beam	1	Cum	19.84	0.30	0.40	2.38	
	Chajja - For Doors	0	Cum	1.50	0.50	0.125	0.00	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.30	0.50	0.125	0.14	
	Ramp/Steps	1	Cum	2.00	1.00	0.600	0.60	
	Roof Slab	1	Cum	6.06	5.06	0.125	3.83	**13.73**
5	**Steel**		MT				1.90	**1.90**

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.80		0.30	8.16	**8.16**
	Columns: C1	4	Sqm	1.20		5.00	24	**24.00**
	Beams: Plinth Beam	1	Sqm	19.84		1.10	21.82	
	Lintel Beam	1	Sqm	7.70		0.63	4.85	
	Roof Beam	1	Sqm	19.84		1.10	21.82	**48.50**
	Roof slab	1	Sqm	5.00	4.00		20.00	
	Suspended: Chajja - For Doors	0	Sqm	1.20	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.00	0.50		1.00	**23.25**
7	**Brick Work Wall**							
	Wall	1	Cum	19.84	0.23	3.5	15.97	
	Wall- upto plinth level	1	Cum	19.84	0.23	0.6	2.74	
	Parapet wall	0	Cum	19.84	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	1.20	0.23	2.10	0.00	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.00	0.23	3.00	-1.38	**16.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	19.84		3.50	69	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Roof (Ceiling)	1	Sqm	5.00	4.00		20.00	
	Deduction- Doors	0	Sqm	1.2		2.1	0.00	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2		3	-6.0	**78.04**
	External Plastering							
	Wall	1	Sqm	19.84		3.50	69.44	
	Wall- upto plinth level	1	Sqm	19.84		0.60	11.90	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Chajja - For Doors	0	Sqm	1.50	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.30	0.50		3.55	
	Roof Slab Projection	1	Sqm	22.24	0.30		6.67	
	Deduction- Doors	0	Sqm	1.20		2.10	0.00	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.00		3.00	-6.00	**90.06**
9	**Painting**							
	Internal Painting	-1	Sqm	2		3	-6	**78.0**
	External Painting							**90.06**
10	**Flooring**	1	Sqm	5.00	4.00		20.00	**20.00**

MEASUREMENT SHEET FOR DIESEL STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	0	Sqm	1.20		2.10	0.00	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**5.40**
12	**Rolling Shutter**	1	Sqm	2.00		3.00	6.00	**6.00**
13	**Water proofing at top of roof**	1	Sqm	6.06	5.06		30.66	**30.66**
14	**Skirting**	1	Sqm	18.00		0.15	2.70	**2.70**
15	**Boulders for Floor area**	1	Sqm	5.46	4.46	0.30	7.31	**10.63**
	F1	4	Sqm	1.9	1.90	0.23	3.32	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- STORE ROOM- IPS A1

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	49.00	360.70	17674.30
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	41.00	116.50	4776.50
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	8.00	270.30	2162.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 Up to Plinth	Cum	5.00	4952.60	24763.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	11.00	5704.70	62751.70
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**Centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	16.00	412.20	6595.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	41.00	362.90	14878.90
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	24.00	470.60	11294.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level upto floor V	Cum	14.00	5839.40	81751.60
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	155.00	157.40	24397.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	155.00	97.20	15066.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	**52 mm thick cement concrete flooring** with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	14.00	456.50	6391.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in **aluminium windows,** ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in charge complete.	Sqm	8.00	3635.80	29086.40
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	23.00	809.00	18607.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
13	**Marble chips skirting** (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	2.00	802.00	1604.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	8.00	191.14	1529.12
	BSR - RCD-18- Item- M-148, P-35				
	Total				**481516.12**

Store Room:

	Nos	L	B	H
Inner dimension		4.50	3.00	3.50
Outer dimension		4.96	3.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.50	1.50	0.30
Total no of Columns	4			
C1	4	0.30	0.30	5.00
Plinth beam		16.84	0.30	0.40
Local lintel beam		6.90	0.23	0.20
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	1	1.20		2.10
Windows size	3	1.50		1.20
Ventilators size	0	0.75		1.00
Rolling Shutter	0	0.00		0.00
Roof beam		16.84	0.30	0.40
Roof slab		5.56	4.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		111.100		
Existing GL		107.000		
Finished GL		107.000		
Plinth level		107.600		
Top of Footing		105.300		
Footing Level		104.900		

MEASUREMENT SHEET FOR STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.30	2.30	2.33	49.30	**49.30**
2	**PCC**							
	F1	4	Cum	1.70	1.70	0.10	1.16	
	Floor Slab	1	Cum	4.96	3.46	0.15	2.57	
	Plinth protection	1	Cum	16.84	1.00	0.05	0.84	**4.57**
3	**Back Filling**							
	Earth work qty		Cum				42.04	
	Deduction C1	-4	Cum	0.30	0.30	2.33	-0.84	**41.20**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.50	1.50	0.30	2.70	
	Columns C1	4	Cum	0.30	0.30	5.00	1.80	**4.50**
	Floor Slab	1	Cum	4.50	3.00	0.15	2.03	
	Plinth Beam	1	Cum	16.84	0.30	0.40	2.02	
	Lintel Beam	3	Cum	6.90	0.23	0.20	0.95	
	Roof Beam	1	Cum	16.84	0.30	0.40	2.02	
	Chajja - For Doors	1	Cum	1.50	0.50	0.125	0.09	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	0.600	0.90	
	Roof Slab	1	Cum	5.56	4.06	0.125	2.82	**11.17**
5	**Steel**		Tonn				1.57	**1.57**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.00		0.30	7.2	**7.20**
	Columns: C1	4	Sqm	1.20		5.00	24	**24.00**
	Beams: Plinth Beam	1	Sqm	16.84		1.10	18.52	
	Lintel Beam	1	Sqm	6.90		0.63	4.35	
	Roof Beam	1	Sqm	16.84		1.10	18.52	**41.39**
	Roof slab	1	Sqm	4.50	3.00		13.50	
	Suspended: Chajja - For Doors	1	Sqm	1.20	0.50		0.60	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**16.35**
7	**Brick Work Wall**							
	Wall	1	Cum	16.84	0.23	3.5	13.56	
	Wall- upto plinth level	1	Cum	16.84	0.23	0.6	2.32	
	Parapet wall	0	Cum	18.04	0.00	0.00	0.00	
	Deduction- Doors	-1	Cum	1.20	0.23	2.10	-0.58	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	0.90	0.00	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**14.06**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	16.84		3.50	59	
	Parapet wall	0	Sqm	18.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	4.50	3.00		13.50	
	Deduction- Doors	-1	Sqm	1.2		2.1	-2.52	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		0.9	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**64.52**
	External Plastering							
	Wall	1	Sqm	16.84		4.10	69.04	
	Wall- upto plinth level	1	Sqm	16.84		0.60	10.10	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Chajja - For Doors	1	Sqm	1.50	0.50		3.15	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	19.24	0.30		5.77	
	Deduction- Doors	-1	Sqm	1.20		2.10	-2.52	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		0.90	0.00	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**90.05**
9	**Painting**							
	Internal Painting	0	Sqm	0		0	0	**64.5**
	External Painting							**90.05**
10	**Flooring**	1	Sqm	4.50	3.00		13.50	**13.50**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	1	Sqm	1.20		2.10	2.52	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**7.92**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	5.56	4.06		22.57	**22.57**
14	**Skirting**	1	Sqm	15.00		0.15	2.25	**2.25**
15	**Boulders for Floor area**	1	Sqm	4.96	3.46	0.30	5.15	**7.81**
	F1	4	Sqm	1.7	1.70	0.23	2.66	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- METERING ROOM- IPS A1

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	74.00	360.70	26691.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	8.00	3953.40	31627.20
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	61.00	116.50	7106.50
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	270.30	3513.96
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 Upto Plinth	Cum	7.00	4952.60	34668.20
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.00	5704.70	114094.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**Centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.00	203.00	2233.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.00	412.20	16900.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and cantilever.	Sqm	73.00	362.90	26491.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	36.00	470.60	16941.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level upto floor V	Cum	23.00	5840.00	134320.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	245.00	157.40	38563.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	245.00	97.20	23814.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm	24.00	534.60	12830.40
	BSR-BCD-20; Item-11.9.1; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in **aluminium windows,** ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in charge complete.	Sqm	9.00	3635.80	32722.20
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-**rolling shutters** of approved make. Made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. **(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter**	Sqm	8.00	1106.50	8852.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	36.00	809.00	29124.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	**Marble chips skirting** (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling upto floor finish level with Random rubble masonry.**	Cum	13.00	191.14	2484.82
	BSR - RCD-18- Item- M-148, P-35			**Total**	**770884.58**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	6	Cum	2.30	2.30	2.33	73.95	**73.95**
2	**PCC**							
	F1	6	Cum	1.90	1.90	0.10	2.17	
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth protection	1	Cum	21.84	1.00	0.05	1.09	**7.58**
3	**Back Filling**							
	Earth work qty		Cum				62.32	
	Deduction C1	-6	Cum	0.30	0.30	1.70	-0.92	**61.40**
4	**RCC M25**							
	Column foundation F1	6	Cum	1.50	1.50	0.30	4.05	
	Columns C1	6	Cum	0.30	0.30	4.95	2.67	**6.72**
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth Beam	1	Cum	28.30	0.30	0.40	3.40	
	Lintel Beam	1	Cum	11.80	0.23	0.20	0.54	
	Roof Beam	1	Cum	28.30	0.30	0.45	3.82	
	Chajja - For Doors	0	Cum	0.00	0.50	0.125	0.00	
	Chajja - For Windows	5	Cum	1.80	0.50	0.125	0.56	
	Chajja - For Ventilators	0	Cum	1.00	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.80	0.50	0.125	0.18	
	Ramp/Steps	1	Cum	2.00	2.50	1.200	3.00	
	Roof Slab	1	Cum	7.06	5.06	0.125	4.47	**20.29**
5	**Steel**		MT				2.70	**2.70**
6	**Formwork**							
	Foundation: Column foundation F1	6	Sqm	6.00		0.30	10.8	**10.80**
	Columns: C1	6	Sqm	1.20		4.95	35.64	**35.64**
	Beams: Plinth Beam	1	Sqm	28.30		1.10	31.13	
	Lintel Beam	1	Sqm	11.80		0.63	7.43	
	Roof Beam	1	Sqm	28.30		1.20	33.96	**72.52**
	Roof slab	1	Sqm	7.06	5.06		35.72	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.50	0.50		3.75	
	Chajja - For Ventilators	0	Sqm	0.70	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.50	0.50		1.25	**40.72**
7	**Brick Work Wall**							
	Wall	1	Cum	28.30	0.23	3.50	22.78	
	Wall- upto plinth level	1	Cum	28.30	0.23	0.60	3.91	
	Parapet wall	0	Cum	23.04	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-5	Cum	1.50	0.23	1.20	-2.07	
	Deduction- Ventilator	0	Cum	0.70	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.50	0.23	3.00	-1.73	**22.89**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	28.30		3.50	99	
	Parapet wall	0	Sqm	23.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	7.06	5.06		35.72	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-5	Sqm	1.5		1.2	-9.00	
	Deduction- Ventilator	0	Sqm	0.7		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.5		3	-7.5	**118.27**
	External Plastering							
	Wall	1	Sqm	28.30		3.50	99.05	
	Wall- upto plinth level	1	Sqm	28.30		0.60	16.98	

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
	Parapet wall	1	Sqm	23.04		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.80	0.50		16.50	
	Chajja - For Ventilators	0	Sqm	1.00	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.80	0.50		3.80	
	Roof Slab Projection	1	Sqm	24.24	0.30		7.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-5	Sqm	1.50		1.20	-9.00	
	Deduction- Ventilator	0	Sqm	0.70		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.50		3.00	-7.50	**127.10**
9	**Painting**							
	Internal Painting							**118.3**
	External Painting							**127.10**
10	**Flooring**	1	Sqm	6.00	4.00		24.00	**24.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	5	Sqm	1.50		1.20	9.00	
	Ventilators	0	Sqm	0.70		0.90	0.00	**9.00**
12	**Rolling Shutter**	1	Sqm	2.50		3.00	7.50	**7.50**
13	**Water proofing at top of roof**	1	Sqm	7.06	5.06		35.72	**35.72**
14	**Skirting**	1	Sqm	20.00		0.15	3.00	**3.00**
15	**Boulders for Floor area**	1	Sqm	6.46	4.46	0.30	8.64	**12.63**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- INTERNAL ROAD IPS A1

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	72.00	637.00	45864.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	32.00	888.00	28416.00
	SOR-RCD-18; Item-4.12; Pg.-76				
3	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	216.00	30.30	6545.00
	BSR-RCD-18-Item 5.1, Pg-84				
4	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	216.00	11.10	2398.00
	BSR-RCD-18-Item 5.2, Pg-84				
5	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	11.00	5406.00	59466.00
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying **Tack Coat with bitumen emulsion grade 60/70 for BUSG** @ 5Kg/10Sqm. area using emulsion pressure distributor on the prepared bituminous/granular surface cleaned with mechanical broom and as per relevant clauses MOSRTH specification clause No. 503 complete in all respects.	Sqm	216.00	31.05	6707.00
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects. Note: *1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis for grading (10mm nominal size)	Cum	5.00	7142.00	35710.00
	BSR-RCD-2018-Item-5.7 P-84				
	Total				**185106.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART					
COST ESTIMATE- CIVIL WORK- COMPOUND WALL- IPS A1					
Sr. no.	**Description**	**Unit**	**Qty**	**Rate in Rs.**	**Amount in Rs.**
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	331.00	360.70	119391.70
2	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	14.00	3953.40	55347.60
3	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	54.00	5839.80	315349.20
	Superstructure above plinth level up to floor V				
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarse sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	Sqm	563.00	146.00	82198.00
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Sqm	47.00	270.30	12704.30
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	283.00	116.50	32969.50
	BSR-BCD-18-Item 2.26; Pg-75				
7	RCC: Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, required grade of reinforced cement concrete:				
	RCC Grade M -20 below Plinth	Cum	28.00	4989.20	139697.60
	RCC Grade M -20 above Plinth	Cum	15.00	5194.80	77922.00
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	**Centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	74.00	203.00	15022.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and cantilever.	Sqm	88.00	362.90	31935.20
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	135.00	470.60	63531.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	Painting: White washing with lime to give an ever shade: New work (three or more coats): BSR-BCD-20; Item-13.70.1; Pg-206	Cum	563.00	17.80	10021.40
				Cost of Compound Wall (without gates)	1161589.50
				Boundary length	140.00
				Cost of 1 m Compound Wall (without gates)	8297.07

Sr. no.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
11	**Gates:** Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.				
	MJP 2018-19, Section H, Item No 3; Pg- 58.	No.	1.00	25303.00	25303.00
12	Providing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.	1.00	13651.00	13651.00
	MJP 2018-19, Section H, Item No 4; Pg- 58.				
	Cost of Compound Wall (with gates)				**1200543.50**

A	**Boundary Wall length**	**140**	m	L=	40
	Column spacing	3	m c/c	W=	30
	No. of columns total	46.0	Nos.		
	No. of Expansion joint	3.0	Nos.		
	Total No. of columns	49.0	Nos.		
	Column ht	2.0	m		
	Col W	0.25	m		
	Col D	0.25	m		
	Beam W	0.23	m		
	Beam D	0.23	m		
	Column footing L	1.5	m		
	Column footing W	1.5	m		
	Footing thk	0.25	m		
	Depth of foundation	1	m		
	PCC proj & thk	0.075	m		
	Working space	0.3	m		

S.No	Description					Quantity
		No.s	L	B	D	
1	Earth work excavation of foundation for structures as per drawing and technical specification including setting out, construction of shoring and bracing,removal of stumps and other deleterious mattar, dressing of sides and bottom and backfilling with approved material etc. and as per relevent clause of section 300 and 2100 - Ordinary Soil (upto 1.5m)					
	Footing	49.00	2.25	2.25	1.33	328.68
	Walls	1.00	29.75	0.38	0.18	1.98
	Total					**330.66**
2	Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centering and shuttering - In plinth and foundation - M - 10 Grade.					
	Footing	49.00	1.65	1.65	0.075	10.01
	Walls	1.00	127.75	0.38	0.075	3.64
	Deduction for Gate	-1.00	2.50	0.38	0.075	-0.07
	Total					**13.57**
3	Brick work with well burnt chimney bricks having crushing strength not less than 25kg/cm2 and water absorption not more than 20% above plinth level including cost of form work					
	Wall	1.00	127.75	0.23	1.870	**54.95**
	Deduction for Gate	-1.00	2.50	0.23	1.870	-1.08
	Total					53.87
4	12 mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete					
	In cement mortar 1:6					
	Two Side Wall	2.00	140.00		2.00	560.00
	Column sides	49.00	0.080		2.00	7.84

S.No	Description					Quantity
		No.s	L	B	D	
	Deduction for Gate	-1.00	2.50		2.00	-5.00
	Total					**562.84**

S.No	Description					Quantity
		No.s	**L**	**B**	**D**	
5	Disposal					
	Footing	49.00	1.50	1.50	0.250	27.56
	Column	49.00	0.25	0.25	0.750	2.30
	Plinth beam	1.00	127.75	0.23	0.130	3.82
	All PCC					13.57
	Total					**47.25**
6	Back filling: Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20 cm in depth including consolidation of each layer by ramming watering, lead up to 50 m and lift upto 1.5 m in all kinds of soils					
		Total				**283.41**
7	**RCC**					
	Footing	49.00	1.50	1.50	0.250	27.56
	Column	49.00	0.25	0.25	2.750	8.42
	Plinth beam	1.00	127.75	0.23	0.230	6.76
	Total					**42.74**
8	**Shuttering**					
	Footing	49.00	6.00		0.250	73.50
	Column	49.00	1.00		2.750	134.75
	Plinth beam	1.00	127.75		0.690	88.15
	Total					**296.40**
9	**Reinforcement**					**3.42**
10	Providing and applying one coat of approved colour and shade to new surface including scaffolding brushing and brooming down including two coats of whitewash as base cost etc., complete					**562.84**
11	Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.	No.				1
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.				1

Unit
m^3
m^3
m^3
m^3
m^3
m^3
m^3
m^3
m^3

Unit
m^2

Unit
m^3
m^3
m^3
m^3
m^2
MT
m^3

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- TOILET BLOCK - IPS A1

Sr. No.	Description	Unit	Qty	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.					
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	27.00	27.00	360.70	9738.90
2	**PCC:** Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15					
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	2.00	2.00	3953.40	7906.80
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	26.00	26.00	116.50	3029.00
	BSR-BCD-20-Item 2.26; Pg-96					
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1.00	1.00	270.30	270.30
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9					
4	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.					
	RCC Grade M -25 Up to Plinth	Cum	3.00	3.00	4952.60	14857.80
	BSR-BCD-20; Item-5.33.1, Pg-108					
	RCC Grade M -25 Above Plinth	Cum	9.00	9.00	5704.70	51342.30
	BSR-BCD-20; Item-5.33.2, Pg-108					
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**					
	BSR-BCD-20; Item-5.22.7, Pg-106	Tonn	1.00	1.00	68500.00	68500.00
6	**Centring & Shuttering**					
	Centring and shuttering including strutting, propping etc. and removal of form for.					
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	6.00	203.00	1218.00
	BSR - BCD-20- Item- 5.9.1, Pg-104					
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	11.00	11.00	412.20	4534.20
	BSR - BCD-20- Item- 5.9.3, Pg-104					
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	32.00	32.00	362.90	11612.80
	BSR - BCD-20- Item- 5.9.5, Pg-104					
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	22.00	22.00	470.60	10353.20
	BSR - BCD-20- Item- 5.9.6, Pg-104					
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)					
	Superstructure above plinth level up to floor V	Cum	5.00	5.00	5840.00	29200.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113					

Sr. No.	Description	Unit	Qty	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	62.00	62.00	157.40	9758.80
	BSR-BCD-20;Item-13.11.1; Pg-202					
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade					
	BSR - BCD-20- Item- 13.77.2, P-206	Sqm	41.00	41.00	97.20	3985.20
10	Providing and fixing double glazed hermetically sealed glazing in **aluminium windows,** ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307					
11	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.					
	BSR-BCD-20; Item-22.8.1; Pg-311	Sqm	18.00	18.00	809.00	14562.00
12	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacture) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	Sqm		21.00	797.50	16747.50
	BSR-BCD-20; Item-11.36; Pg-179					
13	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	Sqm	0.00	6.00	712.20	4273.20
	BSR-BCD-20; Item-11.37; Pg-179					
14	Providing and fixing vitreous china dual purpose closet suitable for use as squatting pan or European type water closet (Anglo Indian W.C pan) with seat lid with C.P. brass hinges and rubber buffers, 10 litre low level flushing cistern with fitting and brackets, 40mm flush bend 20mm over flow pipe with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required :		0.00			
	White vitreous china dual purpose WC pan with white solid plastic seat and lid with white vitreous china flushing cistern and C.P. flush bend.	each		1.00	8734.10	8734.10
	BSR-BCD-20; Item-17.68.1; Pg-260					
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	4.00	4.00	191.14	764.56
	BSR - RCD-18- Item- M-148, P-35					
16	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.					
	External work					
	15mm Dia	m		10.00	187.90	1879.00
	25 mm	m		10.00	227.50	2275.00
	BSR-BCD-20; Item- 18.12.1 & 18.12.3, P-267					
17	Providing and fixing brass stop cock of approved quality :					
	External work					
	15mm Dia	no		1.00	302.50	302.50
	20 mm	no		1.00	326.40	326.40
	BSR-BCD-20; Item- 18.16.1 & 18.16.2, P-267					

Sr. No.	Description	Unit	Qty	Qty	Rate in Rs.	Amount in Rs.
18	Providing, lowering, laying in trenches, aligning, fixing in position and jointing ISI marked uPVC pipe fittings/ accessories of class III (6 Kg/sqcm) suitable for potable water with rubber rings joints in uPVC pipe line at all levels/ depth including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.					
	110 mm dia. (O.D) pipe	m		25.00	273.00	6825.00
	RUIDP-17- Item- 19.1.2					
19	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931					
	15 mm nominal bore	each		3.00	419.00	1257.00
	BSR - BCD-20- Item- 18.49 , P-274					
20	Providing and fixing square-mouth S.W. gully trap grade 'A'' complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design : (100mmx100mm size P type)					
	With Sewer bricks conforming to IS : 4885	each		1.00	1831.90	1831.90
	BSR - BCD-20- Item- 19.4.1.2 P-292					
21	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand : 4 graded stone aggregate 20 mm nominal size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design :					
	Inside dimensions 455x610 mm and 45 cm deep for single pipe line :					
	with bricks	each		3.0	4228.40	12685.20
	BSR - BCD-20- Item- 19.30.1.1 P-299					
22	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require :					
	White Vitreous China Wash basin size 630x450 mm with a pair of 15 mm C.P. brass pillar taps.	each		1.00	2538.80	2538.8
	BSR - BCD-20- Item- 17.7.1, P-248					319488.46
	Total					**319488.46**

TOILET BLOCK :

	Nos	L	B	H
Inner dimension		2.90	2.00	3.00
Outer dimension		3.46	2.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.20	1.20	0.30
Total no of Columns	4			
C1	4	0.30	0.30	4.63
Plinth beam		14.30	0.30	0.40
Lintel beam		6.30	0.23	0.13
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	2	1.00		2.10
Windows size	0	0.00		0.00
Ventilators size	2	0.60		0.45
Rolling Shutter	0	0.00		0.00
Roof beam		11.84	0.30	0.40
Roof slab		4.06	3.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		110.600		
Existing GL		107.000		
Finished GL		107.000		
Plinth level		107.600		
Top of Footing		105.300		
Footing Level		105.000		

MEASUREMENT SHEET FOR TOILET BLOCK

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1- Upto 1.5 m	4	Cum	2.00	2.00	1.50	24.00	**27.32**
	From 1.5 m to 3.0 m	0		2.00	2.00	0.83	3.32	
		0	Cum	0.00	0.00	0.00	0.00	
1A	Excavation in soft soil							
a)	Upto 1.5 m		Cum			24.00		
b)	From 1.5 m to 3.0 m		Cum			3.32		
1B	Excavation in soft rock							
a)	Upto 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1C	Excavation in hard rock							
a)	Upto 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
	Total		Cum					**27.32**
2	**PCC**							
	F1	4	Cum	1.40	1.40	0.10	0.78	
	Floor Slab	1	Cum	3.46	2.46	0.10	0.85	
	Plinth protection	1	Cum	11.84	1.00	0.05	0.59	**2.22**
3	**Back Filling**							
	Earth work qty		Cum				23.37	
	Deduction C1	-4	Cum	0.30	0.30	1.00	-0.36	**26.18**
3a	**Disposal**		Cum				1.14	**1.14**

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.20	1.20	0.30	1.73	
	Columns C1	4	Cum	0.30	0.30	4.63	1.67	**3.39**
		0		1.50	1.00	0.15	0.00	
		0		1.00	1.00	0.15	0.00	
	Floor Slab	1	Cum	3.46	2.46	0.15	1.28	
	Plinth Beam	1	Cum	14.30	0.30	0.40	1.72	
	Lintel Beam	1	Cum	6.30	0.23	0.13	0.18	
	Roof Beam	1	Cum	14.30	0.30	0.40	1.72	
	Chajja - For Doors	2	Cum	1.30	0.50	0.125	0.16	
	Chajja - For Windows	0	Cum	0.30	0.50	0.125	0.00	
	Chajja - For Ventilators	2	Cum	0.90	0.50	0.125	0.11	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	1.200	1.80	
	Roof Slab	1	Cum	4.06	3.06	0.125	1.55	**8.52**
							0.94	
5	**Steel**		Tonn				1.19	**1.19**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	4.80		0.30	5.76	**5.76**
	Columns: C1	4	Sqm	1.20		4.63	22.2	**22.20**
		0		1.50		1.00	0	
		0		1.00		1.00	0	
	Beams: Plinth Beam	1	Sqm	14.30		1.10	15.73	
	Lintel Beam	1	Sqm	6.30		0.48	3.02	
	Roof Beam	1	Sqm	11.84		1.10	13.02	**31.77**
	Roof slab	1	Sqm	3.46	2.46		8.51	
	Suspended: Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**10.71**
7	**Brick Work Wall**							
	Wall	1	Cum	6.30	0.23	3.0	4.35	
	Internal wall	1	Cum	2.00	0.10	3.0	0.60	
	Wall- upto plinth level	1	Cum	8.90	0.23	0.6	1.23	
	Parapet wall	1	Cum	13.04	0.00	0.00	0.00	
	Deduction- Doors	-2	Cum	1.00	0.23	2.10	-0.97	
	Deduction- Windows	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Ventilator	-2	Cum	0.60	0.23	0.45	-0.12	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**5.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	6.30		3.00	19	
	Internal wall	2	Sqm	2.00		3.00	12	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
		0		1.50		1.00	0.00	
		0		1.00		1.00	0.00	
	Roof (Ceiling)	1	Sqm	2.90	2.00		5.80	
	Deduction- Doors	-2	Sqm	1		2.1	-4.20	

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
	Deduction- Windows	0	Sqm	0		0	0.00	
	Deduction- Ventilator	-2	Sqm	0.6		0.45	-0.54	
		0		2.46		3.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**31.96**
	External Plastering							
	Wall	1	Sqm	6.30		3.60	22.68	
	Wall- upto plinth level	1	Sqm	8.90		0.60	5.34	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
	Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	14.24	0.30		4.27	
	Deduction- Doors	-2	Sqm	1.00		2.10	-4.20	
	Deduction- Windows	0	Sqm	0.00		0.00	0.00	
	Deduction- Ventilator	-2	Sqm	0.60		0.45	-0.54	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**29.75**
9	**Painting**							
	Internal Painting	-1	Sqm	13.8		0.00	0	**11.3**
	External Painting							**29.75**
10	**Flooring**	1	Sqm	2.90	2.00		5.80	**5.80**
	dado		Sqm	13.80		1.50	20.70	
	deduct						0.00	**20.70**
11	**Openings**							
	Doors	2	Sqm	1.00		2.10	4.20	
	Windows	0	Sqm	0.00		0.00	0.00	
	Ventilators	2	Sqm	0.60		0.45	0.54	**4.74**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	3.96	3.06		12.12	**17.92**
	Water proofing below the flooring	1	Sqm	2.90	2.00		5.80	
14	**Skirting**	0	Sqm	9.80		0.15	0.00	**0.00**
15	**Boulders for Floor area**	1	Cum	2.90	2.00	0.60	3.48	**3.93**

Rate Analysis for Soil disposal Soil density=1.8

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Stone Boulder Stone Boulder densit

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Sand Sand density=1.

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1

2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for cement Cement density=1

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for Aggregates Aggregates density=

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

84 T/m3

Rate in Rs.	Amount in Rs.	Reference
189.00	189.00	BSR-RCD 2018 Item 1.1, PG.No. 8
10.16	81.30	BSR-RCD 2018 Item 1.4, PG.No. 8 & 9

270.30

y=1.84 T/m3

Rate in Rs.	Amount in Rs.	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1 15

210.61

84 T/m3

Rate in Rs.	Amount in Rs.	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8

7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

L.44 T/m3

Rate in Rs.	Amount in Rs.	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

=1.44 T/m3

Rate in Rs.	Amount in Rs.	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART

COST SUMMARY -CIVIL WORK- PUMPING STATION

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station
		IPS A2
A	**Civil Works**	
1	Screen Chamber	4.61
2	Pump House (Wet well and Superstructure)	#VALUE!
3	Manifold Chamber	2.32
4	Valve Chamber	1.51
5	Flowmeter Chamber	1.57
6	D.G. Room	11.82
7	Diesel Storage Room	5.72
8	Store Room	5.10
9	Metering Room	8.35
10	Internal Roads (3m wide)	2.21
11	Compound Wall	13.23
12	Toilet Block	4.13
13	Material Carrying Charges	3.63
	Total	**#VALUE!**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

Sr. No.	Pumping Stations	Qty. from Estimate Sheet														RCC, Flooring and Sand Filling						Stone Boulders	Bricks				Plaster				Total Quantity in MT			Carriage Charges (In Lakh Rs.)				
		Concrete (C:S:A)				Bricks (cum)	Plaster (sq.m)	Flooring (52 mm thk) M15		Sand Filling	Stone Boulders	Aggregate for Internal Road Works (cum)				Cement		Sand		Aggregate			Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand									
		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (sq.m)	Volume (cum)	Volume (cum)	Volume (cum)	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ cum	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum	Volume (m3)	Wt (MT) 1870kg/ cum	Wt (MT) 1870kg/ cum	Wt (MT) 1920kg/ cum	MT	MT	MT	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum	Sand	Aggregate	Bricks	Sand (9.40 Rs./t.km)	Aggregate (9.40 Rs./t.km)	Bricks (9.40 Rs./t.km)	Stone Boulder (9.40 Rs./t.km)	Total (Rs. In Lakhs)
1	IPS A2																																				
	Screen Chamber	5.00	-		30.00	-	-		-		2.00				-	8.00	11.52	9.00	16.56	18.00	33.66	3.74	-	-	-	-	-	-	-	-	16.56	33.66	-	0.02	0.03	-	-	0.05
	Wetwell & Superstructure	15.00	-		108.00	19.00	188.00	23.00	0.92		1,341.00				-	28.63	41.23	31.76	58.44	63.53	118.80	2,507.67	36.48	0.79	3.17	32.51	0.56	0.81	1.69	3.11	64.72	118.80	36.48	0.06	0.11	0.03	2.36	0.20
	Manifold Chamber	2.00	-		15.00	-	-		-		5.00				-	3.95	5.69	4.35	8.00	8.70	16.27	9.35	-	-	-	-	-	-	-	-	8.00	16.27	-	0.01	0.02	-	0.01	0.03
	Valve Chamber	1.00	-		7.00	-	-		-		2.00				-	1.85	2.66	2.05	3.77	4.10	7.67	3.74	-	-	-	-	-	-	-	-	3.77	7.67	-	-	0.01	-	-	0.01
	Flow Meter Valve Chamber	1.00	-		7.00	-	-		-		2.00				-	1.85	2.66	2.05	3.77	4.10	7.67	3.74	-	-	-	-	-	-	-	-	3.77	7.67	-	-	0.01	-	-	0.01
	D.G. Room	13.00	-		46.00	27.00	375.00	50.00	2.00		24.00				-	13.09	18.85	15.97	29.38	31.94	59.73	44.88	51.84	1.13	4.51	46.21	1.13	1.63	3.38	6.22	40.11	59.73	51.84	0.04	0.06	0.05	0.04	0.15
	Diesel Storage Room	5.00	-		20.00	16.00	168.00	20.00	0.80		11.00				-	5.61	8.08	6.73	12.38	13.46	25.17	20.57	30.72	0.67	2.67	27.38	0.50	0.72	1.51	2.78	17.83	25.17	30.72	0.02	0.02	0.03	0.02	0.07
	Store Room	5.00	-		16.00	14.00	155.00	14.00	0.56		8.00				-	4.58	6.60	5.66	10.41	11.32	21.17	14.96	26.88	0.58	2.34	23.96	0.47	0.68	1.40	2.58	15.33	21.17	26.88	0.01	0.02	0.03	0.01	0.06
	Metering Room	6.00	-		28.00	23.00	244.00	24.00	0.82		13.00				-	7.72	11.12	9.03	16.62	18.07	33.79	24.31	44.16	0.96	3.84	39.36	0.73	1.05	2.20	4.05	24.51	33.79	44.16	0.02	0.03	0.04	0.02	0.09
	Internal Roads											86.00	39.00	13.00	258.06							-									-	258.06	-	-	0.24	-	-	0.24
	Compound Wall	15.00	-	48.00		62.00	641.00		-						-	10.23	14.73	17.59	32.37	35.18	65.79	-	119.04	2.59	10.35	106.10	1.92	2.76	5.77	10.62	53.34	65.79	119.04	0.05	0.06	0.11	-	0.22
	Toilet Block	2.00	-		24.38	-	-	27.00	1.08						-	6.45	9.29	7.00	12.88	14.01	26.20	-	-	-	-	-	-	-	-	-	12.88	26.20	-	0.01	0.02	-	-	0.03
	Total	70.00	-	48.00	301.38	161.00	1,771.00	158.00	6.18	-		86.00	39.00	13.00	258.06	91.96	132.42	111.20	204.61	222.40	415.89	777.71	309.12	6.72	26.88	275.52	5.31	7.65	15.94	29.33	260.82	673.95	309.12	0.25	0.63	0.29	2.46	3.63

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- SCREEN CHAMBER IPS A2

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	up to 1.5 m	Cum	27.00	360.70	9739.00
b)	From 1.5 m to 3.0 m	Cum	27.00	407.00	10989.00
c)	From 3.0 m to 4.5 m	Cum	1.00	453.30	453.00
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	3.00	116.50	350.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	52.00	270.30	14056.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	30.00	**5270.50**	158115.00
	For sulphate resisting cement	MT	11.00	800.00	8800.00
	RUIDP 2017, 3239 & 3237				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT - FE-500**	MT	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**Centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.00	203.00	812.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	158.00	356.40	56311.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	4.00	412.20	1649.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	27.00	241.20	6512.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
11	**Railing:** Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m center to center, complete as per approved drawings including all materi**al, labour. at walkway: Around platform**				
	RUIDP-17, Item 10.20,Pg-34	RM	8.00	2040.00	16320.00
12	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**461446.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET-CIVIL WORK- SCREEN CHAMBER

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Excavation in soft/ ordinary soil					
a)	up to 1.5 m		4.75	3.78	1.50	26.93
b)	From 1.5 m to 3.0 m		4.75	3.78	1.50	26.93
c)	From 3.0 m to 4.5 m		4.75	3.78	0.07	1.31
d)	From 4.5 m to 6.0 m		4.75	3.78	0.00	0.00
e)	From 6.0 m to 7.5 m		4.75	3.78	0.00	0.00
f)	From 7.5 m to 9.0 m		4.75	3.78	0.00	0.00
g)	From 9.0 m to 10.5 m		4.75	3.78		0.00
						55.18
2	Refilling					3.41
3	Disposal		4.20	2.08	5.25	45.89
	PCC					1.40
	Base slab					4.48
	Total					**51.77**
4	PCC: M15		4.70	2.98	0.10	1.40
	Approach, Screen and railing- Haunch		7.16	0.75	0.75	4.03
	Total					**5.43**
5	RCC Grade M -30					
	Footing (Base slab)		4.60	2.78	0.35	4.48
	Benching	2.00	1.00	0.59	0.75	0.89
	Outer walls		10.48	0.30	5.55	17.46
	Inner wall		1.48	0.30	4.44	1.97
	Partition wall		2.60	0.30	5.55	4.33
	RCC Slab		0.50	1.48	0.15	0.11
	Slab for bar screen		1.20	1.48	0.15	0.27
	Grand Total					**29.50**
	Sulphate resisting cement					**10.62**
6	**Shuttering**					
	Footing (Base slab)		14.76		0.35	5.17
	Ramp	0.00	0.75		1.00	0.00
	Outer walls	2	10.48		5.55	116.39
	Inner wall	2	1.48		4.44	13.15
	Partition wall	2	2.60		5.55	28.88
	RCC Slab		0.80	1.48		1.18
	Slab for bar screen		1.80	1.48		2.66
	Grand Total					**167.43**
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					4.48
	Walls (any thickness) including attached plasters. Butteresses, plinth and string courses etc.					158.42
	Suspended floors, roofs, landings, balconies and access platform.					3.84
7	Reinforcement- Fe 500 TMT					**2.4**
8	Painting					
	Side wall	2.00	3.90	0.30		2.34
	Front wall	1.00	2.08	0.30		0.62

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
9	MS/CI foot rests	27				**27.00**
10	Providing and fixing G.I. pipe railing					**7.76**
11	Dewatering					**200.00**
12	Rubble Soling below PCC	1	4.30	2.28	0.23	**2.25492**

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SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- WETWELL IPS A2

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	100 Sqm	894.00	579.80	5183.00
	BSR-BCD-20- Item 2.32 pg 96				
2	**Earth work in excavation in foundation trenches or drains** (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	up to 1.5 m	Cum	89.00	360.70	32102.00
b)	From 1.5 m to 3.0 m	Cum	89.00	407.00	36223.00
c)	From 3.0 m to 4.5 m	Cum	89.00	453.30	40344.00
d)	From 4.5 m to 6.0 m	Cum	80.00	499.60	39968.00
e)	From 6.0 m to 7.5 m	Cum	42.00	545.90	22928.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock				
a)	From 4.5 m to 6.0 m	Cum	4.00	901.00	3604.00
b)	From 6.0 m to 7.5 m	Cum	2.00	984.10	1968.00
	Hard Rock (Blasting prohibited)				
a)	From 4.5 m to 6.0 m	Cum	4.00	1500.50	6002.00
b)	From 6.0 m to 7.5 m	Cum	2.00	1583.60	3167.00
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 96				
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	105.00	116.50	12233.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	298.00	270.30	80549.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000.00
	BSR-BCD-20-Item 2.25; Pg-96				
7	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	15.00	3953.40	59301.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
8.1	RCC Grade M-30	Cum	89.00	**5270.50**	469075.00
	For sulphate resisting cement	MT	32.00	800.00	25600.00
	RUIDP 2017, 3239 & 3237				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
	All work above Plinth level up to floor V Level.				
8.2	RCC Grade M -25	Cum	19.00	5704.70	108389.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	12.00	68500.00	822000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	19.00	203.00	3857.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	333.00	356.40	118681.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	119.00	412.20	49052.00
	BSR - BCD-104- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	69.00	362.90	25040.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	54.00	470.60	25412.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	19.00	5839.40	110949.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sq m	188.00	157.40	29591.00
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	**Painting:** Distempering with **oil bound washable** distemper of approved brand and manufacture to give an even shade	Sq m	287.00	97.20	27896.00
	New work (two or more coats) over & including priming coat with cement primer.				
	BSR - BCD-20- Item- 13.77.2, P-206				
14	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	23.00	456.50	10500.00
	BSR-BCD-20; Item-11.4; Pg-174				
15	**Structural steel** work in single section fixed without connecting plate including cutting, hoisting,fixing in position and applying a priming coat of approved steel primer all complete.	M.T	1.00	68200.00	68200.00
	BSR-BCD-20; Item-10.1; Pg-168				
16	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	42.00	2553.30	107239.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
17	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	Sqm	15.00	3635.80	54537.00
	BSR-BCD-20; Item-21.10; Pg-307				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
18	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	0.00	241.20	0.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
19	Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m c/c, complete as per approved drawings including all material, labour: **Around Opening in the floor platform**	RM	12.00	2040.00	24480.00
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- Rolling shutters of approved make. Made of required size of M.S.Iaths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	1106.50	8852.00
	80x1.25mm MS Laths with 1.25mm thick top cover				
	BSR-BCD-20; Item-10.8.1; Pg-169				
22	Providing and fixing in position **Lightening arrester** set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthling pit at 3.5 meter depth, G.I. strip of size 25mmx5mm thick from earthing plate to top of Over head tank, G.I. Final made of GI bar 25mm dia and 2m long fixed on top of OH tank and connected to GI strip. The earthling set shall comply of IS:3043 complete in all respect as per specification and the direction of the Engineer.	No.	1.00	12500.00	12500.00
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing **M.S. chequerred plate** flooring of following thickness supported on M.S. angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plates to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge. (6 mm Thick)	Sqm	5.00	3226.00	16130.00
	(Item No.6, (a) Section J, MJP Page 366 DSR 2017-18)				
24	230 thick rubble soling: Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	Cum	9.00	1235.90	11123.00
	BSR-BCD-20; Item-24.5, Pg-320				
25	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per Litre	2000.00	8.00	16000.00
	BSR-BCD-20; Item-18.48, Pg-274				
26	Providing and fixing 2HP centrifugal pump (6-20m head)	No	1.00	10000.00	10000.00
	Market Rate				
25	**Overflow Arrangement**				
i	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
a)	up to 1.5 m	Cum	33.00	360.70	11903.00
b)	From 1.5 m to 3.0 m	Cum	10.20	407.00	4150.00

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
ii	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	37.00		#VALUE!
	BSR-BCD-20-Item 2.26; Pg-96				
iii	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026.00
	BSR-BCD-20-Item 2.25; Pg-96				
iv	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	3.00	270.30	811.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
v	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended up to date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	450 mm dia.	m	15.00	6879.30	103190.00
	BSR-BCD-18-Item 18.72.22; Pg-231				
vi	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification.	cum	3.00	217.00	651.00
	BSR - RCD-18- Item- 12.3, P-222				
vii	Providing and fixing Barricading at site of work for restricting the general public using 80-100 mm dia Wooden Ballies as vertical post with average spacing of 1.80 meter between two vertical posts, having height at least 1.5 m above road/ ground level and at least 30-45 cm below road/ ground level by making suitable size hole in road/ ground, providing and fixing two rows of 80-100 mm Wooden Ballies as horizontal members with jute russies. Both vertical and horizontal members shall be painted in red and white colour strips as per approved pattern as and when it becomes shabby but at least after every alternate shifting at new location. After shifting/ removal of barricading holes shall be filled up properly and site is to be cleared in all respect. (Note: measurement is to be done in linear basis.	m	0.00	77.50	0.00
	RUIDP SOR Item-4.24, Pg-15				
viii	Providing and Fixing Minimum 0.63mm thick GI corrugated sheets (minimum width of each sheet shall be 60 cm) for covering the barricading in one/ two rows one above another and painting in red and white stripes as per the specifications and directions of the Engineer in-charge with proper fixing arrangements with GI limpet washers nuts and bolts complete in all respect.	Sqm		101.00	0.00
vii	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer in-charge :				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centring, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS: 4885	Each	1.00		#VALUE!
	BSR - BCD-20- Item- 19.9.1.2, P-295				
26	Filling of total pumping station site up to finished groung level with random Rubble soling	cum	1341.00	191.14	256318.74
	BSR - RCD-18- Item- M-148, P-35				
	Total				#VALUE!

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- WETWELL IPS A2

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Site Clearing		25.00	30.00		Sqm	750.00
			12.00	12.00		Sqm	144.00
	Total						**894.00**
2	Excavation in soft or ordinary soil						
	Pump House						
a)	up to 1.5 m			8.70	1.50	Cum	89.17
b)	From 1.5 m to 3.0 m			8.70	1.50	Cum	89.17
c)	From 3.0 m to 4.5 m			8.70	1.50	Cum	89.17
d)	From 4.5 m to 6.0 m			8.70	1.50	Cum	89.17
e)	From 6.0 m to 7.5 m			8.70	0.78	Cum	46.55
f)	From 7.5 m to 9.0 m			8.70	0.00	Cum	0.00
g)	From 9.0 m to 10.5 m			8.70	0.00	Cum	0.00
h)	From 10.5 m to 12.0 m			8.70	0.00	Cum	0.00
i)	From 12.0 m to 13.5 m			8.70	0.00	Cum	0.00
j)	From 13.5 m to 15.0 m			8.70	0.00	Cum	0.00
	Total					Cum	**403.23**
3	**Refilling of Earth**					Cum	**104.93**
4	**Disposal of Earth**						
	Base Raft	1					22.68
	Well	1		6.70	7.45	Cum	262.77
	PCC	1		6.90	0.10	Cum	3.74
	Rubble Soling	0		7.10	0.23	Cum	9.11
	Total					Cum	**298.30**
5	**Dewatering of water**					KL	5000.00
6	PCC: Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering- M15						
	Below Base Raft			6.90	0.10	Cum	3.74
	Additional sloped portion in Base Raft						11.30
	Total						**15.04**
7	**Reinforced cement concrete**						
a	M 30: up to Plinth level						
	Base Raft			7.60	0.50	Cum	22.68
	Wall		19.95	0.35	8.05	Cum	56.23
	Floor Slab Beams- Peripheral		19.95	0.30	0.40	Cum	2.39
	Floor Slab Beams	1	12.30	0.30	0.45	Cum	1.66
	Floor Slab			6.00	0.20	Cum	5.65
	Ramp		1.50	2.50	0.60	Cum	1.13
	For platform		1.20	1.20	0.15	Cum	0.22
	Deduction for Floor Slab opening		-5.00	1.00	0.20	Cum	-1.00
	Total					Cum	**88.96**
	Sulphate resisting cement						**32.03**
b	M 25: Above Plinth level						
	Columns	7	0.30	0.30	5.82	Cum	3.67
	Corbels	7	0.65	0.65	0.45	Cum	1.33
	Lintel Beams		19.95	0.30	0.40	Cum	2.39
	Chajja		12.60	0.45	0.100	Cum	0.57
	Roof Slab Beams- Peripheral		19.95	0.30	0.45	Cum	2.69
	Roof Slab Beams- Circular inner		0.00	0.00	0.00	Cum	0.00
	Roof Slab Beams	1	19.57	0.30	0.45	Cum	2.64
	Roof Slab			7.30	0.13	Cum	5.23
	Parapet wall		0.00	0.15	0.90	Cum	0.00
	Screen Lifting Platform Slab		1.94	0.80	0.20	Cum	0.31
	Total					Cum	**18.83**
8	**Shuttering**						
a	Foundations, Footings, Bases of Columns, etc for mass concrete						
	Wall- Outer		21.05		8.05	Sqm	169.52
	Wall- Inner		18.85		7.55	Sqm	142.37
	Floor Slab Beams- Peripheral		19.95		1.10	Sqm	21.95
	Floor Slab Beams	1	12.30		1.20	Sqm	14.76
	Floor Slab			6.00		Sqm	28.27
	Ramp		5.50		0.60	Sqm	3.30
	For platform		1.20	1.20		Sqm	1.44
	For Floor Slab opening Sides		12.00		0.20	Sqm	2.40
	Deduction for Floor Slab opening		5.00	1.00		Sqm	5.00
	Total						**389.00**
b	walls (any thickness), including attached pilasters, buttresses, plinth and string courses fillets etc.						
	Columns	7	1.20		5.82	Sqm	48.93
	Corbels	7	1.55		0.45	Sqm	4.88
	Lintel Beams		19.95		1.10	Sqm	21.94
	Chajja		12.60		0.55	Sqm	6.93
	Roof Slab Beams- Peripheral		19.95		1.20	Sqm	23.94
	Roof Slab Beams- Circular inner		0.00		0.00	Sqm	0.00
	Roof Slab Beams	1	19.57		1.20	Sqm	23.49
	Roof Slab			6.00		Sqm	28.27
	Roof Slab Projection		21.99	0.30		Sqm	6.60
	Parapet wall	2	22.44		0.90	Sqm	40.39
	Screen Lifting Platform Slab		2.14	1.00		Sqm	2.14
	Total						**207.51**
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					Sqm	19.36
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					Sqm	332.92
	Suspended floors, roofs, landings, balcnies and access platform.					Sqm	118.66
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.					Sqm	69.37
	Columns,Pillars, Piers, Abutments, Posts and Struts.					Sqm	53.81
9	**Type Item - Brick Work**						
	Brick wall		20.33	0.23	5.82	Cum	27.23
	Deduct opening						
	Rolling Shutter	-1	2.50	3.00	0.23		-1.73
	Windows	-6	1.50	1.20	0.23		-2.48
	Ventilator	-6	0.70	0.90	0.23		-0.87
	Deduct column	-7	0.30	5.82	0.23		-2.81
	Total					Cum	19.34
10	**Plaster work (Inner Face)**						
	Superstructure			18.85	5.82		109.80
	less opening					Sq m	-22.08
	Total					Sq m	**87.72**
11	**Plaster work (Outer Face)**						
	Superstructure			21.05	5.82		122.62
	less opening					Sq m	-22.08
	Total					Sq m	**100.54**
12	**Steel Reinforecement**					MT	11.86
13	**Painting:** Distempering with **oil bound was**hable distember of approved brand and manufacture to give an even shade					Sq m	287.01
14	**Cement concrete flooring**						
	Superstructure			28.27		Sq m	28.27
	deduct for opening						-5.00
	Total					Sq m	**23.27**
15	**Aluminium Window, door and ventilator**						
	Windows	6	1.50	1.20		Sqm	10.80
	Ventilator	6	0.70	0.90		Sqm	3.78
	Total					Sqm	**14.58**
16	MS/CI foot step	0				Nos.	0.00
17	Providing and fixing G.I. pipe railing				12.00	RM	12.00
18	Rolling Shutter	1	2.50	3.00		Sqm	7.50
19	Providing stuctural steel work in single stanchions composed of RSJ, channel, etc,					M.T	1.00
20	Providing and fixing in position copper lightening conductor					No.	1.00
21	**MS Chequerred Plate**						
	6 mm thk plate, 10 mm thk ISMC100 with epoxy painted	1	5.00	1.00		Sqm	5.00
22	Roof Water Proofing		7.30			Sqm	41.85
23	**Rubble Soling:** 230 mm thick rubble soling	1	39.59		0.23	Cum	9.11
24	Filling of total pumping station site up to finished groung level with random Rubble soling		25.00	30.00	1.50	Cum	1125.00
			12.00	12.00	1.50	Cum	216.00
	Total						1341.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- MANIFOLD CHAMBER IPS A2

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	49.00	360.70	17674.00
b)	From 1.5 m to 3.0 m	Cum	25.00	407.00	10175.00
c)	From 3.0 m to 4.5 m	Cum	0.00	453.30	0.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	41.00	116.50	4777.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	33.00	270.30	8920.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	2.00	4151.40	8303.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25: All works up to plinth level	Cum	15.00	5192.50	77888.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	203.00	1218.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	62.00	356.40	22097.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	3.00	241.20	724.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sqm	5.00	17.80	89.00
11	**230mm thick Random rubble soling below PCC.**	Cum	5.00	191.14	955.70
	BSR - RCD-18- Item- M-148, P-35				
	Total				**231961.70**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- MANIFOLD CHAMBER IPS A2

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.60	7.10	1.50	48.99	Cum
b)	From 1.5 m to 3.0 m		4.60	7.10	0.78	25.47	Cum
c)	From 3.0 m to 4.5 m		4.60	7.10	0.00	0.00	Cum
2	Refilling					41.49	Cum
3	Disposal		3.00	5.00	1.65	24.75	Cum
	PCC					2.20	Cum
	Base slab					6.02	Cum
	Total					**32.97**	Cum
4	PCC: M15		3.60	6.10	0.10	2.20	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		3.40	5.90	0.30	6.02	Cum
	Outer walls		16.00	0.25	1.95	7.80	Cum
	Roof slab beam	3	2.64	0.25	0.30	0.59	Cum
	Precast cover	16	1.27	0.30	0.08	0.46	Cum
		16	1.12	0.30	0.08	0.40	Cum
	Total					**15.27**	Cum
6	**Shuttering**						
	Footing (Base slab)		18.60		0.30	5.58	Sqm
	Outer walls	2	16.00		1.95	62.40	Sqm
	Roof slab beam	3	2.64		0.85	6.73	Sqm
	Total					**74.71**	Sqm
7	Reinforcement- Fe 500 TMT					**1.22**	MT
8	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	5.50	0.30		3.30	Sq m
	Total					**5.10**	Sqm
9	MS/CI foot rests	3				**3.00**	No.
10	Dewatering					**100.00**	KL
11	Rubble solling	1	3.6	6.1	0.23	**5.0508**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- VALVE CHAMBER IPS A2

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	24.00	360.70	8657.00
b)	From 1.5 m to 3.0 m	Cum	12.00	407.00	4884.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	24.00	116.50	2796.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	270.30	3514.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -25	Cum	7.00	4952.60	34668.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	34.00	356.40	12118.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	3.00	241.20	724.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.28
	BSR - RCD-18- Item- M-148, P-35				
	Total				**151118.28**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- BUTTERFLY VALVE CHAMBER IPS A2

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.10	3.90	1.50	23.99	Cum
b)	From 1.5 m to 3.0 m		4.10	3.90	0.78	12.47	Cum
c)	From 3.0 m to 4.5 m		4.10	3.90	0.00	0.00	Cum
2	Refilling					23.72	Cum
3	Disposal		2.50	2.30	1.65	9.49	Cum
	PCC					0.90	Cum
	Base slab					2.35	Cum
	Total					**12.74**	Cum
4	PCC: M15		3.10	2.90	0.10	**0.90**	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		2.90	2.70	0.30	2.35	Cum
	Outer walls		8.60	0.25	1.95	4.19	Cum
	Total					**6.92**	Cum
6	**Precast cover**	6	1.94	0.33	0.10	0.38	Cum
7	**Shuttering**						
	Footing (Base slab)		11.20		0.30	3.36	Sqm
	Outer walls	2	8.60		1.95	33.54	Sqm
	Total					**36.90**	Sqm
8	**Reinforcement- Fe 500 TMT**					**0.55**	MT
9	**Painting**						
	Side wall	2.00	2.50	0.30		1.50	Sq m
	Front and back wall	2.00	2.30	0.30		1.38	Sq m
	Total					**2.88**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Rubble solling	1	2.9	3.1	0.23	**2.07**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK-FLOW METER CHAMBER IPS A2

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	25.00	319.60	7990.00
b)	From 1.5 m to 3.0 m	Cum	13.00	360.60	4688.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	24.00	103.30	2479.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	270.30	3514.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	4151.40	4151.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -25	Cum	7.00	5192.50	36348.00
	BSR-BCD-20 Item-5.33.1, Pg-108				
8	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	76000.00	76000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	186.30	559.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	35.00	321.30	11246.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
10	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	3.00	240.60	722.00
	BSR-BCD-20, Item-19.15.2, Pg.-296				
11	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	15.90	48.00
12	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.28
	BSR - RCD-18- Item- M-148, P-35				
	Total				**157347.28**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET-CIVIL WORK- FLOW METER CHAMBER IPS A2

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Qty.	Units.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.60	3.60	1.50	24.84	Cum
b)	From 1.5 m to 3.0 m		4.60	3.60	0.78	12.92	Cum
c)	From 3.0 m to 4.5 m		4.60	3.60	0.00	0.00	Cum
	Total					**37.76**	
2	Refilling					**24.47**	Cum
3	Disposal		2.00	3.00	1.65	9.90	Cum
	PCC					0.94	Cum
	Base slab					2.45	Cum
	Total					**13.29**	Cum
4	PCC: M15		3.60	2.60	0.10	**0.94**	Cum
5	RCC Grade M -20						
	Footing (Base slab)		3.40	2.40	0.30	2.45	Cum
	Outer walls		9.00	0.25	1.95	4.39	Cum
	Total					**7.14**	Cum
6	Roof slab (Precast Cover)	8	1.64	0.30	0.08	**0.30**	Cum
7	Shuttering						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		1.95	35.10	Sqm
	Total					**38.58**	Sqm
8	Reinforcement- Fe 500 TMT					**0.57**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	2.00	0.30		1.20	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
11	Rubble solling	1	2.6	3.6	0.23	**2.15**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK-D.G. ROOM- IPS A2

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	41.00	360.70	14788.70
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	13.00	3953.40	51394.20
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	20.00	116.50	2330.00
	BSR-BCD-20-Item 2.26; Pg-96				
3a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	21.00	270.30	5676.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	13.00	4952.60	64383.80
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	33.00	5704.70	188255.10
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	5.00	68500.00	342500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.00	203.00	3248.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	63.00	412.20	25968.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	133.00	362.90	48265.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	76.00	470.60	35765.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	27.00	5839.40	157663.80
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	375.00	157.40	59025.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	375.00	97.20	36450.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	67.00	809.00	54203.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
11	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	50.00	456.60	22830.00
	BSR-BCD-20; Item-11.4; Pg-174				
12	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	13.00	3635.80	47265.40
	BSR-BCD-20; Item-21.10; Pg-307				
13	Supplying and fixing-rolling shutters of approved make. Made of required size of M.S.Iaths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	12.00	1106.50	13278.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	5.00	802.00	4010.00
	18mm thick with under layer 12mm thick cement plaster 1:3 (1 cement : 3coarse sand)				
	BSR-BCD-20; Item-11.12.1 Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	24.00	191.14	4587.36
	BSR - RCD-18- Item- M-148, P-35				
				Total	**1181888.26**

D G Room:

	Nos	L	B	H	
Inner dimension		10.00	5.00	5.00	
Outer dimension		10.46	5.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	8.00	1.70	1.70	0.30	
Total no of Columns	8				
C1	8	0.30	0.30	7.95	
Plinth beam		42.76	0.30	0.40	
Lintel beam		31.84	0.30	0.40	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0.00	0.00		0.00	
Windows size	7.00	1.50		1.20	
Ventilators size	0.00	0.75		1.00	
Rolling Shutter	1	3.00		4.00	
Roof beam		42.76	0.30	0.45	
Roof slab		11.06	6.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		113.10			
Existing GL		106.00			
Finished GL		107.500			
Plinth level		108.100			
Top of Footing		104.300			
Footing Level		103.900			

MEASUREMENT SHEET FOR D G ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	8	Cum	2.50	2.50	0.83	41.50	**41.50**
2	**PCC**							
	F1	8	Cum	1.90	1.90	0.10	2.89	
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth Protection	1	Cum	31.84	1.00	0.05	1.59	**13.05**
3	**Back Filling**							
	Earth work qty		Cum				21.52	
	Deduction C1	-8	Cum	0.30	0.30	1.70	-1.22	**20.29**
4	**RCC M25**							
	Column foundation F1	8	Cum	1.70	1.70	0.30	6.94	
	Columns C1	8	Cum	0.30	0.30	7.95	5.72	**12.66**
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth Beam	1	Cum	42.76	0.30	0.40	5.13	
	Lintel Beam	1	Cum	31.84	0.30	0.40	3.82	
	Roof Beam	1	Cum	42.76	0.30	0.45	5.77	
	Chajja - For Doors	0	Cum	0.00	0.45	0.125	0.00	
	Chajja - For Windows	7	Cum	1.80	0.45	0.125	0.71	
	Chajja - For Ventilators	0	Cum	1.05	0.45	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	3.30	0.45	0.125	0.19	
	Ramp/Steps	1	Cum	3.00	1.00	0.600	0.90	
	Roof Slab	1	Cum	11.06	6.06	0.125	8.38	**33.47**
5	**Steel**		Tonn				4.61	**4.61**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	8	Sqm	6.80		0.30	16.32	**16.32**
	Columns: C1	8	Sqm	1.20		7.95	76.32	**76.32**
	Beams: Plinth Beam	1	Sqm	42.76		1.10	47.04	
	Lintel Beam	1	Sqm	31.84		1.10	35.02	
	Roof Beam	1	Sqm	42.76		1.20	51.31	**133.37**
	Roof slab	1	Sqm	10.46	5.46		57.11	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.50	0.45		4.73	
	Chajja - For Ventilators	0	Sqm	0.75	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.00	0.45		1.35	**63.19**
7	**Brick Work Wall**							
	Wall	1	Cum	31.84	0.23	5.0	36.62	
	Wall- up to plinth level	1	Cum	31.84	0.23	0.6	4.39	
	Parapet wall	0	Cum	16.52	0.00	0.00	0.00	
	Deduction- Lintel beam	-1	Cum	31.84	0.23	0.40	-2.93	
	Deduction- Floor PCC & floor slab	-1	Cum	31.84	0.23	0.25	-1.83	
	Deduction- Roof beam	-1	Cum	31.84	0.23	0.45	-3.30	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-7	Cum	1.50	0.23	1.20	-2.90	
	Deduction- Ventilator	0	Cum	0.75	0.00	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	3.00	0.23	4.00	-2.76	**27.30**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	31.84		5.00	159	
	Parapet wall	0	Sqm	16.52		0.00	0.00	
	Roof (Ceiling)	1	Sqm	10.00	5.00		50.00	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-7	Sqm	1.5		1.2	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3		4	-12.0	**184.60**
	External Plastering							
	Wall	1	Sqm	31.84		5.00	159.20	
	Wall- up to plinth level	1	Sqm	31.84		0.60	19.10	
	Parapet wall	1	Sqm	16.52		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.80	0.45		22.47	
	Chajja - For Ventilators	0	Sqm	1.05	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.30	0.45		3.89	
	Roof Slab Projection	1	Sqm	34.24	0.30		10.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-7	Sqm	1.50		1.20	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3.00		4.00	-12.00	**190.33**
9	**Painting**							
	Internal Painting							**184.6**
	External Painting							**190.33**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
10	**Flooring**	1	Sqm	10.00	5.00		50.00	**50.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	7	Sqm	1.50		1.20	12.60	
	Ventilators	0	Sqm	0.75		1.00	0.00	**12.60**
12	**Rolling Shutter**	1	Sqm	3.00		4.00	12.00	**12.00**
13	**Water proofing at top of roof**	1	Sqm	11.06	6.06		67.02	**67.02**
14	**Skirting**	1	Sqm	30.00		0.15	4.50	**4.50**
15	**Boulders for Floor area**	1	Sqm	10.46	5.46	0.30	17.13	**23.78**
	F1	8.00	Sqm	1.9	1.90	0.23	6.64	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- DIESEL STORE ROOM- IPS A2

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	Excavation				
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	21.00	360.7	7574.7
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.0
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	12.00	116.50	1398.0
	BSR-BCD-20-Item 2.26; Pg-96				
4	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.00	270.3	2433
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	6.00	4952.60	29715.6
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	14.00	5704.70	79865.8
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500	137000.0
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.00	203.00	1624
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	23.00	412.00	9476
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	48.00	362.90	17419
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	31.00	470.60	14589
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	16.00	5840.00	93440.0
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	168.00	157.40	26443.2
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	168.00	97.20	16329.6
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	20.00	456.50	9130.0
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.0
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	6.00	1106.50	6639.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	31.00	2553.30	79152.3
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	11.00	191.14	2102.5
	BSR - RCD-18- Item- M-148, P-35				
	Total				**572277.54**

Diesel Store Room:

	Nos	L	B	H
Inner dimension		5.00	4.00	3.50
Outer dimension		5.46	4.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.70	1.70	0.30
Total no of Columns	4			
C1	4	0.30	0.30	6.50
Plinth beam		19.84	0.30	0.40
Local lintel beam		7.70	0.23	0.20
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	0	1.20		2.10
Windows size	3	1.50		1.20
Ventilators size	0	0.75		1.00
Rolling Shutter	1	2.00		3.00
Roof beam		19.84	0.30	0.40
Roof slab		6.06	5.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		111.600		
Existing GL		106.000		
Finished GL		107.500		
Plinth level		108.100		
Top of Footing		104.300		
Footing Level		103.900		

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.50	2.50	0.83	20.75	**20.75**
2	**PCC**							
	F1	4	Cum	1.90	1.90	0.10	1.44	
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth protection	1	Cum	19.84	1.00	0.05	0.99	**5.43**
3	**Back Filling**							
	Earth work qty		Cum				11.85	
	Deduction C1	-4	Cum	0.30	0.30	0.83	-0.30	**11.55**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.70	1.70	0.30	3.47	
	Columns C1	4	Cum	0.30	0.30	6.50	2.34	**5.81**
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth Beam	1	Cum	19.84	0.30	0.40	2.38	
	Lintel Beam	3	Cum	7.70	0.23	0.20	1.06	
	Roof Beam	1	Cum	19.84	0.30	0.40	2.38	
	Chajja - For Doors	0	Cum	1.50	0.50	0.125	0.00	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.30	0.50	0.125	0.14	
	Ramp/Steps	1	Cum	2.00	1.00	0.600	0.60	
	Roof Slab	1	Cum	6.06	5.06	0.125	3.83	**13.73**
5	**Steel**		Tonn				1.95	**1.95**

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.80		0.30	8.16	**8.16**
	Columns: C1	4	Sqm	1.20		6.50	31.2	**31.20**
	Beams: Plinth Beam	1	Sqm	19.84		1.10	21.82	
	Lintel Beam	1	Sqm	7.70		0.63	4.85	
	Roof Beam	1	Sqm	19.84		1.10	21.82	**48.50**
	Roof slab	1	Sqm	5.00	4.00		20.00	
	Suspended: Chajja - For Doors	0	Sqm	1.20	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.00	0.50		1.00	**23.25**
7	**Brick Work Wall**							
	Wall	1	Cum	19.84	0.23	3.5	15.97	
	Wall- up to plinth level	1	Cum	19.84	0.23	0.6	2.74	
	Parapet wall	1	Cum	19.84	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	1.20	0.23	2.10	0.00	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.00	0.23	3.00	-1.38	**16.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	19.84		3.50	69	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Roof (Ceiling)	1	Sqm	5.00	4.00		20.00	
	Deduction- Doors	0	Sqm	1.2		2.1	0.00	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2		3	-6.0	**78.04**
	External Plastering							
	Wall	1	Sqm	19.84		3.50	69.44	
	Wall- up to plinth level	1	Sqm	19.84		0.60	11.90	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Chajja - For Doors	0	Sqm	1.50	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.30	0.50		3.55	
	Roof Slab Projection	1	Sqm	22.24	0.30		6.67	
	Deduction- Doors	0	Sqm	1.20		2.10	0.00	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.00		3.00	-6.00	**90.06**
9	**Painting**							
	Internal Painting	-1	Sqm	2		3	-6	**78.0**
	External Painting							**90.06**
10	**Flooring**	1	Sqm	5.00	4.00		20.00	**20.00**

MEASUREMENT SHEET FOR DIESEL STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	0	Sqm	1.20		2.10	0.00	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**5.40**
12	**Rolling Shutter**	1	Sqm	2.00		3.00	6.00	**6.00**
13	**Water proofing at top of roof**	1	Sqm	6.06	5.06		30.66	**30.66**
14	**Skirting**	1	Sqm	18.00		0.15	2.70	**2.70**
15	**Boulders for Floor area**	1	Sqm	5.46	4.46	0.30	7.31	**10.63**
	F1	4	Sqm	1.9	1.90	0.23	3.32	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK-STORE ROOM- IPS A2

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	18.00	360.70	6,492.60
	BSR-BCD-20-Item 2.8.1; Pg-93. & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19,767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	10.00	116.50	1,165.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	8.00	270.30	2,162.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	5.00	4952.60	24,763.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	11.00	5704.70	62,751.70
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	1,37,000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1,421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	16.00	412.00	6,592.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	41.00	362.90	14,878.90
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	31.00	470.60	14,588.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	14.00	5840.00	81,760.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	155.00	157.40	24,397.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	155.00	97.20	15,066.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 litre per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	14.00	456.50	6,391.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	8.00	3635.80	29,086.40
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	23.00	2553.30	58,725.90
	BSR-BCD-20; Item-22.8.1; Pg-311				
13	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	2.00	802.00	1,604.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	8.00	191.14	1,529.12
	BSR - RCD-18- Item- M-148, P-35				
	Total				**510141.22**

Store Room:

	Nos	L	B	H	
Inner dimension		4.50	3.00	3.50	
Outer dimension		4.96	3.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	4	1.50	1.50	0.30	
Total no of Columns	4				
C1	4	0.30	0.30	6.50	6.48
Plinth beam		16.84	0.30	0.40	
Local lintel beam	3	6.90	0.23	0.20	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	1	1.20		2.10	
Windows size	3	1.50		1.20	
Ventilators size	0	0.75		1.00	
Rolling Shutter	0	0.00		0.00	
Roof beam		16.84	0.30	0.40	
Roof slab		5.56	4.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		111.600			
Existing GL		106.000			
Finished GL		107.500			
Plinth level		108.100			
Top of Footing		104.300			
Footing Level		103.900			

MEASUREMENT SHEET FOR STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.30	2.30	0.83	17.56	**17.56**
2	**PCC**							
	F1	4	Cum	1.70	1.70	0.10	1.16	
	Floor Slab	1	Cum	4.96	3.46	0.15	2.57	
	Plinth protection	1	Cum	16.84	1.00	0.05	0.84	**4.57**
3	**Back Filling**							
	Earth work qty		Cum				10.30	
	Deduction C1	-4	Cum	0.30	0.30	0.83	-0.30	**10.00**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.50	1.50	0.30	2.70	
	Columns C1	4	Cum	0.30	0.30	6.50	2.34	**5.04**
	Floor Slab	1	Cum	4.50	3.00	0.15	2.03	
	Plinth Beam	1	Cum	16.84	0.30	0.40	2.02	
	Lintel Beam	3	Cum	6.90	0.23	0.20	0.95	
	Roof Beam	1	Cum	16.84	0.30	0.40	2.02	
	Chajja - For Doors	1	Cum	1.50	0.50	0.125	0.09	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	0.600	0.90	
	Roof Slab	1	Cum	5.56	4.06	0.125	2.82	**11.17**
5	**Steel**		Tonn				1.62	**1.62**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.00		0.30	7.2	**7.20**
	Columns: C1	4	Sqm	1.20		6.50	31.2	**31.20**
	Beams: Plinth Beam	1	Sqm	16.84		1.10	18.52	
	Lintel Beam	1	Sqm	6.90		0.63	4.35	
	Roof Beam	1	Sqm	16.84		1.10	18.52	**41.39**
	Roof slab	1	Sqm	4.50	3.00		13.50	
	Suspended: Chajja - For Doors	1	Sqm	1.20	0.50		0.60	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**16.35**
7	**Brick Work Wall**							
	Wall	1	Cum	16.84	0.23	3.5	13.56	
	Wall- up to plinth level	1	Cum	16.84	0.23	0.6	2.32	
	Parapet wall	1	Cum	18.04	0.00	0.00	0.00	
	Deduction- Doors	-1	Cum	1.20	0.23	2.10	-0.58	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**14.06**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	16.84		3.50	59	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	4.50	3.00		13.50	
	Deduction- Doors	-1	Sqm	1.2		2.1	-2.52	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**64.52**
	External Plastering							
	Wall	1	Sqm	16.84		4.10	69.04	
	Wall- up to plinth level	1	Sqm	16.84		0.60	10.10	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Chajja - For Doors	1	Sqm	1.50	0.50		3.15	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	19.24	0.30		5.77	
	Deduction- Doors	-1	Sqm	1.20		2.10	-2.52	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**90.05**
9	**Painting**							
	Internal Painting	0	Sqm	0		0	0	**64.5**
	External Painting							**90.05**
10	**Flooring**	1	Sqm	4.50	3.00		13.50	**13.50**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	1	Sqm	1.20		2.10	2.52	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**7.92**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	5.56	4.06		22.57	**22.57**
14	**Skirting**	1	Sqm	15.00		0.15	2.25	**2.25**
15	**Boulders for Floor area**	1	Sqm	4.96	3.46	0.30	5.15	**7.81**
	F1	4	Sqm	1.7	1.70	0.23	2.66	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK-METERING ROOM- IPS A2

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	74.00	360.70	26691.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	6.00	3953.40	23720.40
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	64.00	116.50	7456.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	10.00	270.30	2703.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	8.00	4952.60	39620.80
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.00	5704.70	114094.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.00	203.00	2233.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.00	412.20	16900.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and cantilever.	Sqm	73.00	362.90	26491.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	46.00	470.60	21647.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	23.00	5840.00	134320.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	244.00	157.40	38405.60
	BSR-BCD-18;Item-13.11.1; Pg-167				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	244.00	97.20	23716.80
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm	24.00	534.60	12830.40
	BSR-BCD-20; Item-11.9.1; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	9.00	3635.80	32722.20
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make. Made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	1106.50	8852.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	36.00	2553.30	91918.80
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	13.00	191.14	2484.82
	BSR - RCD-18- Item- M-148, P-35			**Total**	**834715.12**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	6	Cum	2.30	2.30	2.33	73.95	**73.95**
2	**PCC**							
	F1	6	Cum	1.70	1.70	0.10	1.73	
	Floor Slab	1	Cum	6.46	4.46	0.10	2.88	
	Plinth protection	1	Cum	21.84	1.00	0.05	1.09	**5.70**
3	**Back Filling**							
	Earth work qty		Cum				64.20	
	Deduction C1	-6	Cum	0.30	0.30	1.00	-0.54	**63.66**
4	**RCC M25**							
	Column foundation F1	6	Cum	1.50	1.50	0.30	4.05	
	Columns C1	6	Cum	0.30	0.30	6.45	3.48	**7.53**
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth Beam	1	Cum	28.30	0.30	0.40	3.40	
	Lintel Beam	1	Cum	11.80	0.23	0.20	0.54	
	Roof Beam	1	Cum	28.30	0.30	0.45	3.82	
	Chajja - For Doors	0	Cum	0.00	0.50	0.125	0.00	
	Chajja - For Windows	5	Cum	1.50	0.50	0.125	0.47	
	Chajja - For Ventilators	0	Cum	0.70	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.50	0.50	0.125	0.16	
	Ramp/Steps	1	Cum	2.00	2.50	1.200	3.00	
	Roof Slab	1	Cum	7.06	5.06	0.125	4.47	**20.18**
5	**Steel**		MT				2.77	**2.77**
6	**Formwork**							
	Foundation: Column foundation F1	6	Sqm	6.00		0.30	10.8	**10.80**
	Columns: C1	6	Sqm	1.20		6.45	46.44	**46.44**
	Beams: Plinth Beam	1	Sqm	28.30		1.10	31.13	
	Lintel Beam	1	Sqm	11.80		0.63	7.43	
	Roof Beam	1	Sqm	28.30		1.20	33.96	**72.52**
	Roof slab	1	Sqm	7.06	5.06		35.72	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.50	0.50		3.75	
	Chajja - For Ventilators	0	Sqm	0.70	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.50	0.50		1.25	**40.72**
7	**Brick Work Wall**							
	Wall	1	Cum	28.30	0.23	3.50	22.78	
	Wall- up to plinth level	1	Cum	28.30	0.23	0.60	3.91	
	Parapet wall	1	Cum	23.04	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-5	Cum	1.50	0.23	1.20	-2.07	
	Deduction- Ventilator	0	Cum	0.70	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.50	0.23	3.00	-1.73	**22.89**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	28.30		3.50	99	
	Parapet wall	1	Sqm	23.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	7.06	5.06		35.72	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-5	Sqm	1.5		1.2	-9.00	
	Deduction- Ventilator	0	Sqm	0.7		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.5		3	-7.5	**118.27**
	External Plastering							
	Wall	1	Sqm	28.30		3.50	99.05	
	Wall- up to plinth level	1	Sqm	28.30		0.60	16.98	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
	Parapet wall	1	Sqm	23.04		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.50	0.50		15.75	
	Chajja - For Ventilators	0	Sqm	0.70	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.50	0.50		3.65	
	Roof Slab Projection	1	Sqm	24.24	0.30		7.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-5	Sqm	1.50		1.20	-9.00	
	Deduction- Ventilator	0	Sqm	0.70		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.50		3.00	-7.50	**126.20**
9	**Painting**							
	Internal Painting							**118.3**
	External Painting							**126.20**
10	**Flooring**	1	Sqm	6.00	4.00		24.00	**24.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	5	Sqm	1.50		1.20	9.00	
	Ventilators	0	Sqm	0.70		0.90	0.00	**9.00**
12	**Rolling Shutter**	1	Sqm	2.50		3.00	7.50	**7.50**
13	**Water proofing at top of roof**	1	Sqm	7.06	5.06		35.72	**35.72**
14	**Skirting**	1	Sqm	20.00		0.15	3.00	**3.00**
15	**Boulders for Floor area**	1	Sqm	6.46	4.46	0.30	8.64	**12.63**

SEWERAGE SYSTEM FOR GAYA EASTER PART
COST ESTIMATE-CIVIL WORK- INTERNAL ROAD IPS A2

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	86.00	637.00	54782.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	39.00	888.00	34632.00
	SOR-RCD-18; Item-4.12; Pg.-76				
3	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	259.00	30.30	7848.00
	BSR-RCD-18-Item 5.1, Pg-84				
4	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	259.00	11.10	2875.00
	BSR-RCD-18-Item 5.2, Pg-84				
5	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	13.00	5406.00	70278.00
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying Tack Coat with bitumen emulsion grade 60/70 for BUSG @ 5Kg/10Sqm. area using emulsion pressure distributor on the prepared bituminus/granular surface cleaned with mechanical broom and as per eelevant clauses MOSRTH specification clause No. 503 complete in all respects.	Sqm	259.00	31.05	8042.00
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects. Note: *1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. for grading (10mm nominal size)	Cum	6.00	7142.00	42852.00
	BSR-RCD-2018-Item-5.7 P-84				
				Total	**221309.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART					
COST ESTIMATE- CIVIL WORK-COMPOUND WALL- IPS A2					
Sr. No.	**Description**	**Unit**	**Qty**	**Rate in Rs.**	**Amount in Rs.**
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	cum	302.00	360.70	108931.40
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	cum	15.00	3953.40	59301.00
3	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	cum	62.00	5840.00	362080.00
	Superstructure above plinth level up to floor V				
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarse sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	Sq m	641.00	146.00	93586.00
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Sq m	53.00	270.30	14325.90
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	cum	248.00	116.50	28892.00
	BSR-BCD-20-Item 2.26; Pg-96				
7	RCC: Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, required grade of reinforced cement concrete:				
	RCC Grade M -20 Below Plinth	cum	31.00	4689.20	145365.20
	RCC Grade M -20 Above Plinth	cum	17.00	5194.00	88298.00
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sq m	83.00	203.00	16849.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sq m	66.00	362.90	23951.40
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sq m	151.00	470.60	71060.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	4.00	68500.00	274000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
10	Painting: White washing with lime to give an ever shade: New work (three or more coats): BSR-BCD-20; Item-13.70.1; Pg-206	cum	641.00	17.80	11409.80
				Cost of Compound Wall (v	1298050.30
				Boundary leng	158.00
				Cost of 1 m Compound Wall	8215.51
11	**Gates:** Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.				
	MJP 2018-19 Section H Item No 3 Page no 58	No.	1.00	25303.00	25303.00
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.				
	MJP 2018-19 Section H Item No 4 Page no 58	No.	1.00	13651.00	13651.00
				Cost of Compound Wall	**1323353.30**

A

Boundary Wall length	**158**	m	L=	25	12
Column spacing	3	m c/c	W=	30	12
No. of columns total	52.0	Nos.			
No. of Expansion joint	3.0	Nos.			
Total No. of columns	55.0	Nos.			
Column ht	2.0	m	Pond depth	1.5	
Col W	0.25	m			
Col D	0.25	m			
Beam W	0.23	m			
Beam D	0.23	m			
Column footing L	1.5	m			
Column footing W	1.5	m			
Footing thk	0.25	m			
Depth of foundation	1	m			
PCC proj & thk	0.075	m			
Working space	0.3	m			

S.No	Description					Quantity	Unit
		No.s	L	B	D		
1	Earth work excavation of foundation for structures as per drawing and technical specification including setting out, construction of shoring and bracing,removal of stumps and other deleterious mattar, dressing of sides and bottom and backfilling with approved material etc. and as per relevent clause of section 300 and 2100 - Ordinary Soil (up to 1.5m)						
	Footing	55.00	2.25	2.25	1.08	299.32	m^3
	Walls	1.00	34.25	0.38	0.18	2.28	m^3
	Total					**301.60**	m^3
2	Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering - In plinth and foundation - M - 10 Grade.						
	Footing	55.00	1.65	1.65	0.075	11.23	m3
	Walls	1.00	144.25	0.38	0.075	4.11	m^3
	Deduction for Gate	-1.00	2.50	0.38	0.075	-0.07	m3
	Total					**15.34**	m^3
3	Brick work with well burnt chimney bricks having crushing strength not less than 25kg/cm2 and water absorption not more than 20% above plinth level including cost of form work						
	Wall	1.00	144.25	0.23	1.870	**62.04**	m^3
	Deduction for Gate	-1.00	2.50	0.23	1.870	**-1.08**	m3
	Total					**60.97**	
4	12 mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete						
	In cement mortar 1:6						
	Two Side Wall	2.00	158.00		2.00	632.00	
	Column sides	55.00	0.080		2.00	8.80	

S.No	Description					Quantity	Unit
		No.s	L	B	D		
	Deduction for Gate	-1.00	2.500		2.00	-5.00	
	Total					**640.80**	m^2

S.No	Description					Quantity	Unit
		No.s	**L**	**B**	**D**		
5	Disposal						
	Footing	55.00	1.50	1.50	0.250	30.94	
	Column	55.00	0.25	0.25	0.750	2.58	
	Plinth beam	1.00	144.25	0.23	0.130	4.31	m^3
	All PCC					15.34	
	Total					**53.17**	m^3
6	Back filling: Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20 cm in depth including consolidation of each layer by ramming watering, lead up to 50 m and lift up to 1.5 m in all kinds of soils						
		Total				**248.43**	m^3
7	**RCC**						
	Footing	55.00	1.50	1.50	0.250	30.94	
	Column	55.00	0.25	0.25	2.750	9.45	
	Plinth beam	1.00	144.25	0.23	0.230	7.63	
	Total					**48.02**	m^3
8	**Shuttering**						
	Footing	55.00	6.00		0.250	82.50	
	Column	55.00	1.00		2.750	151.25	
	Plinth beam	1.00	144.25		0.460	66.36	
	Total					**300.11**	m^2
9	**Reinforcement**					**3.84**	MT
10	Providing and applying one coat of approved colour and shade to new surface including scaffolding brushing and brooming down including two coats of whitewash as base cost etc., complete					**640.80**	m^3
11	Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.	No.				1	
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.				1	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- TOILET BLOCK - IPS A2

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	24.00	360.70	8656.80
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	2.00	3953.40	7906.80
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	26.00	116.50	3029.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1.00	270.30	270.30
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	4.00	4952.60	19810.40
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	12.00	5704.70	68456.40
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**				
	BSR-BCD-20; Item-5.22.7, Pg-106	Tonn	2.00	68,500.0	137000.00
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	203.00	1218.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	11.00	412.20	4534.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	32.00	362.90	11612.80
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	29.00	470.60	13647.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	5.00	5840.00	29200.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	62.00	157.40	9758.80
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade				
	BSR - BCD-20- Item- 13.77.2, P-206	Sqm	41.00	97.20	3985.20
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm		534.60	0.00
	BSR-BCD-20; Item-11.9.1; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.40	18177.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.				
	BSR-BCD-20; Item-22.8.1; Pg-311	Sqm	18.00	809.00	14562.00
13	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacture) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	Sqm	21.00	797.50	16747.50
	BSR-BCD-20; Item-11.36; Pg-179				
14	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	Sqm	6.00	712.20	4273.20
	BSR-BCD-20; Item-11.37; Pg-179				
15	Providing and fixing vitreous china dual purpose closet suitable for use as squatting pan or European type water closet (Anglo Indian W.C pan) with seat lid with C.P. brass hinges and rubber buffers, 10 litre low level flushing cistern with fitting and brackets, 40mm flush bend 20mm over flow pipe with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required :				
	White vitreous china dual purpose WC pan with white solid plastic seat and lid with white vitreous china flushing cistern and C.P. flush bend.	each	1.00	8734.10	8734.10
	BSR-BCD-20; Item-17.68.1; Pg-260				
16	**Filling up to floor finish level with Random rubble masonry.**	Cum	4.00	191.14	764.56
	BSR - RCD-18- Item- M-148, P-35				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
17	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.				
	External work				
	15mm Dia	m	10.00	187.90	1879.00
	25 mm	m	10.00	303.20	3032.00
	BSR-BCD-20; Item- 18.12.1 & 18.12.3, P-267				
18	Providing and fixing brass stop cock of approved quality :				
	External work				
	15mm Dia	no	1.00	302.50	302.50
	20 mm	no	1.00	326.40	326.40
	BSR-BCD-20; Item- 18.16.1 & 18.16.2, P-267				
19	Providing, lowering, laying in trenches, aligning, fixing in position and jointing ISI marked uPVC pipe fittings/ accessories of class III (6 Kg/sqcm) suitable for potable water with rubber rings joints in uPVC pipe line at all levels/ depth including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	110 mm dia pipe	RM	25.00	273.00	6825.00
	RUIDP-17- Item- 19.1.2				
20	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931				
	15 mm nominal bore	each	3.00	552.30	1656.90
	SOR - BCD-16- Item- 18.51.1 P-228				
21	Providing and fixing square-mouth S.W. gully trap grade 'A'' complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	100mmx100mm size P type				
	With Sewer bricks conforming to IS : 4885	each	1.00	1831.90	1831.90
	BSR - BCD-20- Item- 19.4.1.2 P-292				
22	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand : 4 graded stone aggregate 20 mm nominal size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design :				
	Inside dimensions 455x610 mm and 45 cm deep for single pipe line :				
	with bricks	each	3.00	4228.40	12685.20
	BSR - BCD-20- Item- 19.30.1.1 P-299				
23	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require :				
	White Vitreous China Wash basin size 630x450 mm with a pair of 15 mm C.P. brass pillar taps.	each	1.00	2538.80	2538.80
	BSR - BCD-20- Item- 17.7.1, P-248				
					413422.16
				Total	**413422.16**

TOILET BLOCK :

	Nos	L	B	H
Inner dimension		2.90	2.00	3.00
Outer dimension		3.46	2.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.20	1.20	0.30
Total no of Columns	4			
C1	4	0.30	0.30	6.13
Plinth beam		14.30	0.30	0.40
Lintel beam		6.30	0.23	0.13
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	2	1.00		2.10
Windows size	0	0.00		0.00
Ventilators size	2	0.60		0.45
Rolling Shutter	0	0.00		0.00
Roof beam		11.84	0.30	0.40
Roof slab		4.06	3.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		111.100		
Existing GL		106.000		
Finished GL		107.500		
Plinth level		108.100		
Top of Footing		104.300		
Footing Level		104.000		

MEASUREMENT SHEET FOR TOILET BLOCK

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1- up to 1.5 m	4	Cum	2.00	2.00	1.50	24.00	**27.32**
	From 1.5 m to 3.0 m	0		2.00	2.00	0.83	3.32	
		0	Cum	0.00	0.00	0.00	0.00	
1A	Excavation in soft soil							
a)	up to 1.5 m		Cum			24.00		
b)	From 1.5 m to 3.0 m		Cum			3.32		
1B	Excavation in soft rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1C	Excavation in hard rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
	Total		Cum					**27.32**
2	**PCC**							
	F1	4	Cum	1.40	1.40	0.10	0.78	
	Floor Slab	1	Cum	3.46	2.46	0.10	0.85	
	Plinth protection	1	Cum	11.84	1.00	0.05	0.59	**2.22**
3	**Back Filling**							
	Earth work qty		Cum				23.37	
	Deduction C1	-4	Cum	0.30	0.30	1.00	-0.36	**26.18**
3a	**Disposal**		Cum				1.14	**1.14**

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.20	1.20	0.30	1.73	
	Columns C1	4	Cum	0.30	0.30	6.13	2.21	**3.93**
		0		1.50	1.00	0.15	0.00	
		0		1.00	1.00	0.15	0.00	
	Floor Slab	1	Cum	3.46	2.46	0.15	1.28	
	Plinth Beam	1	Cum	14.30	0.30	0.40	1.72	
	Lintel Beam	1	Cum	6.30	0.23	0.13	0.18	
	Roof Beam	1	Cum	14.30	0.30	0.40	1.72	
	Chajja - For Doors	2	Cum	1.30	0.50	0.125	0.16	
	Chajja - For Windows	0	Cum	0.30	0.50	0.125	0.00	
	Chajja - For Ventilators	2	Cum	0.90	0.50	0.125	0.11	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	1.200	1.80	
	Roof Slab	1	Cum	4.06	3.06	0.125	1.55	**12.45**
							0.94	
5	**Steel**		Tonn				1.64	**1.64**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	4.80		0.30	5.76	**5.76**
	Columns: C1	4	Sqm	1.20		6.13	29.4	**29.40**
		0		1.50		1.00	0	
		0		1.00		1.00	0	
	Beams: Plinth Beam	1	Sqm	14.30		1.10	15.73	
	Lintel Beam	1	Sqm	6.30		0.48	3.02	
	Roof Beam	1	Sqm	11.84		1.10	13.02	**31.77**
	Roof slab	1	Sqm	3.46	2.46		8.51	
	Suspended: Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**10.71**
7	**Brick Work Wall**							
	Wall	1	Cum	6.30	0.23	3.0	4.35	
	Internal wall	1	Cum	2.00	0.10	3.0	0.60	
	Wall- up to plinth level	1	Cum	8.90	0.23	0.6	1.23	
	Parapet wall	1	Cum	13.04	0.00	0.00	0.00	
	Deduction- Doors	-2	Cum	1.00	0.23	2.10	-0.97	
	Deduction- Windows	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Ventilator	-2	Cum	0.60	0.23	0.45	-0.12	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**5.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	6.30		3.00	19	
	Internal wall	2	Sqm	2.00		3.00	12	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
		0		1.50		1.00	0.00	
		0		1.00		1.00	0.00	
	Roof (Ceiling)	1	Sqm	2.90	2.00		5.80	
	Deduction- Doors	-2	Sqm	1		2.1	-4.20	

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
	Deduction- Windows	0	Sqm	0		0	0.00	
	Deduction- Ventilator	-2	Sqm	0.6		0.45	-0.54	
		0		2.46		3.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**31.96**
	External Plastering							
	Wall	1	Sqm	6.30		3.60	22.68	
	Wall- up to plinth level	1	Sqm	8.90		0.60	5.34	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
	Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	14.24	0.30		4.27	
	Deduction- Doors	-2	Sqm	1.00		2.10	-4.20	
	Deduction- Windows	0	Sqm	0.00		0.00	0.00	
	Deduction- Ventilator	-2	Sqm	0.60		0.45	-0.54	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**29.75**
9	**Painting**							
	Internal Painting	-1	Sqm	13.8		0.00	0	**11.3**
	External Painting							**29.75**
10	**Flooring**	1	Sqm	2.90	2.00		5.80	**5.80**
	dado		Sqm	13.80		1.50	20.70	
	deduct						0.00	**20.70**
11	**Openings**							
	Doors	2	Sqm	1.00		2.10	4.20	
	Windows	0	Sqm	0.00		0.00	0.00	
	Ventilators	2	Sqm	0.60		0.45	0.54	**4.74**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	3.96	3.06		12.12	**17.92**
	Water proofing below the flooring	1	Sqm	2.90	2.00		5.80	
14	**Skirting**	0	Sqm	9.80		0.15	0.00	**0.00**
15	**Boulders for Floor area**	1	Cum	2.90	2.00	0.60	3.48	**3.93**
	F1	1	Cum	1.40	1.40	0.23	0.45	

Rate Analysis for Soil disposal Soil density=1.

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Stone Boulder tone Boulder densi

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Sand Sand density=1

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1

2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for cement Cement density=

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for Aggregates Aggregates density

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

ity=1.84 T/m

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1 15

210.61

.84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8

7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

γ=1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Summary -Civil Work- Pumping Station IPS A3

Cost in Lakhs

Sr. No.	Name of Sub-work	Pumping Station
A	**Civil Works**	
1	Screen Chamber	4.74
2	Pump House (Wet well and Superstructure)	56.96
3	Manifold Chamber	3.54
4	Valve Chamber	1.56
5	Flowmeter Chamber	1.55
6	D.G. Room	0.00
7	Diesel Storage Room	5.71
8	Store Room	5.18
9	Metering Room	8.44
10	Internal Roads (3m wide)	1.86
11	Compound Wall	10.87
12	Toilet Block	3.62
13	Material Carrying Charges	1.38
		105.41

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

Sr. No.	Pumping Stations	Qty. from Estimate Sheet														RCC, Flooring and Sand Filling							Bricks				Plaster				Total Quantity in MT			Carriage Charges (In Lakh Rs.)				
		Concrete (C:S:A)				Bricks (m^3)	Plaster (Sq m)	Flooring (52 mm thk) M15		Sand Filling	Stone Boulders	Aggregate for Internal Road Works (m3)				Cement		Sand		Aggregate		Random Rubble Soling	Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand		Sand	Aggregate	Bricks	Sand (9.40 Rs./t.km)	Aggregate (9.40 Rs./t.km)	Bricks (9.40 Rs./t.km)	Rubble soling (9.40 Rs./t.km)	Total (Rs. In Lakhs)
		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (Sq m)	Volume (cum)	Volume (cum)	Volume (cum)	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ cum	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum	Volume (cum)	Wt (MT) 1870kg/ cum	Wt (MT) 1870kg/ cum	Wt (MT) 1920kg/ cum	MT	MT	MT	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum								
1	**IPS A3**																																	94.0	94.0	94.0	94.0	
	Screen Chamber	6.00			28.00	-	-		-		3.00				-	7.60	10.94	8.80	16.19	17.60	32.91	5.61	-	-	-	-	-	-	-	-	16.19	32.91	-	0.02	0.03	-	0.01	0.05
	Wetwell & Superstructure	23.00			137.00	22.00	218.00	31.00	1.24		11.85				-	36.73	52.89	41.50	76.36	83.01	155.23	22.16	42.24	0.92	3.67	37.65	0.65	0.94	1.96	3.61	83.64	155.23	42.24	0.08	0.15	0.04	0.02	0.27
	Manifold Chamber	3.00			-	-	-		-		7.00				-	0.30	0.43	0.90	1.66	1.80	3.37	13.09	-	-	-	-	-	-	-	-	1.66	3.37	-	-	-	-	0.01	-
	Valve Chamber	1.00			8.00	-	-		-		2.00				-	2.10	3.02	2.30	4.23	4.60	8.60	3.74	-	-	-	-	-	-	-	-	4.23	8.60	-	-	0.01	-	0.01	0.01
	Flow Meter Chamber	1.00			8.00	-	-		-		2.00				-	2.10	3.02	2.30	4.23	4.60	8.60	3.74	-	-	-	-	-	-	-	-	4.23	8.60	-	-	0.01	-	0.01	0.01
	D.G. Room	13.00			44.00	27.00	375.00	50.00	2.00	24.00	24.00				-	12.59	18.13	39.47	72.62	30.94	57.86	44.88	51.84	1.13	4.51	46.21	1.13	1.63	3.38	6.22	83.35	57.86	51.84	0.08	0.05	0.05	0.04	0.18
	Diesel Storage Room	5.00			19.00	16.00	168.00	20.00	0.80	11.00	11.00				-	5.36	7.72	17.48	32.16	12.96	24.24	20.57	30.72	0.67	2.67	27.38	0.50	0.72	1.51	2.78	37.61	24.24	30.72	0.04	0.02	0.03	0.02	0.09
	Store Room	4.00			16.00	14.00	155.00	14.00	0.56	8.00	8.00				-	4.48	6.45	13.36	24.58	10.72	20.05	14.96	26.88	0.58	2.34	23.96	0.47	0.68	1.40	2.58	29.50	20.05	26.88	0.03	0.02	0.03	0.01	0.08
	Metering Room	8.00			27.00	23.00	245.00	24.00	0.82	13.00	13.00				-	7.67	11.04	22.38	41.18	18.77	35.10	24.31	44.16	0.96	3.84	39.36	0.74	1.07	2.21	4.07	49.09	35.10	44.16	0.05	0.03	0.04	0.02	0.12
	Internal Roads											72.00	33.00	11.00	216.92							-									-	216.92	-	-	0.20	-	-	0.20
	Compound Wall	13.00		39.00		51.00	527.00		-						-	8.39	12.08	14.54	26.75	29.07	54.36	-	97.92	2.13	8.51	87.28	1.58	2.28	4.74	8.72	43.98	54.36	97.92	0.04	0.05	0.09	-	0.18
	Toilet Block	2.00			18.91	5.09	61.71	36.00	1.44	4.00					-	5.13	7.39	9.74	17.92	11.48	21.47	-	9.76	0.21	0.85	8.70	0.19	0.27	0.56	1.03	19.80	21.47	9.76	0.02	0.02	0.01	-	0.05
	Total	79.00	-	39.00	305.91	158.09	1,749.71	175.00	6.86	60.00		72.00	33.00	11.00	216.92	92.45	133.13	172.77	317.90	225.55	421.78	788.73	303.53	6.60	26.39	270.54	5.25	7.56	15.75	28.98	373.27	638.70	303.53	0.35	0.60	0.30	0.13	1.38

SEWERAGE SYSTEM FOR EASTERN PART
COST ESTIMATE-CIVIL WORK- SCREEN CHAMBER IPS A3

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	up to 1.5 m	Cum	26.00	360.70	9378.00
b)	From 1.5 m to 3.0 m	Cum	26.00	407.00	10582.00
c)	From 3.0 m to 4.5 m	Cum	26.00	453.38	11788.00
d)	From 4.5 m to 6 m	Cum	11.00	499.76	5497.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock (Blasting Prohibited)				
a)	From 4.5 m to 6 m	Cum	1.00	900.90	900.90
	BSR-BCD-20-Item 2.9.1; Pg-93 & 2.27.2; Pg.-96				
	Hard rock (blasting prohibited)				
a)	From 4.5 m to 6 m	Cum	1.00	1500.50	1500.50
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93 & 2.27.2 pg 96				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	37.00	116.50	4311.00
	BSR-BCD-20-Item 2.26; Pg-96				
4	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	53.00	270.30	14326.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520.00
	BSR-BCD-20-Item 2.25; Pg-96				
6	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	6.00	3953.40	23720.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
7	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	28.00	**5270.50**	147574.00
	For sulphate resisting cement	MT	10.13	800.00	8107.87
	RUIDP 2017, 3239 & 3237				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
8	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT - FE-500**	MT	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.00	203.00	1015.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	147.00	356.40	52391.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	4.00	412.20	1649.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal.. size) complete as per design	each	22.00	290.50	6391.00
	BSR-BCD-20; Item-19.16; Pg-296				
11	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
12	**Railing:** Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m center to center, complete as per approved drawings including all materi**al, labour. at walkway: Around platform**				
	RUIDP-17, Item 10.20,Pg-34	RM	8.00	2040.00	16320.00
13	**230mm thick Random rubble soling below PCC.**	Cum	3.00	191.14	573.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**473597.27**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET-CIVIL WORK- SCREEN CHAMBER IPS A3

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Excavation in soft/ ordinary soil					
a)	up to 1.5 m		4.75	3.62	1.50	25.79
b)	From 1.5 m to 3.0 m		4.75	3.62	1.50	25.79
c)	From 3.0 m to 4.5 m		4.75	3.62	1.50	25.79
d)	From 4.5 m to 6.0 m		4.75	3.62	0.72	12.40
e)	From 6.0 m to 7.5 m		4.75	3.62	0.00	0.00
f)	From 7.5 m to 9.0 m		4.75	3.62	0.00	0.00
g)	From 9.0 m to 10.5 m		4.75	3.62		0.00
						89.78
2	Refilling					36.77
3	Disposal		4.40	2.32	4.54	46.35
	PCC					1.58
	Base slab					5.07
	Total					**53.01**
4	PCC: M15		4.90	3.22	0.10	1.58
	Approach, Screen and railing- Haunch		7.64	0.75	0.75	4.30
	Total					**5.88**
5	RCC Grade M -30					
	Footing (Base slab)		4.80	3.02	0.35	5.07
	Benching	2.00	1.00	0.71	0.90	0.64
	Outer walls		11.12	0.30	4.84	16.15
	Inner wall		1.72	0.30	3.74	1.93
	Partition wall		2.70	0.30	4.84	3.92
	RCC Slab		0.50	1.72	0.15	0.13
	Slab for bar screen		1.20	1.72	0.15	0.31
	Grand Total					**28.15**
	Sulphate resisting cement					**10.13**
6	**Shuttering**					
	Footing (Base slab)		15.64		0.35	5.47
	Ramp	0.00	0.75		1.00	0.00
	Outer walls	2	11.12		4.84	107.66
	Inner wall	2	1.72		3.74	12.87
	Partition wall	2	2.70		4.84	26.14
	RCC Slab		0.80	1.72		1.38
	Slab for bar screen		1.80	1.72		3.10
	Grand Total					**156.62**
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					5.07
	Walls (any thickness) including attached plasters. Butteresses, plinth and string courses etc.					146.67
	Suspended floors, roofs, landings, balconies and access platform.					4.48
7	Reinforcement- Fe 500 TMT					**2.3**
8	Painting					
	Side wall	2.00	4.10	0.30		2.46
	Front wall	1.00	2.32	0.30		0.70

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
9	MS/CI foot rests	22				**22.00**
10	Providing and fixing G.I. pipe railing					**8.24**
11	Dewatering					**200.00**
12	Rubble Soling	1	4.50	2.52	0.23	**2.6082**

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Qty.
Nos.
RM
KL
Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- WETWELL IPS A3

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	100 Sqm	1200.00	654.70	7856.00
	BSR-BCD-20- Item 2.32 pg 96				
2	**Earth work in excavation in foundation trenches or drains** (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	up to 1.5 m	Cum	113.00	360.70	40759.00
b)	From 1.5 m to 3.0 m	Cum	113.00	407.00	45991.00
c)	From 3.0 m to 4.5 m	Cum	113.00	453.30	51223.00
d)	From 4.5 m to 6.0 m	Cum	102.00	499.60	50959.00
e)	From 6.0 m to 7.5 m	Cum	102.00	545.90	55682.00
f)	From 7.5 m to 9.0 m	Cum	49.00	592.20	29018.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock				
a)	From 4.5 m to 6.0 m	Cum	6.00	901.00	5406.00
b)	From 6.0 m to 7.5 m	Cum	6.00	984.10	5905.00
c)	From 7.5 m to 9.0 m	Cum	3.00	1067.20	3202.00
	Hard Rock (Blasting prohibited)				
a)	From 4.5 m to 6.0 m	Cum	6.00	1500.50	9003.00
b)	From 6.0 m to 7.5 m	Cum	6.00	1583.60	9502.00
c)	From 7.5 m to 9.0 m	Cum	3.00	1666.70	5000.00
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	229.00	116.50	26679.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	391.00	270.30	105687.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000.00
	BSR-BCD-20-Item 2.25; Pg-96				
7	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	23.00	3953.50	90931.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
8.1	RCC Grade M-30	Cum	111.00	**5270.50**	585026.00
	For sulphate resisting cement	MT	40.00	800.00	32000.00
	RUIDP 2017, 3239 & 3237				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
	All work above Plinth level up to floor V Level.				
8.2	RCC Grade M -25	Cum	26.00	5859.00	152334.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	15.00	68500.00	1027500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	27.00	203.00	5481.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	371.00	356.40	132224.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	148.00	412.20	61006.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	94.00	362.90	34113.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	70.00	470.60	32942.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	22.00	5840.00	128480.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sq m	218.00	157.40	34313.00
	BSR-BCD-18; Item-13.11.1, Pg-167				
13	**Painting:** Distempering with **oil bound washable** distemper of approved brand and manufacture to give an even shade	Sq m	348.00	97.20	33826.00
	New work (two or more coats) over & including priming coat with cement primer.				
	BSR - BCD-20- Item- 13.77.2, P-206				
14	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal.. size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal.. size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	31.00	456.50	14152.00
	BSR-BCD-20; Item-11.4; Pg-174				
15	**Structural steel** work in single section fixed without connecting plate including cutting, hoisting,fixing in position and applying a priming coat of approved steel primer all complete.	M.T	1.00	65600.00	65600.00
	BSR-BCD-20; Item-10.1; Pg-168				
16	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	54.00	809.00	43686.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
17	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	Sqm	17.00	3635.80	61809.00
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m c/c, complete as per approved drawings including all material, labour: **Around Opening in the floor platform**	RM	16.00	2040.00	32640.00
	RUIDP-2017, Item-10.20, Pg.-34				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
19	Supplying and fixing- Rolling shutters of approved make. Made of required size of M.S.Iaths inter locked together through their entirre length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	1.00	1106.50	1107.00
	80x1.25mm MS Laths with 1.25mm thick top cover				
	BSR-BCD-; Item-10.8.1; Pg-169				
20	Providing and fixing in position **Lightening arrester** set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthling pit at 3.5 meter depth, G.I. strip of size 25mmx5mm thick from earthing plate to top of Over head tank, G.I. Final made of GI bar 25mm dia and 2m long fixed on top of OH tank and connected to GI strip. The earthling set shall comply of IS:3043 complete in all respect as per specification and the direction of the Engineer	No.	1.00	12500.00	12500.00
	RUIDP-2017, Item-19.80, Pg.-145				
21	Providing and fixing **M.S. chequerred plate** flooring of following thickness supported on M.S. angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plates to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge. (6 mm Thick)	Sqm	7.00	3226.00	22582.00
	(Item No.6, (a) Section J, MJP Page 366 DSR 2017-18)				
22	230 thick rubble soling: Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	Cum	12.00	1235.90	14831.00
	BSR-BCD-20; Item-24.5, Pg-320				
23	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per Litre	2000.00	8.80	**17600.00**
	BSR-BCD-20; Item-18.48, Pg-274				
	Providing and fixing 2HP centrifugal pump (6-20m head)	No	1.00	10000.00	**10000.00**
	Market Rate				
24	**Overflow Arrangement**				
i	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
a)	up to 1.5 m	Cum	413.00	360.70	148969.00
b)	From 1.5 m to 3.0 m	Cum	184.00	407.00	74888.00
	BSR-BCD-18-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	505.00	116.50	58833.00
	BSR-BCD-20-Item 2.26; Pg-96				
iii	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026.00
	BSR-BCD-20-Item 2.25; Pg-96				
iv	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	51.00	270.30	13785.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
v	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended up to date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	600 mm dia.	m	170.00	10402.40	1768408.00
	BSR-BCD-18-Item 18.72.24; Pg-231				
vi	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification.	cum	41.00	217.00	8897.00
	BSR - RCD-18- Item- 12.3, P-222				
vii	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal.. size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal.. size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer in-charge :				
	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal.. size) including centring, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS: 4885	Each	1.00	6970.60	6970.60
	BSR - BCD-20- Item- 19.9.1.2, P-295				
25	**230mm thick Random rubble soling below PCC.**	Cum	11.85	191.14	2265.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**5695597.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- WETWELL IPS A3

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Site Clearing		40.00	30.00		Sqm
2	Excavation in soft or ordinary soil					
	Pump House					
a)	up to 1.5 m			9.80	1.50	Cum
b)	From 1.5 m to 3.0 m			9.80	1.50	Cum
c)	From 3.0 m to 4.5 m			9.80	1.50	Cum
d)	From 4.5 m to 6.0 m			9.80	1.50	Cum
e)	From 6.0 m to 7.5 m			9.80	1.50	Cum
f)	From 7.5 m to 9.0 m			9.80	0.72	Cum
g)	From 9.0 m to 10.5 m			9.80	0	Cum
h)	From 10.5 m to 12.0 m			9.80	0.00	Cum
i)	From 12.0 m to 13.5 m			9.80	0.00	Cum
j)	From 13.5 m to 15.0 m			9.80	0.00	Cum
	Total					Cum
3	**Refilling of Earth**					Cum
4	**Disposal of Earth**					
	Base Raft	1				
	Well	1		7.70	7.29	Cum
	PCC	1		7.90	0.10	Cum
	Rubble Soling	0		8.10	0.23	Cum
	Total					Cum
5	**Dewatering of water**					KL
6	PCC: Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering- M15					
	Below Base Raft			7.90	0.10	Cum
	Additional sloped portion in Base Raft					
	Total					
7	**Reinforced cement concrete**					
a	M 30: up to Plinth level					
	Base Raft			8.60	0.60	Cum
	Wall		23.09	0.35	7.89	Cum
	Floor Slab Beams- Peripheral		23.09	0.30	0.40	Cum
	Floor Slab Beams	1	12.30	0.30	0.50	Cum
	Floor Slab			7.00	0.20	Cum
	Ramp		1.50	2.50	0.60	Cum
	For platform		1.20	1.20	0.15	Cum
	Deduction for Floor Slab opening		-7.00	1.00	0.20	Cum
	Total					Cum
	Sulphate resisting cement					
b	M 25: Above Plinth level					
	Columns	8	0.30	0.40	5.78	Cum
	Corbels	8	0.65	0.65	0.45	Cum
	Lintel Beams		23.09	0.30	0.40	Cum
	Chajja		14.70	0.45	0.100	Cum
	Roof Slab Beams- Peripheral		23.09	0.30	0.50	Cum
	Roof Slab Beams- Circular inner		0.00	0.00	0.00	Cum
	Roof Slab Beams	1	29.71	0.30	0.50	Cum
	Roof Slab			8.30	0.13	Cum
	Parapet wall		0.00	0.15	0.90	Cum
	Screen Lifting Platform Slab		2.32	0.80	0.20	Cum
	Total					Cum

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
8	**Shuttering**					
a	Foundations, Footings, Bases of Columns, etc for mass concrete					
	Wall- Outer		24.19		7.89	Sqm
	Wall- Inner		21.99		7.29	Sqm
	Floor Slab Beams- Peripheral		23.09		1.10	Sqm
	Floor Slab Beams	1	12.30		1.30	Sqm
	Floor Slab			7.00		Sqm
	Ramp		5.50		0.60	Sqm
	For platform		1.20	1.20		Sqm
	For Floor Slab opening Sides		16.00		0.20	Sqm
	Deduction for Floor Slab opening		7.00	1.00		Sqm
	Total					
b	walls (any thickness), including attached pilasters, buttresses, plinth and string courses fillets etc.					
	Columns	8	1.40		5.78	Sqm
	Corbels	8	1.55		0.45	Sqm
	Lintel Beams		23.09		1.10	Sqm
	Chajja		14.70		0.55	Sqm
	Roof Slab Beams- Peripheral		23.09		1.30	Sqm
	Roof Slab Beams- Circular inner		0.00		0.00	Sqm
	Roof Slab Beams	1	29.71		1.30	Sqm
	Roof Slab			7.00		Sqm
	Roof Slab Projection		25.13	0.30		Sqm
	Parapet wall	2	25.58		0.90	Sqm
	Screen Lifting Platform Slab		2.52	1.00		Sqm
	Total					
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					Sqm
	Suspended floors, roofs, landings, balcnies and access platform.					Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.					Sqm
	Columns,Pillars, Piers, Abutments, Posts and Struts.					Sqm
9	**Type Item - Brick Work**					
	Brick wall		23.47	0.23	5.78	Cum
	Deduct opening					
	Rolling Shutter	-1	2.50	3.00	0.23	
	Windows	-7	1.50	1.20	0.23	
	Ventilator	-7	0.70	0.90	0.23	
	Deduct column	-8	0.30	5.78	0.23	
	Total					Cum
10	**Plaster work (Inner Face)**					
	Superstructure			21.99	5.78	
	less opening					Sq m
	Total					Sq m
11	**Plaster work (Outer Face)**					
	Superstructure			24.19	5.78	
	less opening					Sq m
	Total					Sq m
12	**Steel Reinforecement**					MT

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
13	**Painting:** Distempering with **oil bound was**hable distember of approved brand and manufacture to give an even shade					Sq m
14	**Cement concrete flooring**					
	Superstructure			38.48		Sq m
	deduct for opening					
	Total					Sq m
15	**Aluminium Window, door and ventilator**					
	Windows	7	1.50	1.20		Sqm
	Ventilator	7	0.70	0.90		Sqm
	Total					Sqm
16	MS/CI foot step					Nos.
17	Providing and fixing G.I. pipe railing				16.00	RM
18	Rolling Shutter	1	2.50	3.00		Sqm
19	Providing stuctural steel work in single stanchions composed of RSJ, channel, etc,					M.T
20	Providing and fixing in position copper lightening conductor					No.
21	**MS Chequerred Plate**					
	6 mm thk plate, 10 mm thk ISMC100 with epoxy painted	1	7.00	1.00		Sqm
22	Roof Water Proofing		8.30			Sqm
23	**Rubble Soling:** 230 mm thick rubble soling	1	51.53		0.23	Cum

Qty.
1200.00
113.14
113.14
113.14
113.14
113.14
54.31
0.00
0.00
0.00
0.00
620.01
228.94
34.85
339.47
4.90
11.85
391.07
5000.00
4.90
17.95
22.85
34.85
63.76
2.77
1.85
7.70
1.13
0.22
-1.40
110.88
39.92
5.54
1.52
2.77
0.66
3.46
0.00
4.46
6.76
0.00
0.37
25.54

Qty.
190.86
160.31
25.40
15.99
38.48
3.30
1.44
3.20
7.00
446.00
64.68
5.58
25.40
8.09
30.02
0.00
38.63
38.48
7.54
46.04
2.52
266.98
26.70
370.51
148.24
94.05
70.26
31.17
-1.73
-2.90
-1.01
-3.19
22.34
126.99
-24.51
102.48
139.70
-24.51
115.19
15.01

Qty.
348.36
38.48
-7.00
31.48
12.60
4.41
17.01
0.00
16.00
7.50
1.00
1.00
7.00
54.11
11.85

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- MANIFOLD CHAMBER IPS A3

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	58.00	360.70	20921.00
b)	From 1.5 m to 3.0 m	Cum	30.00	407.00	12210.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	37.00	116.50	4311.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	51.00	270.30	13785.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	3.00	3953.40	11860.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25: All works up to plinth level	Cum	21.00	4952.60	104005.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	9.00	412.20	3710.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	82.00	356.40	29225.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	9.00	362.90	3266.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal.. size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				0.00
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	6.00	17.80	107.00
11	**230mm thick Random rubble soling below PCC.**	Cum	7.00	191.14	1338.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**354291.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- MANIFOLD CHAMBER SPS A3

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.20	9.20	1.50	57.96	Cum
b)	From 1.5 m to 3.0 m		4.20	9.20	0.78	30.14	Cum
c)	From 3.0 m to 4.5 m		4.20	9.20	0.00	0.00	Cum
2	Refilling					36.83	Cum
3	Disposal		3.00	8.00	1.65	39.60	Cum
	PCC					3.10	Cum
	Base slab					8.57	Cum
	Total					**51.27**	Cum
4	PCC: M15		3.60	8.60	0.10	3.10	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		3.40	8.40	0.30	8.57	Cum
	Outer walls		21.00	0.25	1.95	10.24	Cum
	Roof slab beam	4	2.64	0.25	0.30	0.79	Cum
	Total					**20.90**	Cum
6	**Precast Cover**	24	1.59	0.30	0.08	0.86	Cum
		16	1.22	0.30	0.08	0.44	Cum
	Total					**1.3**	Cum
7	Shuttering						
	Footing (Base slab)		23.60		0.30	7.08	Sqm
	Outer walls	2	21.00		1.95	81.90	Sqm
	Roof slab beam	4	2.64		0.85	8.98	Sqm
	Total					**97.96**	Sqm
8	Reinforcement- Fe 500 TMT					**2**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	7.50	0.30		4.50	Sq m
	Total					**6.30**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Rubble solling	1	3.6	8.6	0.23	**7.1208**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- BUTTERFLY VALVE CHAMBER IPS A3

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	21.00	360.70	7575.00
b)	From 1.5 m to 3.0 m	Cum	12.00	407.00	4884.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	18.00	116.50	2097.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	14.00	270.30	3784.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -25	Cum	8.00	4952.60	39621.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	37.00	356.40	13187.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal.. size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**155777.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- BUTTERFLY VALVE CHAMBER IPS A3

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		3.70	3.70	1.50	20.54	Cum
b)	From 1.5 m to 3.0 m		3.70	3.70	0.88	12.05	Cum
c)	From 3.0 m to 4.5 m		3.70	3.70	0.00	0.00	Cum
2	Refilling					18.11	Cum
3	Disposal		2.50	2.50	1.75	10.94	Cum
	PCC					1.02	Cum
	Base slab					2.52	Cum
	Total					**14.48**	Cum
4	PCC: M15		3.20	3.20	0.10	1.02	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		2.90	2.90	0.30	2.52	Cum
	Outer walls		9.00	0.25	2.05	4.61	Cum
	Total					**7.13**	Cum
6	**Precast Cover**	6	2.14	0.33	0.10	0.42	Cum
7	**Shuttering**						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		2.05	36.90	Sqm
	Total					**40.38**	Sqm
8	**Reinforcement- Fe 500 TMT**					**0.57**	MT
9	**Painting**						
	Side wall	2.00	2.50	0.30		1.50	Sq m
	Front and back wall	2.00	2.50	0.30		1.50	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- FLOW METER CHAMBER IPS A3

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	20.00	360.70	7214.00
b)	From 1.5 m to 3.0 m	Cum	12.00	407.00	4884.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	18.00	116.50	2097.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	14.00	270.30	3784.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -25	Cum	8.00	4952.60	39621.00
	BSR-BCD-20 Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	186.30	559.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	37.00	356.40	13187.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal.. size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**155366.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- CIVIL WORK- FLOW METER CHAMBER IPS A3

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.20	3.20	1.50	20.16	Cum
b)	From 1.5 m to 3.0 m		4.20	3.20	0.88	11.83	Cum
c)	From 3.0 m to 4.5 m		4.20	3.20	0.00	0.00	Cum
2	Refilling					18.10	Cum
3	Disposal		3.00	2.00	1.75	10.50	Cum
	PCC					0.94	Cum
	Base slab					2.45	Cum
	Total					**13.89**	Cum
4	PCC: M15		3.60	2.60	0.10	0.94	Cum
5	RCC Grade M -20						
	Footing (Base slab)		3.40	2.40	0.30	2.45	Cum
	Outer walls		9.00	0.25	2.05	4.61	Cum
	Total					**7.36**	Cum
6	**Precast Cover**	8	1.65	0.30	0.08	0.30	Cum
7	Shuttering						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		2.05	36.90	Sqm
	Total					**40.38**	Sqm
8	Reinforcement- Fe 500 TMT					**0.59**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	2.00	0.30		1.20	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL

SEWERAGE SYSTEM FOR GAYA TOWN
COST ESTIMATE-CIVIL WORK- D.G. ROOM- IPS A3

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	117.00	360.70	42201.90
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	13.00	3953.40	51394.20
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	95.00	116.50	11067.50
	BSR-BCD-20-Item 2.26; Pg-96				
3a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.00	270.30	5947.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	11.00	4952.60	54478.60
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	33.00	5704.70	188255.10
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	4.00	68500.00	274000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.00	203.00	3248.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	63.00	412.20	25968.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	133.00	362.90	48265.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	58.00	470.60	27294.80
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	27.00	5048.20	136301.40
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	375.00	157.40	59025.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	375.00	97.20	36450.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	67.00	809.00	54203.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
11	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal.. size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal.. size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	50.00	456.50	22825.00
	BSR-BCD-20; Item-11.4; Pg-174				
12	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	13.00	3635.80	47265.40
	BSR-BCD-20; Item-21.10; Pg-307				
13	Supplying and fixing-rolling shutters of approved make. Made of required size of M.S.laths inter locked together through their entirre length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	12.00	2394.00	28728.00
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal.. size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	5.00	802.00	4010.00
	18mm thick with under layer 12mm thick cement plaster 1:3 (1 cement : 3coarse sand)				
	BSR-BCD-20; Item-11.12.1 Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	24.00	191.14	4587.36
	BSR - RCD-18- Item- M-148, P-35				
				Total	**361**

D G Room:

	Nos	L	B	H	
Inner dimension		10.00	5.00	5.00	
Outer dimension		10.46	5.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	8.00	1.70	1.70	0.30	
Total no of Columns	8				
C1	8	0.30	0.30	6.05	
Plinth beam		42.76	0.30	0.40	
Lintel beam		31.84	0.30	0.40	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0.00	0.00		0.00	
Windows size	7.00	1.50		1.20	
Ventilators size	0.00	0.75		0.90	
Rolling Shutter	1	3.00		4.00	
Roof beam		42.76	0.30	0.45	
Roof slab		11.06	6.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		111.40			
Existing GL		105.80			
Finished GL		105.800			
Plinth level		106.400			
Top of Footing		104.100			
Footing Level		103.700			

MEASUREMENT SHEET FOR D G ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	8	Cum	2.50	2.50	2.33	116.50	**116.50**
2	**PCC**							
	F1	8	Cum	1.90	1.90	0.10	2.89	
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth protection	1	Cum	31.84	1.00	0.05	1.59	**13.05**
3	**Back Filling**							
	Earth work qty		Cum				96.52	
	Deduction C1	-8	Cum	0.30	0.30	1.70	-1.22	**95.29**
4	**RCC M25**							
	Column foundation F1	8	Cum	1.70	1.70	0.30	6.94	
	Columns C1	8	Cum	0.30	0.30	6.05	4.36	**11.29**
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth Beam	1	Cum	42.76	0.30	0.40	5.13	
	Lintel Beam	1	Cum	31.84	0.30	0.40	3.82	
	Roof Beam	1	Cum	42.76	0.30	0.45	5.77	
	Chajja - For Doors	0	Cum	0.00	0.45	0.125	0.00	
	Chajja - For Windows	7	Cum	1.80	0.45	0.125	0.71	
	Chajja - For Ventilators	0	Cum	1.05	0.45	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	3.30	0.45	0.125	0.19	
	Ramp/Steps	1	Cum	3.00	1.00	0.600	0.90	
	Roof Slab	1	Cum	11.06	6.06	0.125	8.38	**33.47**
5	**Steel**		Tonn				4.48	**4.48**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	8	Sqm	6.80		0.30	16.32	**16.32**
	Columns: C1	8	Sqm	1.20		6.05	58.08	**58.08**
	Beams: Plinth Beam	1	Sqm	42.76		1.10	47.04	
	Lintel Beam	1	Sqm	31.84		1.10	35.02	
	Roof Beam	1	Sqm	42.76		1.20	51.31	**133.37**
	Roof slab	1	Sqm	10.46	5.46		57.11	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.50	0.45		4.73	
	Chajja - For Ventilators	0	Sqm	0.75	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.00	0.45		1.35	**63.19**
7	**Brick Work Wall**							
	Wall	1	Cum	31.84	0.23	5.0	36.62	
	Wall- up to plinth level	1	Cum	31.84	0.23	0.6	4.39	
	Parapet wall	0	Cum	16.52	0.00	0.00	0.00	
	Deduction- Lintel beam	-1	Cum	31.84	0.23	0.40	-2.93	
	Deduction- Floor PCC & floor slab	-1	Cum	31.84	0.23	0.25	-1.83	
	Deduction- Roof beam	-1	Cum	31.84	0.23	0.45	-3.30	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-7	Cum	1.50	0.23	1.20	-2.90	
	Deduction- Ventilator	0	Cum	0.75	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	3.00	0.23	4.00	-2.76	**27.30**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	31.84		5.00	159	
	Parapet wall	0	Sqm	16.52		0.00	0.00	
	Roof (Ceiling)	1	Sqm	10.00	5.00		50.00	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-7	Sqm	1.5		1.2	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3		4	-12.0	**184.60**
	External Plastering							
	Wall	1	Sqm	31.84		5.00	159.20	
	Wall- up to plinth level	1	Sqm	31.84		0.60	19.10	
	Parapet wall	1	Sqm	16.52		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.80	0.45		22.47	
	Chajja - For Ventilators	0	Sqm	1.05	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.30	0.45		3.89	
	Roof Slab Projection	1	Sqm	34.24	0.30		10.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-7	Sqm	1.50		1.20	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3.00		4.00	-12.00	**190.33**
9	**Painting**							
	Internal Painting							**184.6**
	External Painting							**190.33**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
10	**Flooring**	1	Sqm	10.00	5.00		50.00	**50.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	7	Sqm	1.50		1.20	12.60	
	Ventilators	0	Sqm	0.75		0.90	0.00	**12.60**
12	**Rolling Shutter**	1	Sqm	3.00		4.00	12.00	**12.00**
13	**Water proofing at top of roof**	1	Sqm	11.06	6.06		67.02	**67.02**
14	**Skirting**	1	Sqm	30.00		0.15	4.50	**4.50**
15	**Boulders for Floor area**	1	Sqm	10.46	5.46	0.30	17.13	**23.78**
	F1	8.00	Sqm	1.9	1.90	0.23	6.64	

SEWERAGE SYSTEM FOR GAYA TOWN
COST ESTIMATE-CIVIL WORK- DIESEL STORE ROOM- IPS A3

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	Excavation				
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	58.00	360.7	20920.60
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-96; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	49.00	116.50	5708.50
	BSR-BCD-20-Item 2.26; Pg-96				
4	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.00	270.30	2433.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	5.00	4952.60	24763.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	14.00	5704.70	79865.80
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.00	203.00	1624.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	23.00	412.20	9480.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	48.00	362.90	17419.20
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	24.00	470.60	11294.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	16.00	5048.20	80771.20
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	168.00	157.40	26443.20
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	168.00	97.20	16329.60
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal.. size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal.. size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	20.00	456.50	9130.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	6.00	1106.50	6639.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	31.00	2553.30	79152.30
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal.. size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1 Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	11.00	191.14	2102.54
	BSR - RCD-18- Item- M-148, P-35				
				Total	**571428.94**

Diesel Store Room:

	Nos	L	B	H	
Inner dimension		5.00	4.00	3.50	
Outer dimension		5.46	4.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	4	1.70	1.70	0.30	
Total no of Columns	4				
C1	4	0.30	0.30	5.00	4.93
Plinth beam		19.84	0.30	0.40	
Local lintel beam		7.70	0.23	0.20	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0	1.20		2.10	
Windows size	3	1.50		1.20	
Ventilators size	0	0.75		1.00	
Rolling Shutter	1	2.00		3.00	
Roof beam		19.84	0.30	0.40	
Roof slab		6.06	5.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		109.900			
Existing GL		105.800			
Finished GL		105.800			
Plinth level		106.400			
Top of Footing		104.100			
Footing Level		103.700			

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.50	2.50	2.33	58.25	**58.25**
2	**PCC**							
	F1	4	Cum	1.90	1.90	0.10	1.44	
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth protection	1	Cum	19.84	1.00	0.05	0.99	**5.43**
3	**Back Filling**							
	Earth work qty		Cum				49.35	
	Deduction C1	-4	Cum	0.30	0.30	1.70	-0.61	**48.74**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.70	1.70	0.30	3.47	
	Columns C1	4	Cum	0.30	0.30	5.00	1.80	**5.27**
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth Beam	1	Cum	19.84	0.30	0.40	2.38	
	Lintel Beam	3	Cum	7.70	0.23	0.20	1.06	
	Roof Beam	1	Cum	19.84	0.30	0.40	2.38	
	Chajja - For Doors	0	Cum	1.50	0.50	0.125	0.00	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.30	0.50	0.125	0.14	
	Ramp/Steps	1	Cum	2.00	1.00	0.600	0.60	
	Roof Slab	1	Cum	6.06	5.06	0.125	3.83	**13.73**
5	**Steel**		Tonn				1.90	**1.90**

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.80		0.30	8.16	**8.16**
	Columns: C1	4	Sqm	1.20		5.00	24	**24.00**
	Beams: Plinth Beam	1	Sqm	19.84		1.10	21.82	
	Lintel Beam	1	Sqm	7.70		0.63	4.85	
	Roof Beam	1	Sqm	19.84		1.10	21.82	**48.50**
	Roof slab	1	Sqm	5.00	4.00		20.00	
	Suspended: Chajja - For Doors	0	Sqm	1.20	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.00	0.50		1.00	**23.25**
7	**Brick Work Wall**							
	Wall	1	Cum	19.84	0.23	3.5	15.97	
	Wall- up to plinth level	1	Cum	19.84	0.23	0.6	2.74	
	Parapet wall	0	Cum	19.84	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	1.20	0.23	2.10	0.00	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.00	0.23	3.00	-1.38	**16.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	19.84		3.50	69	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Roof (Ceiling)	1	Sqm	5.00	4.00		20.00	
	Deduction- Doors	0	Sqm	1.2		2.1	0.00	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2		3	-6.0	**78.04**
	External Plastering							
	Wall	1	Sqm	19.84		3.50	69.44	
	Wall- up to plinth level	1	Sqm	19.84		0.60	11.90	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Chajja - For Doors	0	Sqm	1.50	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.30	0.50		3.55	
	Roof Slab Projection	1	Sqm	22.24	0.30		6.67	
	Deduction- Doors	0	Sqm	1.20		2.10	0.00	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.00		3.00	-6.00	**90.06**
9	**Painting**							
	Internal Painting	-1	Sqm	2		3	-6	**78.0**
	External Painting							**90.06**
10	**Flooring**	1	Sqm	5.00	4.00		20.00	**20.00**

MEASUREMENT SHEET FOR DIESEL STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	0	Sqm	1.20		2.10	0.00	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**5.40**
12	**Rolling Shutter**	1	Sqm	2.00		3.00	6.00	**6.00**
13	**Water proofing at top of roof**	1	Sqm	6.06	5.06		30.66	**30.66**
14	**Skirting**	1	Sqm	18.00		0.15	2.70	**2.70**
15	**Boulders for Floor area**	1	Sqm	5.46	4.46	0.30	7.31	**10.63**
	F1	4	Sqm	1.9	1.90	0.23	3.32	

SEWERAGE SYSTEM FOR GAYA TOWN
COST ESTIMATE-CIVIL WORK- STORE ROOM- IPS A3

Sr. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	49.00	360.70	17674.30
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15	Cum	4.00	3953.40	15813.60
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	42.00	116.50	4893.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	7.00	270.30	1892.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	5.00	4952.60	24763.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	11.00	5704.70	62751.70
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	16.00	412.20	6595.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	41.00	362.90	14878.90
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	24.00	470.60	11294.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs)
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	14.00	5840.00	81760.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	155.00	157.40	24397.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	155.00	97.20	15066.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal.. size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal.. size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	14.00	456.50	6391.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	8.00	3635.80	29086.40
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	23.00	2553.30	58725.90
	BSR-BCD-20; Item-22.8.1; Pg-311				
13	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal.. size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	2.00	802.00	1604.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	8.00	191.14	1529.12
	BSR - RCD-18- Item- M-148, P-35				
				Total	**517536.52**

Store Room:

	Nos	L	B	H
Inner dimension		4.50	3.00	3.50
Outer dimension		4.96	3.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.50	1.50	0.30
Total no of Columns	4			
C1	4	0.30	0.30	5.00
Plinth beam		16.84	0.30	0.40
Local lintel beam		6.90	0.23	0.20
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	1	1.20		2.10
Windows size	3	1.50		1.20
Ventilators size	0	0.75		1.00
Rolling Shutter	0	0.00		0.00
Roof beam		16.84	0.30	0.40
Roof slab		5.56	4.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		109.900		
Existing GL		105.800		
Finished GL		105.800		
Plinth level		106.400		
Top of Footing		104.100		
Footing Level		103.700		

MEASUREMENT SHEET FOR STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.30	2.30	2.33	49.30	**49.30**
2	**PCC**							
	F1	4	Cum	1.70	1.70	0.10	1.16	
	Floor Slab	1	Cum	4.96	3.46	0.10	1.72	
	Plinth protection	1	Cum	16.84	1.00	0.05	0.84	**3.72**
3	**Back Filling**							
	Earth work qty		Cum				42.89	
	Deduction C1	-4	Cum	0.30	0.30	2.33	-0.84	**42.05**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.50	1.50	0.30	2.70	
	Columns C1	4	Cum	0.30	0.30	5.00	1.80	**4.50**
	Floor Slab	1	Cum	4.50	3.00	0.15	2.03	
	Plinth Beam	1	Cum	16.84	0.30	0.40	2.02	
	Lintel Beam	3	Cum	6.90	0.23	0.20	0.95	
	Roof Beam	1	Cum	16.84	0.30	0.40	2.02	
	Chajja - For Doors	1	Cum	1.50	0.50	0.125	0.09	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	1.20	1.00	0.600	0.36	
	Roof Slab	1	Cum	5.56	4.06	0.125	2.82	**10.63**
5	**Steel**		Tonn				1.51	**1.51**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.00		0.30	7.2	**7.20**
	Columns: C1	4	Sqm	1.20		5.00	24	**24.00**
	Beams: Plinth Beam	1	Sqm	16.84		1.10	18.52	
	Lintel Beam	1	Sqm	6.90		0.63	4.35	
	Roof Beam	1	Sqm	16.84		1.10	18.52	**41.39**
	Roof slab	1	Sqm	4.50	3.00		13.50	
	Suspended: Chajja - For Doors	1	Sqm	1.20	0.50		0.60	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**16.35**
7	**Brick Work Wall**							
	Wall	1	Cum	16.84	0.23	3.5	13.56	
	Wall- up to plinth level	1	Cum	16.84	0.23	0.6	2.32	
	Parapet wall	0	Cum	18.04	0.00	0.00	0.00	
	Deduction- Doors	-1	Cum	1.20	0.23	2.10	-0.58	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	0.90	0.00	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**14.06**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	16.84		3.50	59	
	Parapet wall	0	Sqm	18.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	4.50	3.00		13.50	
	Deduction- Doors	-1	Sqm	1.2		2.1	-2.52	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		0.9	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**64.52**
	External Plastering							
	Wall	1	Sqm	16.84		4.10	69.04	
	Wall- up to plinth level	1	Sqm	16.84		0.60	10.10	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Chajja - For Doors	1	Sqm	1.50	0.50		3.15	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	19.24	0.30		5.77	
	Deduction- Doors	-1	Sqm	1.20		2.10	-2.52	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		0.90	0.00	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**90.05**
9	**Painting**							
	Internal Painting	0	Sqm	0		0	0	**64.5**
	External Painting							**90.05**
10	**Flooring**	1	Sqm	4.50	3.00		13.50	**13.50**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	1	Sqm	1.20		2.10	2.52	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**7.92**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	5.56	4.06		22.57	**22.57**
14	**Skirting**	1	Sqm	15.00		0.15	2.25	**2.25**
15	**Boulders for Floor area**	1	Sqm	4.96	3.46	0.30	5.15	**7.81**
	F1	4	Sqm	1.7	1.70	0.23	2.66	

SEWERAGE SYSTEM FOR GAYA TOWN
COST ESTIMATE- CIVIL WORK- METERING ROOM- IPS A3

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	74.00	360.70	26691.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	8.00	3953.40	31627.20
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	61.00	116.50	7106.50
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	270.30	3513.90
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	7.00	4952.60	34668.20
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.00	5704.70	114094.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.00	203.00	2233.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.00	412.20	16900.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	73.00	362.90	26491.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	36.00	470.60	16941.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	23.00	5840.00	134320.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	245.00	157.40	38563.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	245.00	97.20	23814.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal.. size) and top layer 6 mm thick.	Sqm	24.00	534.60	12830.40
	BSR-BCD-20; Item-11.9.1; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	9.00	3635.80	32722.20
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make. Made of required size of M.S.Iaths inter locked together through their entirre length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	2394.00	19152.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	36.00	2553.30	91918.80
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal.. size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	13.00	191.14	2484.82
	BSR - RCD-18- Item- M-148, P-35			**Total**	**843979.32**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	6	Cum	2.30	2.30	2.33	73.95	**73.95**
2	**PCC**							
	F1	6	Cum	1.90	1.90	0.10	2.17	
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth protection	1	Cum	21.84	1.00	0.05	1.09	**7.58**
3	**Back Filling**							
	Earth work qty		Cum				62.32	
	Deduction C1	-6	Cum	0.30	0.30	1.70	-0.92	**61.40**
4	**RCC M25**							
	Column foundation F1	6	Cum	1.50	1.50	0.30	4.05	
	Columns C1	6	Cum	0.30	0.30	4.95	2.67	**6.72**
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth Beam	1	Cum	28.30	0.30	0.40	3.40	
	Lintel Beam	1	Cum	11.80	0.23	0.20	0.54	
	Roof Beam	1	Cum	28.30	0.30	0.45	3.82	
	Chajja - For Doors	0	Cum	0.00	0.50	0.125	0.00	
	Chajja - For Windows	5	Cum	1.80	0.50	0.125	0.56	
	Chajja - For Ventilators	0	Cum	1.00	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.80	0.50	0.125	0.18	
	Ramp/Steps	1	Cum	2.00	2.50	1.200	3.00	
	Roof Slab	1	Cum	7.06	5.06	0.125	4.47	**20.29**
5	**Steel**		MT				2.70	**2.70**
6	**Formwork**							
	Foundation: Column foundation F1	6	Sqm	6.00		0.30	10.8	**10.80**
	Columns: C1	6	Sqm	1.20		4.95	35.64	**35.64**
	Beams: Plinth Beam	1	Sqm	28.30		1.10	31.13	
	Lintel Beam	1	Sqm	11.80		0.63	7.43	
	Roof Beam	1	Sqm	28.30		1.20	33.96	**72.52**
	Roof slab	1	Sqm	7.06	5.06		35.72	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.50	0.50		3.75	
	Chajja - For Ventilators	0	Sqm	0.70	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.50	0.50		1.25	**40.72**
7	**Brick Work Wall**							
	Wall	1	Cum	28.30	0.23	3.50	22.78	
	Wall- up to plinth level	1	Cum	28.30	0.23	0.60	3.91	
	Parapet wall	0	Cum	23.04	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-5	Cum	1.50	0.23	1.20	-2.07	
	Deduction- Ventilator	0	Cum	0.70	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.50	0.23	3.00	-1.73	**22.89**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	28.30		3.50	99	
	Parapet wall	0	Sqm	23.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	7.06	5.06		35.72	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-5	Sqm	1.5		1.2	-9.00	
	Deduction- Ventilator	0	Sqm	0.7		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.5		3	-7.5	**118.27**
	External Plastering							
	Wall	1	Sqm	28.30		3.50	99.05	
	Wall- up to plinth level	1	Sqm	28.30		0.60	16.98	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
	Parapet wall	1	Sqm	23.04		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.80	0.50		16.50	
	Chajja - For Ventilators	0	Sqm	1.00	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.80	0.50		3.80	
	Roof Slab Projection	1	Sqm	24.24	0.30		7.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-5	Sqm	1.50		1.20	-9.00	
	Deduction- Ventilator	0	Sqm	0.70		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.50		3.00	-7.50	**127.10**
9	**Painting**							
	Internal Painting							**118.3**
	External Painting							**127.10**
10	**Flooring**	1	Sqm	6.00	4.00		24.00	**24.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	5	Sqm	1.50		1.20	9.00	
	Ventilators	0	Sqm	0.70		0.90	0.00	**9.00**
12	**Rolling Shutter**	1	Sqm	2.50		3.00	7.50	**7.50**
13	**Water proofing at top of roof**	1	Sqm	7.06	5.06		35.72	**35.72**
14	**Skirting**	1	Sqm	20.00		0.15	3.00	**3.00**
15	**Boulders for Floor area**	1	Sqm	6.46	4.46	0.30	8.64	**12.63**

SEWERAGE SYSTEM FOR GAYA TOWN
COST ESTIMATE- CIVIL WORK- INTERNAL ROAD IPS A3

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	72.00	637.00	45864.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	33.00	888.00	29304.00
	SOR-RCD-18; Item-4.12; Pg.-76				
3	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	217.00	30.30	6575.00
	BSR-RCD-18-Item 5.1, Pg-84				
4	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical	Sqm	217.00	11.10	2409.00
	BSR-RCD-18-Item 5.2, Pg-84				
5	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal.. size); thickness 40 mm	Cum	11.00	5406.00	59466.00
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying **Tack Coat with bitumen emulsion grade 60/70 for BUSG** @ 5Kg/10Sqm. area using emulsion pressure distributor on the prepared bituminus/granular surface cleaned with mechanical broom and as per eelevant clauses MOSRTH specification clause No. 503 complete in all respects.	Sqm	217.00	31.05	6738.00
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51, (+15%)				
7	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects. Note: *1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis for grading (10mm nominal size)	Cum	5.00	7142.00	35710.00
	BSR-RCD-2018-Item-5.7 P-84				
				Total	**186066.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART					
COST ESTIMATE-CIVIL WORK- COMPOUND WALL- IPS A3					
Sr. No.	**Description**	**Unit**	**Qty**	**Rate in Rs.**	**Amount in Rs.**
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	cum	248.00	360.70	89453.60
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	cum	13.00	3953.40	51394.20
3	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	cum	51.00	5840.00	297840.00
	Superstructure above plinth level up to floor V				
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarse sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	Sq m	527.00	146.00	76942.00
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Sq m	44.00	270.30	11893.20
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	cum	204.00	116.50	23766.00
	BSR-BCD-18-Item 2.26; Pg-75				
7	RCC: Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, required grade of reinforced cement concrete:				
	RCC Grade M -20 Below Plinth	cum	25.00	4689.20	117230.00
	RCC Grade M -20 Above Plinth	cum	14.00	5194.80	72727.20
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sq m	68.00	203.00	13804.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sq m	55.00	362.90	19959.50
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sq m	124.00	470.60	58354.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	Painting: White washing with lime to give an ever shade: New work (three or more coats): BSR-BCD-20; Item-13.70.1; Pg-206	cum	527.00	17.80	9380.60
				Cost of Compound Wall (without gates)	1048245
				Boundary length	130
				Cost of 1 m Compound Wall (without gates)	8063

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
11	**Gates:** Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.				
	MJP 2018-19, Section H, Item No 3; Pg- 58.	No.	1	25303.00	25303.00
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.	1	13651.00	13651.00
	MJP 2018-19, Section H, Item No 4; Pg- 58.				
				Cost of Compound Wall	**1087199**

A

Boundary Wall length	**130**	m	L= 37
Column spacing	3	m c/c	W= 28
No. of columns total	42.0	Nos.	
No. of Expansion joint	3.0	Nos.	
Total No. of columns	45.0	Nos.	
Column ht	2.0	m	
Col W	0.25	m	
Col D	0.25	m	
Beam W	0.23	m	
Beam D	0.23	m	
Column footing L	1.5	m	
Column footing W	1.5	m	
Footing thk	0.25	m	
Depth of foundation	1	m	
PCC proj & thk	0.075	m	
Working space	0.3	m	

S.No	Description					Quantity	Unit
		No.s	L	B	D		
1	Earth work excavation of foundation for structures as per drawing and technical specification including setting out, construction of shoring and bracing,removal of stumps and other deleterious mattar, dressing of sides and bottom and backfilling with approved material etc. and as per relevent clause of section 300 and 2100 - Ordinary Soil (up to 1.5m)						
	Footing	45.00	2.25	2.25	1.08	244.90	m^3
	Walls	1.00	28.75	0.58	0.18	2.92	m^3
	Total					**247.82**	m^3
2	Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering - In plinth and foundation - M - 10 Grade.						
	Footing	45.00	1.65	1.65	0.075	9.19	m3
	Walls	1.00	118.75	0.38	0.075	3.38	m^3
	Total					**12.57**	m^3
3	Brick work with well burnt chimney bricks having crushing strength not less than 25kg/cm2 and water absorption not more than 20% above plinth level including cost of form work						
	Wall	1.00	118.75	0.23	1.870	**51.07**	m^3
4	12 mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete						
	In cement mortar 1:6						
	Two Side Wall	2.00	130.00		2.00	520.00	
	Column sides	45.00	0.080		2.00	7.20	
	Total					**527.20**	m^2

S.No	Description					Quantity	Unit
		No.s	**L**	**B**	**D**		
5	Disposal						
	Footing	45.00	1.50	1.50	0.250	25.31	
	Column	45.00	0.25	0.25	0.750	2.11	
	Plinth beam	1.00	118.75	0.23	0.130	3.55	m^3
	All PCC					12.57	
	Total					**43.55**	m^3
6	Back filling: Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20 cm in depth including consolidation of each layer by ramming watering, lead up to 50 m and lift up to 1.5 m in all kinds of soils						
		Total				**204.27**	m^3
7	**RCC**						
	Footing	45.00	1.50	1.50	0.250	25.31	
	Column	45.00	0.25	0.25	2.750	7.73	
	Plinth beam	1.00	118.75	0.23	0.230	6.28	
	Total					**39.33**	m^3
8	**Shuttering**						
	Footing	45.00	6.00		0.250	67.50	
	Column	45.00	1.00		2.750	123.75	
	Plinth beam	1.00	118.75		0.460	54.63	
	Total					**245.88**	m^2
9	**Reinforcement**					**3.15**	MT
10	Providing and applying one coat of approved colour and shade to new surface including scaffolding brushing and brooming down including two coats of whitewash as base cost etc., complete					**527.20**	m^3
11	Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.	No.				1	
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.				1	

SEWERAGE SYSTEM FOR GAYA EASYERN PART
COST ESTIMATE-CIVIL WORK- TOILET BLOCK - IPS A3

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	27.00	360.70	9738.90
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal.. size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	2.00	3953.40	7906.80
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	26.00	116.50	3029.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1.00	270.30	0.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	3.00	4952.60	14857.80
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	9.00	5704.70	51342.30
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**				
	BSR-BCD-20; Item-5.22.7, Pg-106	Tonn	1.00	68500.00	68500.00
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	203.00	1218.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	11.00	412.20	4534.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	32.00	362.90	11612.80
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	22.00	470.60	10353.20
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	5.00	5840.00	29200.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	62.00	157.40	9758.80
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade				
	BSR - BCD-20- Item- 13.77.2, P-206	Sqm	41.00	97.20	3985.20
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal.. size) and top layer 6 mm thick.	Sqm	6.00	530.80	3184.80
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.				
	BSR-BCD-20; Item-22.8.1; Pg-311	Sqm	18.00	2553.30	45959.40
13	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacture) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	Sqm	30.00	797.50	23925.00
	BSR-BCD-20; Item-11.36; Pg-179				
14	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	Sqm	6.00	712.20	4273.20
	BSR-BCD-20; Item-11.37; Pg-179				
15	Providing and fixing vitreous china dual purpose closet suitable for use as squatting pan or European type water closet (Anglo Indian W.C pan) with seat lid with C.P. brass hinges and rubber buffers, 10 litre low level flushing cistern with fitting and brackets, 40mm flush bend 20mm over flow pipe with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required :				
	White vitreous china dual purpose WC pan with white solid plastic seat and lid with white vitreous china flushing cistern and C.P. flush bend.	each	1.00	8734.10	8734.10
	BSR-BCD-20; Item-17.68.1; Pg-260				
16	**Filling up to floor finish level with Random rubble masonry.**	Cum	4.00	191.14	764.56
	BSR - RCD-18- Item- M-148, P-35				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
17	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.				
	External work				
	15mm Dia	m	10.00	187.90	1879.00
	25 mm	m	10.00	303.20	3032.00
	BSR-BCD-20; Item- 18.12.1 & 18.12.3, P-267				
18	Providing and fixing brass stop cock of approved quality :				
	External work				
	15mm Dia	no	1.00	302.50	302.50
	20 mm	no	1.00	326.40	326.40
	BSR-BCD-20; Item- 18.16.1 & 18.16.2, P-267				
19	Providing, lowering, laying in trenches, aligning, fixing in position and jointing ISI marked uPVC pipe fittings/ accessories of class III (6 Kg/sqcm) suitable for potable water with rubber rings joints in uPVC pipe line at all levels/ depth including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	110 mm dia pipe	m	25.00	273.00	6825.00
	RUIDP-17- Item- 19.1.2				
20	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931				
	15 mm nominal.. bore	each	3.00	419.00	1257.00
	BSR - BCD-20- Item- 18.49 , P-274				
21	Providing and fixing square-mouth S.W. gully trap grade 'A" complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	100mmx100mm size P type With Sewer bricks conforming to IS : 4885	each	1.00	1931.90	1931.90
	BSR - BCD-20- Item- 19.4.1.2 P-292				
22	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand : 4 graded stone aggregate 20 mm nominal.. size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal.. size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design :				
	Inside dimensions 455x610 mm and 45 cm deep for single pipe line :				
	with bricks	each	3.0	4228.40	12685.20
	BSR - BCD-20- Item- 19.30.1.1 P-299				
23	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require :				
	White Vitreous China Wash basin size 630x450 mm with a pair of 15 mm C.P. brass pillar taps.	each	1.00	2538.80	2538.8
	BSR - BCD-20- Item- 17.7.1, P-248				
	Total				**361834.86**

TOILET BLOCK :

	Nos	L	B	H
Inner dimension		2.90	2.00	3.00
Outer dimension		3.46	2.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.20	1.20	0.30
Total no of Columns	4			
C1	4	0.30	0.30	4.63
Plinth beam		14.30	0.30	0.40
Lintel beam		6.30	0.23	0.13
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	2	1.00		2.10
Windows size	0	0.00		0.00
Ventilators size	2	0.60		0.45
Rolling Shutter	0	0.00		0.00
Roof beam		11.84	0.30	0.40
Roof slab		4.06	3.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		109.400		
Existing GL		105.800		
Finished GL		105.800		
Plinth level		106.400		
Top of Footing		104.100		
Footing Level		103.800		

MEASUREMENT SHEET FOR TOILET BLOCK

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1- up to 1.5 m	4	Cum	2.00	2.00	1.50	24.00	**27.32**
	From 1.5 m to 3.0 m	0		2.00	2.00	0.83	3.32	
		0	Cum	0.00	0.00	0.00	0.00	
1A	Excavation in soft soil							
a)	up to 1.5 m		Cum			24.00		
b)	From 1.5 m to 3.0 m		Cum			3.32		
1B	Excavation in soft rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1C	Excavation in hard rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
	Total		Cum					**27.32**
2	**PCC**							
	F1	4	Cum	1.40	1.40	0.10	0.78	
	Floor Slab	1	Cum	3.46	2.46	0.10	0.85	
	Plinth protection	1	Cum	11.84	1.00	0.05	0.59	**2.22**
3	**Back Filling**							
	Earth work qty		Cum				23.37	
	Deduction C1	-4	Cum	0.30	0.30	1.00	-0.36	**26.18**
3a	**Disposal**		Cum				1.14	**1.14**

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.20	1.20	0.30	1.73	
	Columns C1	4	Cum	0.30	0.30	4.63	1.67	**3.39**
		0		1.50	1.00	0.15	0.00	
		0		1.00	1.00	0.15	0.00	
	Floor Slab	1	Cum	3.46	2.46	0.15	1.28	
	Plinth Beam	1	Cum	14.30	0.30	0.40	1.72	
	Lintel Beam	1	Cum	6.30	0.23	0.13	0.18	
	Roof Beam	1	Cum	14.30	0.30	0.40	1.72	
	Chajja - For Doors	2	Cum	1.30	0.50	0.125	0.16	
	Chajja - For Windows	0	Cum	0.30	0.50	0.125	0.00	
	Chajja - For Ventilators	2	Cum	0.90	0.50	0.125	0.11	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	1.200	1.80	
	Roof Slab	1	Cum	4.06	3.06	0.125	1.55	**8.52**
							0.94	
5	**Steel**		Tonn				1.19	**1.19**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	4.80		0.30	5.76	**5.76**
	Columns: C1	4	Sqm	1.20		4.63	22.2	**22.20**
		0		1.50		1.00	0	
		0		1.00		1.00	0	
	Beams: Plinth Beam	1	Sqm	14.30		1.10	15.73	
	Lintel Beam	1	Sqm	6.30		0.48	3.02	
	Roof Beam	1	Sqm	11.84		1.10	13.02	**31.77**
	Roof slab	1	Sqm	3.46	2.46		8.51	
	Suspended: Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**10.71**
7	**Brick Work Wall**							
	Wall	1	Cum	6.30	0.23	3.0	4.35	
	Internal wall	1	Cum	2.00	0.10	3.0	0.60	
	Wall- up to plinth level	1	Cum	8.90	0.23	0.6	1.23	
	Parapet wall	1	Cum	13.04	0.00	0.00	0.00	
	Deduction- Doors	-2	Cum	1.00	0.23	2.10	-0.97	
	Deduction- Windows	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Ventilator	-2	Cum	0.60	0.23	0.45	-0.12	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**5.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	6.30		3.00	19	
	Internal wall	2	Sqm	2.00		3.00	12	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
		0		1.50		1.00	0.00	
		0		1.00		1.00	0.00	
	Roof (Ceiling)	1	Sqm	2.90	2.00		5.80	
	Deduction- Doors	-2	Sqm	1		2.1	-4.20	

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
	Deduction- Windows	0	Sqm	0		0	0.00	
	Deduction- Ventilator	-2	Sqm	0.6		0.45	-0.54	
		0		2.46		3.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**31.96**
	External Plastering							
	Wall	1	Sqm	6.30		3.60	22.68	
	Wall- up to plinth level	1	Sqm	8.90		0.60	5.34	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
	Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	14.24	0.30		4.27	
	Deduction- Doors	-2	Sqm	1.00		2.10	-4.20	
	Deduction- Windows	0	Sqm	0.00		0.00	0.00	
	Deduction- Ventilator	-2	Sqm	0.60		0.45	-0.54	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**29.75**
9	**Painting**							
	Internal Painting	-1	Sqm	13.8		0.00	0	**11.3**
	External Painting							**29.75**
10	**Flooring**	1	Sqm	2.90	2.00		5.80	**5.80**
	dado		Sqm	13.80		1.50	20.70	
	deduct						0.00	**20.70**
11	**Openings**							
	Doors	2	Sqm	1.00		2.10	4.20	
	Windows	0	Sqm	0.00		0.00	0.00	
	Ventilators	2	Sqm	0.60		0.45	0.54	**4.74**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	3.96	3.06		12.12	**17.92**
	Water proofing below the flooring	1	Sqm	2.90	2.00		5.80	
14	**Skirting**	0	Sqm	9.80		0.15	0.00	**0.00**

Rate Analysis for Soil disposal Soil density=1.

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Stone Boulder tone Boulder densi

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Sand Sand density=1

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1

2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for cement Cement density=

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for Aggregates Aggregates density

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

84 T/m3

Rate (Rs.)	Amount In Rs.	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

ity=1.84 T/m

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1 15

210.61

.84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8

7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

γ=1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART

COST SUMMARY -CIVIL WORK- PUMPING STATION- IPS A4

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station IPS A4
A	**Civil Works**	
1	Screen Chamber	3.97
2	Pump House (Wet well and Superstructure)	44.72
3	Manifold Chamber	2.88
4	Valve Chamber	1.52
5	Flowmeter Chamber	1.55
6	D.G. Room	13.06
7	Diesel Storage Room	5.80
8	Store Room	5.04
9	Metering Room	8.16
10	Internal Roads (3m wide)	2.43
11	Compound Wall	12.16
12	Toilet Block	3.55
13	Material Carrying Charges	5.41
	Total	**110.25**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

Sr. No.	Pumping Stations	Qty. from Estimate Sheet														RCC, Flooring and Sand Filling							Bricks				Plaster				Total Quantity in MT			Carriage Charges (In Lakh Rs.)				
		Concrete (C:S:A)				Bricks (cum)	Plaster (Sq m)	Flooring (52 mm thk) M15		Sand Filling	Rubble Solling	Aggregate for Internal Road Works (cum)				Cement		Sand		Aggregate		Random Rubble Soling	Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand									
		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (Sq m)	Volume (cum)	Volume (cum)	**Volume (cum)**	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ cum	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum	Volume (cum)	Wt (MT) 1870kg/ cum	Wt (MT) 1870kg/ cum	Wt (MT) 1920kg/ cum	MT	MT	MT	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum	Sand	Aggregate	Bricks	Sand (9.40 Rs./t.km)	Aggregate (9.40 Rs./t.km)	Bricks (9.40 Rs./t.km)	**Rubble soling (9.40 Rs./t.km)**	Total (Rs. In Lakhs)
1	**IPS A4**																																				
	Screen Chamber	6.00	-		23.00	-	-		-		2.61				-	6.35	9.14	7.55	13.89	15.10	28.24	4.88		-	-	-	-	-	-	13.89	28.24	-	0.01	0.03	-	-	0.04
	Wetwell & Superstructure	23.00	-		126.00	28.00	271.00	32.00	1.28		########				-	33.98	48.93	38.77	71.34	77.53	144.98	########	53.76	1.17	4.67	47.92	0.81	1.17	2.44	4.49	80.50	144.98	53.76	0.08	0.14	0.05	4.01	0.27
	Manifold Chamber	3.00	-		-	-	-		-		7.00				-	0.30	0.43	0.90	1.66	1.80	3.37	13.09	-	-	-	-	-	-	-	-	1.66	3.37	-	-	-	-	0.01	-
	Valve Chamber	1.00	-		7.00	-	-		-		2.00				-	1.85	2.66	2.05	3.77	4.10	7.67	3.74	-	-	-	-	-	-	-	-	3.77	7.67	-	-	0.01	-	-	0.01
	Flow Meter Chamber	1.00	-		8.00	-	-		-		2.00				-	2.10	3.02	2.30	4.23	4.60	8.60	3.74	-	-	-	-	-	-	-	-	4.23	8.60	-	-	0.01	-	-	0.01
	D.G. Room	13.00	-		46.00	27.00	375.00	50.00	2.00	24.00	24.00				-	13.09	18.85	39.97	73.54	31.94	59.73	44.88	51.84	1.13	4.51	46.21	1.13	1.63	3.38	6.22	84.27	59.73	51.84	0.08	0.06	0.05	-	0.19
	Diesel Storage Room	5.00	-		20.00	16.00	168.00	20.00	0.80	11.00	11.00				-	5.61	8.08	17.73	32.62	13.46	25.17	20.57	30.72	0.67	2.67	27.38	0.50	0.72	1.51	2.78	38.07	25.17	30.72	0.04	0.02	0.03	-	0.09
	Store Room	5.00	-		15.00	14.00	155.00	14.00	0.56	8.00	8.00				-	4.33	6.24	13.41	24.67	10.82	20.23	14.96	26.88	0.58	2.34	23.96	0.47	0.68	1.40	2.58	29.59	20.23	26.88	0.03	0.02	0.03	-	0.08
	Metering Room	6.00	-		28.00	23.00	245.00	24.00	0.82	13.00	13.00				-	7.72	11.12	22.03	40.54	18.07	33.79	24.31	44.16	0.96	3.84	39.36	0.74	1.07	2.21	4.07	48.45	33.79	44.16	0.05	0.03	0.04	-	0.12
	Internal Roads		-									94.00	42.00	14.00	280.50							-									-	280.50	-	-	0.26	-	-	0.26
	Compound Wall	14.00	-	42.74		53.87	562.84		-						-	9.17	13.20	15.86	29.18	31.71	59.30	-	103.43	2.25	8.99	92.19	1.69	2.43	5.07	9.33	47.50	59.30	103.43	0.04	0.06	0.10	-	-	0.20
	Toilet Block	2.00	-		20.59	-	-	27.00	1.08	4.00					-	5.50	7.92	10.06	18.51	12.11	22.65	-	-	-	-	-	-	-	-	-	18.51	22.65	-	0.02	0.02	-	-	0.04
	Total	79.00	-	42.74	293.59	161.87	########	167.00	6.54	60.00		94.00	42.00	14.00	280.50	90.00	129.60	170.62	313.94	221.24	413.72	773.66	310.79	6.76	27.03	277.01	5.33	7.68	15.99	29.42	370.39	694.22	310.79	0.35	0.65	0.30	4.11	5.41

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- SCREEN CHAMBER IPS A4

Sr. No.	Description	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	up to 1.5 m	Cum	37.00	360.70	13346.00
b)	From 1.5 m to 3.0 m	Cum	14.00	407.00	5698.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	10.00	116.50	1165.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	40.00	270.30	10812.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	6.00	3953.40	23720.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	23.00	**5018.60**	115428.00
	BSR-BCD-20; Item 5.33.1&5.34.1 ; Pg-108				
	For sulphate resisting cement	MT	8.00	800.00	6400.00
	RUIDP 2017, 3239 & 3237				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT - FE-500**	MT	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.00	203.00	1015.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	109.00	356.40	38848.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	4.00	412.20	1649.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Description	Unit	Qty	Rates (Rs.)	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	14.00	290.50	4067.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
11	**Railing:** Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m center to center, complete as per approved drawings including all materi**al, labour. at walkway: Around platform**				
	RUIDP-2017, Item-10.20, Pg.-34	RM	8.00	2040.00	16320.00
12	**230mm thick Random rubble soling below PCC.**	Cum	2.61	191.14	499.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**396540.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- SCREEN CHAMBER IPS A4

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Excavation in soft/ ordinary soil					
a)	up to 1.5 m		6.10	4.02	1.50	36.78
b)	From 1.5 m to 3.0 m		6.10	4.02	0.57	13.90
c)	From 3.0 m to 4.5 m		6.10	4.02	0.00	0.00
d)	From 4.5 m to 6.0 m		6.10	4.02	0.00	0.00
e)	From 6.0 m to 7.5 m		6.10	4.02	0.00	0.00
f)	From 7.5 m to 9.0 m		6.10	4.02	0.00	0.00
g)	From 9.0 m to 10.5 m		6.10	4.02		0.00
						50.69
2	Refilling					**10.48**
3	Disposal		4.40	2.32	3.29	33.55
	PCC					1.58
	Base slab					5.07
	Total					**40.21**
4	PCC: M15		4.90	3.22	0.10	1.58
	Approach, Screen and railing- Haunch		7.64	0.75	0.75	4.30
	Total					**5.88**
5	RCC Grade M -30					
	Footing (Base slab)		4.80	3.02	0.35	5.07
	Benching	2.00	1.00	0.71	0.90	1.28
	Outer walls		11.12	0.30	3.59	11.97
	Inner wall		1.72	0.30	2.59	1.33
	Partition wall		2.80	0.30	3.59	3.01
	RCC Slab		0.50	1.72	0.15	0.13
	Slab for bar screen		1.20	1.72	0.15	0.31
	Grand Total					**23.10**
	Sulphate resisting cement					**8.32**
6	**Shuttering**					
	Footing (Base slab)		15.64		0.35	5.47
	Ramp	0.00	0.75		1.00	0.00
	Outer walls	2	11.12		3.59	79.77
	Inner wall	2	1.72		2.59	8.90
	Partition wall	2	2.80		3.59	20.09
	RCC Slab		0.80	1.72		1.38
	Slab for bar screen		1.80	1.72		3.10
	Grand Total					**118.71**
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					5.07
	Walls (any thickness) including attached plasters. Butteresses, plinth and string courses etc.					108.76
	Suspended floors, roofs, landings, balconies and access platform.					4.48
7	Reinforcement- Fe 500 TMT					**1.8**
8	Painting					
	Side wall	2.00	4.10	0.30		2.46
	Front wall	1.00	2.32	0.30		0.70

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
9	MS/CI foot rests	14				**14.00**
10	Providing and fixing G.I. pipe railing					**8.24**
11	Dewatering					**200.00**
	Rubble Soling	1	4.50	2.52	0.23	**2.6082**
						700

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Sq m

Qty.
Nos.
RM
KL
Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- WETWELL IPS A4

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	100 Sqm	1200.00	654.70	7856.00
	BSR-BCD-20- Item 2.32 pg 96				
2	**Earth work in excavation in foundation trenches or drains** (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	up to 1.5 m	Cum	123.00	360.70	44366.00
b)	From 1.5 m to 3.0 m	Cum	123.00	407.00	50061.00
c)	From 3.0 m to 4.5 m	Cum	123.00	453.30	55756.00
d)	From 4.5 m to 6.0 m	Cum	35.00	499.60	17486.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock				
a)	From 4.5 m to 6.0 m	Cum	2.00	901.00	1802.00
	Hard Rock (Blasting prohibited)				
a)	From 4.5 m to 6.0 m	Cum	2.00	1500.40	3001.00
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 96				
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	78.00	116.50	9087.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	328.00	270.30	88658.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000.00
	BSR-BCD-20-Item 2.25; Pg-96				
7	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	23.00	3953.40	90928.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
8.1	RCC Grade M-30	Cum	100.00	**5018.60**	501860.00
	BSR-BCD-20; Item-5.33.21,& 5.34.1 Pg-108				
	For sulphate resisting cement	MT	36.00	800.00	28800.00
	RUIDP 2017, 3239 & 3237				
	All work above Plinth level up to floor V Level.				
8.2	RCC Grade M -25	Cum	26.00	5704.70	148322.00
	BSR-BCD-20; Item-5.33.2, Pg-108				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	14.00	68500.00	959000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	26.00	203.00	5278.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	308.00	356.40	109771.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	145.00	412.20	59769.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	89.00	362.90	32298.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	82.00	470.60	38589.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	28.00	5840.00	163520.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sq m	271.00	157.40	42655.00
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	**Painting:** Distempering with **oil bound washable** distemper of approved brand and manufacture to give an even shade	Sq m	399.00	97.20	38783.00
	New work (two or more coats) over & including priming coat with cement primer.				
	BSR - BCD-20- Item- 13.77.2, P-206				
14	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	32.00	456.50	14608.00
	BSR-BCD-20; Item-11.4; Pg-174				
15	**Structural steel** work in single section fixed without connecting plate including cutting, hoisting,fixing in position and applying a priming coat of approved steel primer all complete.	M.T	1.00	65600.00	65600.00
	BSR-BCD-20; Item-10.1; Pg-168				
16	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	54.00	2553.30	137878.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
17	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	Sqm	15.00	3635.80	54537.00
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m c/c, complete as per approved drawings including all material, labour: **Around Opening in the floor platform**	RM	15.00	2040.00	30600.00
	RUIDP-2017, Item-10.20, Pg.-34				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
19	Supplying and fixing- Rolling shutters of approved make. Made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	1106.50	8852.00
	80x1.25mm MS Laths with 1.25mm thick top cover				
	BSR-BCD-20; Item-10.8.1; Pg-169				
20	Providing and fixing in position **Lightening arrester** set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthling pit at 3.5 meter depth, G.I. strip of size 25mmx5mm thick from earthing plate to top of Over head tank, G.I. Final made of GI bar 25mm dia and 2m long fixed on top of OH tank and connected to GI strip. The earthling set shall comply of IS:3043 complete in all respect as per specification and the direction of the Engineer.	No.	1.00	12500.00	12500.00
	RUIDP-2017, Item-19.80, Pg.-145				
21	Providing and fixing **M.S. chequerred plate** flooring of following thickness supported on M.S. angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plates to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge. (6 mm Thick)	Sqm	7.00	3226.00	22582.00
	(Item No.6, (a) Section J, MJP Page 366 DSR 2017-18)				
22	230 thick rubble soling: Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	Cum	12.00	1235.90	14831.00
	BSR-BCD-20; Item-24.5, Pg-320				
23	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per Litre	2000.00	8.80	**17600.00**
	BSR-BCD-20; Item-18.48, Pg-274				
24	Providing and fixing 2HP centrifugal pump (6-20m head)	No	1.00	10000.00	**10000.00**
	Market Rate				
25	**Overflow Arrangement**				
i	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
a)	up to 1.5 m	Cum	135.00	360.70	48695.00
b)	From 1.5 m to 3.0 m	Cum	76.00	407.00	30932.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	183.00	116.50	21320.00
	BSR-BCD-20-Item 2.26; Pg-96				
iii	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026.00
	BSR-BCD-20-Item 2.25; Pg-96				
iv	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	15.00	270.30	4055.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9		7204.60		

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
v	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended up to date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	600 mm dia.	m	50.00	10402.40	520120.00
	BSR-BCD-18-Item 18.72.24; Pg-231				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
vi	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification.	cum	13.00	217.00	2821.00
	BSR - RCD-18- Item- 12.3, P-222				
	BSR - RCD-18- Item- 12.3, P-222				
vii	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer in-charge :				
	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centring, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS: 4885	Each	1.00	**6970.60**	6970.60
	BSR - BCD-20- Item- 19.9.1.2, P-295				
26	**Filling of total pumping station site up to finished ground level with Random rubble soling**	Cum	2280.00	**191.14**	435799.20
	BSR - RCD-18- Item- M-148, P-35				
	Total				**4471973.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- WETWELL IPS A4

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Site Clearing		40.00	30.00		Sqm
2	Excavation in soft or ordinary soil					
	Pump House					
a)	up to 1.5 m			10.20	1.50	Cum
b)	From 1.5 m to 3.0 m			10.20	1.50	Cum
c)	From 3.0 m to 4.5 m			10.20	1.50	Cum
d)	From 4.5 m to 6.0 m			10.20	0.47	Cum
e)	From 6.0 m to 7.5 m			10.20	0.00	Cum
f)	From 7.5 m to 9.0 m			10.20	0.00	Cum
g)	From 9.0 m to 10.5 m			10.20	0	Cum
h)	From 10.5 m to 12.0 m			10.20	0.00	Cum
i)	From 12.0 m to 13.5 m			10.20	0.00	Cum
j)	From 13.5 m to 15.0 m			10.20	0.00	Cum
	Total					Cum
3	**Refilling of Earth**					Cum
4	**Disposal of Earth**					
	Base Raft	1				
	Well	1		7.70	5.94	Cum
	PCC	1		7.90	0.10	Cum
	Rubble Soling	0		8.10	0.23	Cum
	Total					Cum
5	**Dewatering of water**					KL
6	PCC: Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering- M15					
	Below Base Raft			7.90	0.10	Cum
	Additional sloped portion in Base Raft					
	Total					
7	**Reinforced cement concrete**					
a	M 30: up to Plinth level					
	Base Raft			8.60	0.60	Cum
	Wall		23.09	0.35	6.54	Cum
	Floor Slab Beams- Peripheral		23.09	0.30	0.40	Cum
	Floor Slab Beams	1	12.30	0.30	0.45	Cum
	Floor Slab			7.00	0.20	Cum
	Ramp		1.50	2.50	0.60	Cum
	For platform		1.20	1.20	0.15	Cum
	Deduction for Floor Slab opening		-6.50	1.00	0.20	Cum
	Total					Cum
	Sulphate resisting cement					
b	M 25: Above Plinth level					
	Columns	8	0.30	0.40	6.82	Cum
	Corbels	8	0.65	0.65	0.45	Cum
	Lintel Beams		23.09	0.30	0.40	Cum
	Chajja		12.60	0.45	0.100	Cum
	Roof Slab Beams- Peripheral		23.09	0.30	0.45	Cum
	Roof Slab Beams- Circular inner		0.00	0.00	0.00	Cum
	Roof Slab Beams	1	29.71	0.30	0.45	Cum
	Roof Slab			8.30	0.13	Cum
	Parapet wall		0.00	0.15	0.90	Cum
	Screen Lifting Platform Slab		1.94	0.80	0.20	Cum
	Total					Cum

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
8	**Shuttering**					
a	Foundations, Footings, Bases of Columns, etc for mass concrete					
	Wall- Outer		24.19		6.54	Sqm
	Wall- Inner		21.99		5.94	Sqm
	Floor Slab Beams- Peripheral		23.09		1.10	Sqm
	Floor Slab Beams	1	12.30		1.20	Sqm
	Floor Slab			7.00		Sqm
	Ramp		5.50		0.60	Sqm
	For platform		1.20	1.20		Sqm
	For Floor Slab opening Sides		15.00		0.20	Sqm
	Deduction for Floor Slab opening		6.50	1.00		Sqm
	Total					
b	walls (any thickness), including attached pilasters, buttresses, plinth and string courses fillets etc.					
	Columns	8	1.40		6.82	Sqm
	Corbels	8	1.55		0.45	Sqm
	Lintel Beams		23.09		1.10	Sqm
	Chajja		12.60		0.55	Sqm
	Roof Slab Beams- Peripheral		23.09		1.20	Sqm
	Roof Slab Beams- Circular inner		0.00		0.00	Sqm
	Roof Slab Beams	1	29.71		1.20	Sqm
	Roof Slab			7.00		Sqm
	Roof Slab Projection		25.13	0.30		Sqm
	Parapet wall	2	25.58		0.90	Sqm
	Screen Lifting Platform Slab		2.14	1.00		Sqm
	Total					
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					Sqm
	Suspended floors, roofs, landings, balcnies and access platform.					Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.					Sqm
	Columns,Pillars, Piers, Abutments, Posts and Struts.					Sqm
9	**Type Item - Brick Work**					
	Brick wall		23.47	0.23	6.82	Cum
	Deduct opening					
	Rolling Shutter	-1	2.50	3.00	0.23	
	Windows	-6	1.50	1.20	0.23	
	Ventilator	-6	0.70	0.90	0.23	
	Deduct column	-8	0.30	6.82	0.23	
	Total					Cum
10	**Plaster work (Inner Face)**					
	Superstructure			21.99	6.82	
	less opening					Sq m
	Total					Sq m
11	**Plaster work (Outer Face)**					
	Superstructure			24.19	6.82	
	less opening					Sq m
	Total					Sq m
12	**Steel Reinforecement**					MT

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
13	**Painting:** Distempering with **oil bound was**hable distember of approved brand and manufacture to give an even shade					Sq m
14	**Cement concrete flooring**					
	Superstructure			38.48		Sq m
	deduct for opening					
	Total					Sq m
15	**Aluminium Window, door and ventilator**					
	Windows	6	1.50	1.20		Sqm
	Ventilator	6	0.70	0.90		Sqm
	Total					Sqm
16	MS/CI foot step	0				Nos.
17	Providing and fixing G.I. pipe railing				15.00	RM
18	Rolling Shutter	1	2.50	3.00		Sqm
19	Providing stuctural steel work in single stanchions composed of RSJ, channel, etc,					M.T
20	Providing and fixing in position copper lightening conductor					No.
21	**MS Chequerred Plate**					
	6 mm thk plate, 10 mm thk ISMC100 with epoxy painted	1	6.50	1.00		Sqm
22	Roof Water Proofing		8.30			Sqm
23	**Rubble Soling:** 230 mm thick rubble soling	1	51.53		0.23	Cum
24	**Filling of total pumping station site up to finished ground level with Random rubble soling**		40.00	30.00	1.90	Cum
	Total					

Qty.
1200.00
122.57
122.57
122.57
38.41
0.00
0.00
0.00
0.00
0.00
0.00
406.12
77.92
34.85
276.60
4.90
11.85
328.20
5000.00
4.90
17.95
22.85
34.85
52.85
2.77
1.66
7.70
1.13
0.22
-1.30
99.88
35.96
6.55
1.52
2.77
0.57
3.12
0.00
4.01
6.76
0.00
0.31
25.61

Qty.
158.20
130.62
25.40
14.76
38.48
3.30
1.44
3.00
6.50
382.00
76.44
5.58
25.40
6.93
27.71
0.00
35.66
38.48
7.54
46.04
2.14
271.92
26.50
308.36
144.97
88.77
82.02
36.84
-1.73
-2.48
-0.87
-3.77
27.99
150.08
-22.08
128.00
165.10
-22.08
143.02
13.80

Qty.
398.74
38.48
-6.50
31.98
10.80
3.78
14.58
0.00
15.00
7.50
1.00
1.00
6.50
54.11
11.85
2280.00
2291.85

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- MANIFOLD CHAMBER IPS A4

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
	up to 1.5 m	Cum	7.00	360.70	2525.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	2.00	116.50	233.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	6.00	270.30	1622.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	3.00	3953.40	11860.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25: All works up to plinth level	Cum	21.00	4952.60	104005.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.71	68500.00	117382.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	86.00	356.40	30650.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	9.00	362.90	3266.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	6.00	17.80	107.00
11	**230mm thick Random rubble soling below PCC.**	Cum	7.00	191.14	1337.98
	BSR - RCD-18- Item- M-148, P-35				
	Total				**287764.98**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- MANIFOLD CHAMBER SPS A4

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.60	8.60	0.18	7.12	Cum
b)	From 1.5 m to 3.0 m		4.60	8.60	0.00	0.00	Cum
c)	From 3.0 m to 4.5 m		4.60	8.60	0.00	0.00	Cum
	Total					**7.12**	
2	Refilling					1.55	Cum
3	Disposal		0.00	8.00	1.75	0.00	Cum
	Rubble solling	1.00	3.60	8.60	0.18	5.57	Cum
	Base slab					0.00	Cum
	Total					5.57	Cum
4	PCC: M15		3.60	8.60	0.10	3.10	Cum
5	**RCC Grade M -25**						
	Footing (Base slab)		3.40	8.40	0.30	8.57	Cum
	Outer walls		21.00	0.25	2.05	10.76	Cum
	Roof slab beam	4	2.64	0.25	0.30	0.79	Cum
	Total					**21.42**	Cum
6	Precast Cover	24	1.59	0.30	0.08	0.86	Cum
		16	1.22	0.30	0.08	0.44	Cum
	Total					**1.3**	Cum
7	Shuttering						
	Footing (Base slab)		23.60		0.30	7.08	Sqm
	Outer walls	2	21.00		2.05	86.10	Sqm
	Roof slab beam	4	2.50		0.85	8.50	Sqm
	Total					**101.68**	Sqm
8	Reinforcement- Fe 500 TMT					**2**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	7.50	0.30		4.50	Sq m
	Total					**6.30**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Rubble solling	1	3.60	8.60	0.23	**7.1208**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- VALVE CHAMBER IPS A4

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	25.00	360.70	9018.00
b)	From 1.5 m to 3.0 m	Cum	10.00	407.00	4070.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	20.00	116.50	2330.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	14.00	270.30	3784.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	7.00	5018.00	35126.00
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	37.00	356.40	13187.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
12	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.28
	BSR - RCD-18- Item- M-148, P-35				
	Total				**152144.28**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- BUTTERFLY VALVE CHAMBER IPS A4

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.10	4.10	1.50	25.22	Cum
b)	From 1.5 m to 3.0 m		4.10	4.10	0.58	9.75	Cum
c)	From 3.0 m to 4.5 m		4.10	4.10		0.00	Cum
2	Refilling					20.49	Cum
3	Disposal		2.50	2.50	1.75	10.94	Cum
	PCC					1.02	Cum
	Base slab					2.52	Cum
	Total					**14.48**	Cum
4	PCC: M15		3.20	3.20	0.10	1.02	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		2.90	2.90	0.30	2.52	Cum
	Outer walls		9.00	0.25	2.05	4.61	Cum
	Total					**7.13**	Cum
6	**Precast Cover**	6	2.14	0.33	0.10	0.42	Cum
7	**Shuttering**						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		2.05	36.90	Sqm
	Total					**40.38**	Sqm
8	**Reinforcement- Fe 500 TMT**					**0.6**	MT
9	**Painting**						
	Side wall	2.00	2.50	0.30		1.50	Sq m
	Front and back wall	2.00	2.50	0.30		1.50	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Rubble solling	1	3.00	3.00	0.23	**2.07**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- FLOW METER CHAMBER IPS A4

Sr. No.	Description	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	20.00	360.70	7214.00
b)	From 1.5 m to 3.0 m	Cum	12.00	407.00	4884.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	18.00	116.50	2097.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	14.00	270.30	3784.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -25	Cum	8.00	4952.60	39621.00
	BSR-BCD-20 Item-5.33.1 Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				

Sr. No.	Description	Unit	Qty	Rates (Rs.)	Amount in Rs.
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	37.00	356.40	13187.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.28
	BSR - RCD-18- Item- M-148, P-35				
	Total				**155416.28**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- CIVIL WORK- FLOW METER CHAMBER IPS A4

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.20	3.20	1.50	20.16	Cum
b)	From 1.5 m to 3.0 m		4.20	3.20	0.88	11.83	Cum
c)	From 3.0 m to 4.5 m		4.20	3.20		0.00	Cum
2	Refilling					18.10	Cum
3	Disposal		3.00	2.00	1.75	10.50	Cum
	PCC					0.94	Cum
	Base slab					2.45	Cum
	Total					**13.89**	Cum
4	PCC: M15		3.60	2.60	0.10	0.94	Cum
5	RCC Grade M -20						
	Footing (Base slab)		3.40	2.40	0.30	2.45	Cum
	Outer walls		9.00	0.25	2.05	4.61	Cum
	Total					**7.36**	Cum
6	**Precast Cover**	8	1.65	0.30	0.08	0.30	Cum
7	Shuttering						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		2.05	36.90	Sqm
	Total					**40.38**	Sqm
8	Reinforcement- Fe 500 TMT					**0.59**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	2.00	0.30		1.20	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Rubble solling	1	2.60	3.60	0.23	**2.1528**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- D.G. ROOM- IPS A4

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	21.00	360.70	7574.70
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	13.00	3953.40	51394.20
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	1.00	116.50	116.50
	BSR-BCD-20-Item 2.26; Pg-96				
3a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	20.00	270.30	5406.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	13.00	4952.60	64383.80
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	33.00	5704.70	188255.10
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	5.00	68500.00	342500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.00	203.00	3248.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	63.00	412.20	25968.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	133.00	362.90	48265.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	80.00	470.60	37648.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	27.00	5840.00	157680.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	375.00	157.40	59025.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	375.00	97.20	36450.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	67.00	2553.30	171071.10
	BSR-BCD-20; Item-22.8.1; Pg-311				
11	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	50.00	456.60	22830.00
	BSR-BCD-20; Item-11.4; Pg-174				
12	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	13.00	3635.80	47265.40
	BSR-BCD-20; Item-21.10; Pg-307				
13	Supplying and fixing-rolling shutters of approved make. Made of required size of M.S.Iaths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	12.00	2394.00	28728.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	5.00	802.00	4010.00
	18mm thick with under layer 12mm thick cement plaster 1:3 (1 cement : 3coarse sand)				
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	24.00	191.14	4587.36
	BSR - RCD-18- Item- M-148, P-35				
				Total	**1306407.46**

D G Room:

	Nos	L	B	H	
Inner dimension		10.00	5.00	5.00	
Outer dimension		10.46	5.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	8.00	1.70	1.70	0.30	
Total no of Columns	8				
C1	8	0.30	0.30	8.35	
Plinth beam		42.76	0.30	0.40	
Lintel beam		31.84	0.30	0.40	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0.00	0.00		0.00	
Windows size	7.00	1.50		1.20	
Ventilators size	0.00	0.75		1.00	
Rolling Shutter	1	3.00		4.00	
Roof beam		42.76	0.30	0.45	
Roof slab		11.06	6.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		112.10			
Existing GL		104.60			
Finished GL		106.500			
Plinth level		107.100			
Top of Footing		102.900			
Footing Level		102.500			

MEASUREMENT SHEET FOR D G ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	8	Cum	2.50	2.50	0.43	21.50	**21.50**
2	**PCC**							
	F1	8	Cum	1.90	1.90	0.10	2.89	
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth protection	1	Cum	31.84	1.00	0.05	1.59	**13.05**
3	**Back Filling**							
	Earth work qty		Cum				1.52	
	Deduction C1	-8	Cum	0.30	0.30	1.00	-0.72	**0.80**
4	**RCC M25**							
	Column foundation F1	8	Cum	1.70	1.70	0.30	6.94	
	Columns C1	8	Cum	0.30	0.30	8.35	6.01	**12.95**
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth Beam	1	Cum	42.76	0.30	0.40	5.13	
	Lintel Beam	1	Cum	31.84	0.30	0.40	3.82	
	Roof Beam	1	Cum	42.76	0.30	0.45	5.77	
	Chajja - For Doors	0	Cum	0.00	0.45	0.125	0.00	
	Chajja - For Windows	7	Cum	1.80	0.45	0.125	0.71	
	Chajja - For Ventilators	0	Cum	1.05	0.45	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	3.30	0.45	0.125	0.19	
	Ramp/Steps	1	Cum	3.00	1.00	0.600	0.90	
	Roof Slab	1	Cum	11.06	6.06	0.125	8.38	**33.47**
5	**Steel**		Tonn				4.64	**4.64**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	8	Sqm	6.80		0.30	16.32	**16.32**
	Columns: C1	8	Sqm	1.20		8.35	80.16	**80.16**
	Beams: Plinth Beam	1	Sqm	42.76		1.10	47.04	
	Lintel Beam	1	Sqm	31.84		1.10	35.02	
	Roof Beam	1	Sqm	42.76		1.20	51.31	**133.37**
	Roof slab	1	Sqm	10.46	5.46		57.11	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.50	0.45		4.73	
	Chajja - For Ventilators	0	Sqm	0.75	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.00	0.45		1.35	**63.19**
7	**Brick Work Wall**							
	Wall	1	Cum	31.84	0.23	5.0	36.62	
	Wall- up to plinth level	1	Cum	31.84	0.23	0.6	4.39	
	Parapet wall	0	Cum	16.52	0.00	0.00	0.00	
	Deduction- Lintel beam	-1	Cum	31.84	0.23	0.40	-2.93	
	Deduction- Floor PCC & floor slab	-1	Cum	31.84	0.23	0.25	-1.83	
	Deduction- Roof beam	-1	Cum	31.84	0.23	0.45	-3.30	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-7	Cum	1.50	0.23	1.20	-2.90	
	Deduction- Ventilator	0	Cum	0.75	0.00	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	3.00	0.23	4.00	-2.76	**27.30**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	31.84		5.00	159	
	Parapet wall	0	Sqm	16.52		0.00	0.00	
	Roof (Ceiling)	1	Sqm	10.00	5.00		50.00	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-7	Sqm	1.5		1.2	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3		4	-12.0	**184.60**
	External Plastering							
	Wall	1	Sqm	31.84		5.00	159.20	
	Wall- up to plinth level	1	Sqm	31.84		0.60	19.10	
	Parapet wall	1	Sqm	16.52		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.80	0.45		22.47	
	Chajja - For Ventilators	0	Sqm	1.05	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.30	0.45		3.89	
	Roof Slab Projection	1	Sqm	34.24	0.30		10.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-7	Sqm	1.50		1.20	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3.00		4.00	-12.00	**190.33**
9	**Painting**							
	Internal Painting							**184.6**
	External Painting							**190.33**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
10	**Flooring**	1	Sqm	10.00	5.00		50.00	**50.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	7	Sqm	1.50		1.20	12.60	
	Ventilators	0	Sqm	0.75		1.00	0.00	**12.60**
12	**Rolling Shutter**	1	Sqm	3.00		4.00	12.00	**12.00**
13	**Water proofing at top of roof**	1	Sqm	11.06	6.06		67.02	**67.02**
14	**Skirting**	1	Sqm	30.00		0.15	4.50	**4.50**
15	**Boulders for Floor area**	1	Sqm	10.46	5.46	0.30	17.13	**23.78**
	F1	8.00	Sqm	1.9	1.90	0.23	6.64	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- DIESEL STORE ROOM- IPS A4

Sr. No.	Description	Unit	Qty	Rate Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	11.00	360.70	3967.70
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	2.00	116.50	233.00
	BSR-BCD-20-Item 2.26; Pg-96				
4	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.00	270.30	2433.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	6.00	4952.60	29715.60
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	14.00	5704.70	79865.80
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.00	203.00	1624.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	23.00	412.20	9480.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	48.00	362.90	17419.20
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	37.00	470.60	17412.20
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	16.00	5840.00	93440.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	168.00	157.40	26443.20
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	168.00	97.20	16329.60
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	20.00	456.50	9130.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	6.00	2394.00	14364.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	31.00	2553.30	79152.30
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	11.00	191.14	2102.54
	BSR - RCD-18- Item- M-148, P-35				
				Total	**580464.74**

Diesel Store Room:

	Nos	L	B	H	
Inner dimension		5.00	4.00	3.50	
Outer dimension		5.46	4.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	4	1.70	1.70	0.30	
Total no of Columns	4				
C1	4	0.30	0.30	7.70	4.93
Plinth beam		19.84	0.30	0.40	
Local lintel beam		7.70	0.23	0.20	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0	1.20		2.10	
Windows size	3	1.50		1.20	
Ventilators size	0	0.75		1.00	
Rolling Shutter	1	2.00		3.00	
Roof beam		19.84	0.30	0.40	
Roof slab		6.06	5.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		110.600			
Existing GL		104.600			
Finished GL		106.500			
Plinth level		107.100			
Top of Footing		102.900			
Footing Level		102.500			

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.50	2.50	0.43	10.75	**10.75**
2	**PCC**							
	F1	4	Cum	1.90	1.90	0.10	1.44	
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth protection	1	Cum	19.84	1.00	0.05	0.99	**5.43**
3	**Back Filling**							
	Earth work qty		Cum				1.85	
	Deduction C1	-4	Cum	0.30	0.30	0.43	-0.15	**1.69**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.70	1.70	0.30	3.47	
	Columns C1	4	Cum	0.30	0.30	7.70	2.77	**6.24**
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth Beam	1	Cum	19.84	0.30	0.40	2.38	
	Lintel Beam	3	Cum	7.70	0.23	0.20	1.06	
	Roof Beam	1	Cum	19.84	0.30	0.40	2.38	
	Chajja - For Doors	0	Cum	1.50	0.50	0.125	0.00	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.30	0.50	0.125	0.14	
	Ramp/Steps	1	Cum	2.00	1.00	0.600	0.60	
	Roof Slab	1	Cum	6.06	5.06	0.125	3.83	**13.73**
5	**Steel**		Tonn				2.00	**2.00**

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.80		0.30	8.16	**8.16**
	Columns: C1	4	Sqm	1.20		7.70	36.96	**36.96**
	Beams: Plinth Beam	1	Sqm	19.84		1.10	21.82	
	Lintel Beam	1	Sqm	7.70		0.63	4.85	
	Roof Beam	1	Sqm	19.84		1.10	21.82	**48.50**
	Roof slab	1	Sqm	5.00	4.00		20.00	
	Suspended: Chajja - For Doors	0	Sqm	1.20	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.00	0.50		1.00	**23.25**
7	**Brick Work Wall**							
	Wall	1	Cum	19.84	0.23	3.5	15.97	
	Wall- up to plinth level	1	Cum	19.84	0.23	0.6	2.74	
	Parapet wall	1	Cum	19.84	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	1.20	0.23	2.10	0.00	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.00	0.23	3.00	-1.38	**16.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	19.84		3.50	69	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Roof (Ceiling)	1	Sqm	5.00	4.00		20.00	
	Deduction- Doors	0	Sqm	1.2		2.1	0.00	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2		3	-6.0	**78.04**
	External Plastering							
	Wall	1	Sqm	19.84		3.50	69.44	
	Wall- up to plinth level	1	Sqm	19.84		0.60	11.90	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Chajja - For Doors	0	Sqm	1.50	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.30	0.50		3.55	
	Roof Slab Projection	1	Sqm	22.24	0.30		6.67	
	Deduction- Doors	0	Sqm	1.20		2.10	0.00	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.00		3.00	-6.00	**90.06**
9	**Painting**							
	Internal Painting	-1	Sqm	2		3	-6	**78.0**
	External Painting							**90.06**
10	**Flooring**	1	Sqm	5.00	4.00		20.00	**20.00**

MEASUREMENT SHEET FOR DIESEL STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	0	Sqm	1.20		2.10	0.00	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**5.40**
12	**Rolling Shutter**	1	Sqm	2.00		3.00	6.00	**6.00**
13	**Water proofing at top of roof**	1	Sqm	6.06	5.06		30.66	**30.66**
14	**Skirting**	1	Sqm	18.00		0.15	2.70	**2.70**
15	**Boulders for Floor area**	1	Sqm	5.46	4.46	0.30	7.31	**10.63**
	F1	4	Sqm	1.9	1.90	0.23	3.32	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- STORE ROOM- IPS A4

Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	9.00	360.70	3246.30
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.60	19768.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	2.00	116.50	233.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	7.00	270.30	1892.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	4.00	4952.60	19810.40
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	11.00	5704.70	62751.70
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	16.00	412.20	6595.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	41.00	362.90	14878.90
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	37.00	470.60	17412.20
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	14.00	5840.00	81760.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	155.00	157.40	24397.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	155.00	97.20	15066.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	14.00	456.50	6391.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	8.00	3635.50	29084.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	23.00	2553.30	58725.90
	BSR-BCD-20; Item-22.8.1; Pg-311				
13	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	2.00	802.00	1604.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	8.00	191.14	1529.12
	BSR - RCD-18- Item- M-148, P-35				
				Total	**503565.72**

Store Room:

	Nos	L	B	H	
Inner dimension		4.50	3.00	3.50	
Outer dimension		4.96	3.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	4	1.50	1.50	0.30	
Total no of Columns	4				
C1	4	0.30	0.30	7.70	4.93
Plinth beam		16.84	0.30	0.40	
Local lintel beam	3	6.90	0.23	0.20	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	1	1.20		2.10	
Windows size	3	1.50		1.20	
Ventilators size	0	0.75		1.00	
Rolling Shutter	0	0.00		0.00	
Roof beam		16.84	0.30	0.40	
Roof slab		5.56	4.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		110.600			
Existing GL		104.600			
Finished GL		106.500			
Plinth level		107.100			
Top of Footing		102.900			
Footing Level		102.500			

MEASUREMENT SHEET FOR STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.30	2.30	0.43	9.10	**9.10**
2	**PCC**							
	F1	4	Cum	1.70	1.70	0.10	1.16	
	Floor Slab	1	Cum	4.96	3.46	0.15	2.57	
	Plinth protection	1	Cum	16.84	1.00	0.05	0.84	**4.57**
3	**Back Filling**							
	Earth work qty		Cum				1.83	
	Deduction C1	-4	Cum	0.30	0.30	0.43	-0.15	**1.68**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.50	1.50	0.30	2.70	
	Columns C1	4	Cum	0.30	0.30	4.93	1.77	**4.47**
	Floor Slab	1	Cum	4.50	3.00	0.15	2.03	
	Plinth Beam	1	Cum	16.84	0.30	0.40	2.02	
	Lintel Beam	3	Cum	6.90	0.23	0.20	0.95	
	Roof Beam	1	Cum	16.84	0.30	0.40	2.02	
	Chajja - For Doors	1	Cum	1.50	0.50	0.125	0.09	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	0.600	0.90	
	Roof Slab	1	Cum	5.56	4.06	0.125	2.82	**11.17**
5	**Steel**		Tonn				1.56	**1.56**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.00		0.30	7.2	**7.20**
	Columns: C1	4	Sqm	1.20		7.70	36.96	**36.96**
	Beams: Plinth Beam	1	Sqm	16.84		1.10	18.52	
	Lintel Beam	1	Sqm	6.90		0.63	4.35	
	Roof Beam	1	Sqm	16.84		1.10	18.52	**41.39**
	Roof slab	1	Sqm	4.50	3.00		13.50	
	Suspended: Chajja - For Doors	1	Sqm	1.20	0.50		0.60	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**16.35**
7	**Brick Work Wall**							
	Wall	1	Cum	16.84	0.23	3.5	13.56	
	Wall- up to plinth level	1	Cum	16.84	0.23	0.6	2.32	
	Parapet wall	1	Cum	18.04	0.00	0.00	0.00	
	Deduction- Doors	-1	Cum	1.20	0.23	2.10	-0.58	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**14.06**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	16.84		3.50	59	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	4.50	3.00		13.50	
	Deduction- Doors	-1	Sqm	1.2		2.1	-2.52	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**64.52**
	External Plastering							
	Wall	1	Sqm	16.84		4.10	69.04	
	Wall- up to plinth level	1	Sqm	16.84		0.60	10.10	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Chajja - For Doors	1	Sqm	1.50	0.50		3.15	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	19.24	0.30		5.77	
	Deduction- Doors	-1	Sqm	1.20		2.10	-2.52	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**90.05**
9	**Painting**							
	Internal Painting	0	Sqm	0		0	0	**64.5**
	External Painting							**90.05**
10	**Flooring**	1	Sqm	4.50	3.00		13.50	**13.50**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	1	Sqm	1.20		2.10	2.52	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**7.92**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	5.56	4.06		22.57	**22.57**
14	**Skirting**	1	Sqm	15.00		0.15	2.25	**2.25**
15	**Boulders for Floor area**	1	Sqm	4.96	3.46	0.30	5.15	**7.81**
	F1	4	Sqm	1.7	1.70	0.23	2.66	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- METERING ROOM- IPS A4

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	74.00	360.70	26691.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	6.00	3953.40	23720.40
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	64.00	116.50	7456.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	10.00	270.30	2703.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	8.00	4952.60	39620.80
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.00	5704.70	114094.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.00	203.00	2233.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.00	412.20	16900.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	73.00	362.90	26491.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	49.00	470.60	23059.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	23.00	5840.00	134320.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	245.00	157.40	38563.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	245.00	97.20	23814.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm	24.00	534.60	12830.40
	BSR-BCD-20; Item-11.9.1; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	9.00	3635.80	32722.20
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make. Made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	2394.00	19152.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	24.00	2553.30	61279.20
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	13.00	191.14	2484.82
	BSR - RCD-18- Item- M-148, P-35			**Total**	**816041.92**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	6	Cum	2.30	2.30	2.33	73.95	**73.95**
2	**PCC**							
	F1	6	Cum	1.70	1.70	0.10	1.73	
	Floor Slab	1	Cum	6.46	4.46	0.10	2.88	
	Plinth protection	1	Cum	21.84	1.00	0.05	1.09	**5.70**
3	**Back Filling**							
	Earth work qty		Cum				64.20	
	Deduction C1	-6	Cum	0.30	0.30	1.00	-0.54	**63.66**
4	**RCC M25**							
	Column foundation F1	6	Cum	1.50	1.50	0.30	4.05	
	Columns C1	6	Cum	0.30	0.30	6.85	3.70	**7.75**
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth Beam	1	Cum	28.30	0.30	0.40	3.40	
	Lintel Beam	1	Cum	11.80	0.23	0.20	0.54	
	Roof Beam	1	Cum	28.30	0.30	0.45	3.82	
	Chajja - For Doors	0	Cum	0.00	0.50	0.125	0.00	
	Chajja - For Windows	5	Cum	1.80	0.50	0.125	0.56	
	Chajja - For Ventilators	0	Cum	1.00	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.80	0.50	0.125	0.18	
	Ramp/Steps	1	Cum	2.00	2.50	1.200	3.00	
	Roof Slab	1	Cum	7.06	5.06	0.125	4.47	**20.29**
5	**Steel**		MT				2.80	**2.80**
6	**Formwork**							
	Foundation: Column foundation F1	6	Sqm	6.00		0.30	10.8	**10.80**
	Columns: C1	6	Sqm	1.20		6.85	49.32	**49.32**
	Beams: Plinth Beam	1	Sqm	28.30		1.10	31.13	
	Lintel Beam	1	Sqm	11.80		0.63	7.43	
	Roof Beam	1	Sqm	28.30		1.20	33.96	**72.52**
	Roof slab	1	Sqm	7.06	5.06		35.72	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.50	0.50		3.75	
	Chajja - For Ventilators	0	Sqm	0.70	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.50	0.50		1.25	**40.72**
7	**Brick Work Wall**							
	Wall	1	Cum	28.30	0.23	3.50	22.78	
	Wall- up to plinth level	1	Cum	28.30	0.23	0.60	3.91	
	Parapet wall	1	Cum	23.04	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-5	Cum	1.50	0.23	1.20	-2.07	
	Deduction- Ventilator	0	Cum	0.70	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.50	0.23	3.00	-1.73	**22.89**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	28.30		3.50	99	
	Parapet wall	0	Sqm	23.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	7.06	5.06		35.72	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-5	Sqm	1.5		1.2	-9.00	
	Deduction- Ventilator	0	Sqm	0.7		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.5		3	-7.5	**118.27**
	External Plastering							
	Wall	1	Sqm	28.30		3.50	99.05	
	Wall- up to plinth level	1	Sqm	28.30		0.60	16.98	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
	Parapet wall	1	Sqm	23.04		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.80	0.50		16.50	
	Chajja - For Ventilators	0	Sqm	1.00	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.80	0.50		3.80	
	Roof Slab Projection	1	Sqm	24.24	0.30		7.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-5	Sqm	1.50		1.20	-9.00	
	Deduction- Ventilator	0	Sqm	0.70		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.50		3.00	-7.50	**127.10**
9	**Painting**							
	Internal Painting							**118.3**
	External Painting							**127.10**
10	**Flooring**	1	Sqm	6.00	4.00		24.00	**24.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	5	Sqm	1.50		1.20	9.00	
	Ventilators	0	Sqm	0.70		0.90	0.00	**9.00**
12	**Rolling Shutter**	1	Sqm	2.50		3.00	7.50	**7.50**
13	**Water proofing at top of roof**	1	Sqm	6.00	4.00		24.00	**24.00**
14	**Skirting**	1	Sqm	20.00		0.15	3.00	**3.00**
15	**Boulders for Floor area**	1	Sqm	6.46	4.46	0.30	8.64	**12.63**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- INTERNAL ROAD IPS A4

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	94.00	637.00	59878.00
2	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	42.00	888.00	37296.00
	SOR-RCD-18; Item-4.12; Pg.-76				
3	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	281.00	30.30	8514.00
	BSR-RCD-18-Item 5.1, Pg-84				
4	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	281.00	11.10	3119.00
	BSR-RCD-18-Item 5.2, Pg-84				
5	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	14.00	5406.00	75684.00
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying **Tack Coat with bitumen emulsion grade 60/70 for BUSG** @ 5Kg/10Sqm. area using emulsion pressure distributor on the prepared bituminus/granular surface cleaned with mechanical broom and as per eelevant clauses MOSRTH specification clause No. 503 complete in all respects.	Sqm	281.00	31.05	8725.00
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects. Note: *1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. for grading (10mm nominal size)	Cum	7.00	7142.00	49994.00
	BSR-RCD-2018-Item-5.7 P-84				
				Total	**243210.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART					
COST ESTIMATE- CIVIL WORK- COMPOUND WALL- IPS A4					
Sr. no.	**Description**	**Unit**	**Qty**	**Rate in Rs.**	**Amount in Rs.**
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	cum	331.00	360.70	119391.70
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	cum	14.00	3953.40	55347.60
3	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	cum	53.87	5840.00	314600.95
	Superstructure above plinth level up to floor V				
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarse sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	Sq m	562.84	146.00	82174.64
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Sq m	47.25	270.30	12772.73
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	cum	283.41	116.50	33016.95
	BSR-BCD-20-Item 2.26; Pg-96				
7	RCC: Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, required grade of reinforced cement concrete:				
	RCC Grade M -20 Below Plinth	cum	34.32	4689.20	160935.57
	RCC Grade M -20 Above Plinth	cum	8.42	5194.80	43749.96
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sq m	73.50	203.00	14920.50
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sq m	88.15	362.90	31988.73
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sq m	134.75	470.60	63413.35
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.42	68500.00	234228.08
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	Painting: White washing with lime to give an ever shade: New work (three or more coats): BSR-BCD-20; Item-13.70.1; Pg-206	cum	562.84	17.80	10018.55
				Cost of Compound Wall (without gates)	1176559.31
				Boundary length	140.00
				Cost of 1 m Compound Wall (without gates)	8404.00
11	**Gates:** Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.				
	MJP 2018-19, Section H, Item No 3; Pg- 58.	No.	1	25303.00	25303.00

Sr. no.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.	1	13651.00	13651.00
	MJP 2018-19, Section H, Item No 4; Pg- 58.				
		Cost of Compound Wall (with gates)			**1215513.31**

A

Boundary Wall length	**140**	m	L= 40
Column spacing	3	m c/c	W= 30
No. of columns total	46.0	Nos.	
No. of Expansion joint	3.0	Nos.	
Total No. of columns	49.0	Nos.	
Column ht	2.0	m	
Col W	0.25	m	
Col D	0.25	m	
Beam W	0.23	m	
Beam D	0.23	m	
Column footing L	1.5	m	
Column footing W	1.5	m	
Footing thk	0.25	m	
Depth of foundation	1	m	
PCC proj & thk	0.075	m	
Working space	0.3	m	

S.No	Description					Quantity
		No.s	L	B	D	
1	Earth work excavation of foundation for structures as per drawing and technical specification including setting out, construction of shoring and bracing,removal of stumps and other deleterious mattar, dressing of sides and bottom and backfilling with approved material etc. and as per relevent clause of section 300 and 2100 - Ordinary Soil (upto 1.5m)					
	Footing	49.00	2.25	2.25	1.33	328.68
	Walls	1.00	29.75	0.38	0.18	1.98
	Total					**330.66**
2	Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centering and shuttering - In plinth and foundation - M - 10 Grade.					
	Footing	49.00	1.65	1.65	0.075	10.01
	Walls	1.00	127.75	0.38	0.075	3.64
	Deduction for Gate	-1.00	2.50	0.38	0.075	-0.07
	Total					**13.57**
3	Brick work with well burnt chimney bricks having crushing strength not less than 25kg/cm2 and water absorption not more than 20% above plinth level including cost of form work					
	Wall	1.00	127.75	0.23	1.870	**54.95**
	Deduction for Gate	-1.00	2.50	0.23	1.870	-1.08
	Total					53.87
4	12 mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete					
	In cement mortar 1:6					
	Two Side Wall	2.00	140.00		2.00	560.00

S.No	Description					Quantity
		No.s	L	B	D	
	Column sides	49.00	0.080		2.00	7.84
	Deduction for Gate	-1.00	2.50		2.00	-5.00
	Total					**562.84**
5	Disposal					
	Footing	49.00	1.50	1.50	0.250	27.56
	Column	49.00	0.25	0.25	0.750	2.30
	Plinth beam	1.00	127.75	0.23	0.130	3.82
	All PCC					13.57
	Total					**47.25**
6	Back filling: Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20 cm in depth including consolidation of each layer by ramming watering, lead up to 50 m and lift upto 1.5 m in all kinds of soils					
		Total				**283.41**
7	**RCC**					
	Footing	49.00	1.50	1.50	0.250	27.56
	Column	49.00	0.25	0.25	2.750	8.42
	Plinth beam	1.00	127.75	0.23	0.230	6.76
	Total					**42.74**
8	**Shuttering**					
	Footing	49.00	6.00		0.250	73.50
	Column	49.00	1.00		2.750	134.75
	Plinth beam	1.00	127.75		0.690	88.15
	Total					**296.40**
9	**Reinforcement**					**3.42**
10	Providing and applying one coat of approved colour and shade to new surface including scaffolding brushing and brooming down including two coats of whitewash as base cost etc., complete					**562.84**

Unit
m^3
m^3
m^3
m^3
m^3
m^3
m^3
m^3
m^3

Unit
m^2
m^3
m^3
m^3
m^3
m^2
MT
m^3

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- TOILET BLOCK - IPS A4

Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	7.00	360.70	2524.90
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	2.00	3953.40	7906.80
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	6.00	116.50	699.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1.00	270.30	0.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	4.00	4952.60	19810.40
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	9.00	5704.70	51342.30
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**				
	BSR-BCD-20; Item-5.22.7, Pg-106	Tonn	1.00	68500.00	68500.00
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	203.00	1218.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	11.00	412.20	4534.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	32.00	362.90	11612.80
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	31.00	470.60	14588.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	5.09	5840.00	29696.40
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	62.00	157.40	9758.80
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade				
	BSR - BCD-20- Item- 13.77.2, P-206	Sqm	41.00	97.20	3985.20
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm	6.00	534.60	3207.60
	BSR-BCD-20; Item-11.9; Pg-370				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	**Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.**				
	BSR-BCD-20; Item-22.8.1; Pg-311	Sqm	18.00	2553.30	45959.40
13	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacture) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	Sqm	21.00	797.50	16747.50
	BSR-BCD-20; Item-11.36; Pg-179				
14	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	Sqm	6.00	712.20	4273.20
	BSR-BCD-20; Item-11.37; Pg-179				
15	Providing and fixing vitreous china dual purpose closet suitable for use as squatting pan or European type water closet (Anglo Indian W.C pan) with seat lid with C.P. brass hinges and rubber buffers, 10 litre low level flushing cistern with fitting and brackets, 40mm flush bend 20mm over flow pipe with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required :				
	White vitreous china dual purpose WC pan with white solid plastic seat and lid with white vitreous china flushing cistern and C.P. flush bend.	each	1.00	8734.10	8734.10
	BSR-BCD-20; Item-17.68.1; Pg-260				
16	**Filling up to floor finish level with Random rubble masonry.**	Cum	4.00	191.14	764.56
	BSR - RCD-18- Item- M-148, P-35				

Sr. No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
17	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.				
	External work				
	15mm Dia	m	10.00	187.90	1879.00
	25 mm	m	10.00	303.20	3032.00
	BSR-BCD-20; Item- 18.12.1 & 18.12.3, P-267				
18	Providing and fixing brass stop cock of approved quality :				
	External work				
	15mm Dia	no	1.00	302.50	302.50
	20 mm	no	1.00	326.40	326.40
	BSR-BCD-20; Item- 18.16.1 & 18.16.2, P-267				
19	Providing, lowering, laying in trenches, aligning, fixing in position and jointing ISI marked uPVC pipe fittings/ accessories of class III (6 Kg/sqcm) suitable for potable water with rubber rings joints in uPVC pipe line at all levels/ depth including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	110 mm dia pipe	m	25.00	273.00	6825.00
	RUIDP-17- Item- 19.1.2 -PG-104				
20	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931				
	15 mm nominal bore	each	3.00	419.00	1257.00
	BSR - BCD-20- Item- 18.49 , P-274				
21	Providing and fixing square-mouth S.W. gully trap grade 'A'' complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	100mmx100mm size P type				
	With Sewer bricks conforming to IS : 4885	each	1.00	1831.90	1831.90
	BSR - BCD-20- Item- 19.4.1.2 P-292				
22	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand : 4 graded stone aggregate 20 mm nominal size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design :				
	Inside dimensions 455x610 mm and 45 cm deep for single pipe line :				
	with bricks	each	3.00	4228.40	12685.20
	BSR - BCD-20- Item- 19.30.1.1 P-299				
23	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require :				
	White Vitreous China Wash basin size 630x450 mm with a pair of 15 mm C.P. brass pillar taps.	each	1.00	2538.80	2538.80
	BSR - BCD-20- Item- 17.7.1, P-248				
					354720.56
				Total	**354720.56**

TOILET BLOCK :

	Nos	L	B	H
Inner dimension		2.90	2.00	3.00
Outer dimension		3.46	2.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.20	1.20	0.30
Total no of Columns	4			
C1	4	0.30	0.30	6.53
Plinth beam		14.30	0.30	0.40
Lintel beam		6.30	0.23	0.13
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	2	1.00		2.10
Windows size	0	0.00		0.00
Ventilators size	2	0.60		0.45
Rolling Shutter	0	0.00		0.00
Roof beam		11.84	0.30	0.40
Roof slab		4.06	3.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		110.100		
Existing GL		104.600		
Finished GL		106.500		
Plinth level		107.100		
Top of Footing		102.900		
Footing Level		102.600		

MEASUREMENT SHEET FOR TOILET BLOCK

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1- up to 1.5 m	4	Cum	2.00	2.00	0.43	6.88	**6.88**
	From 1.5 m to 3.0 m	0		2.00	2.00	0.00	0.00	
		0	Cum	0.00	0.00	0.00	0.00	
1A	Excavation in soft soil							
a)	up to 1.5 m		Cum			6.88		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1B	Excavation in soft rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1C	Excavation in hard rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
	Total		Cum					**6.88**
2	**PCC**							
	F1	4	Cum	1.40	1.40	0.10	0.78	
	Floor Slab	1	Cum	3.46	2.46	0.10	0.85	
	Plinth protection	1	Cum	11.84	1.00	0.05	0.59	**2.22**
3	**Back Filling**							
	Earth work qty		Cum				2.93	
	Deduction C1	-4	Cum	0.30	0.30	1.00	-0.36	**5.74**
3a	**Disposal**		Cum				1.14	**1.14**

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.20	1.20	0.30	1.73	
	Columns C1	4	Cum	0.30	0.30	6.53	2.35	**4.08**
		0		1.50	1.00	0.15	0.00	
		0		1.00	1.00	0.15	0.00	
	Floor Slab	1	Cum	3.46	2.46	0.15	1.28	
	Plinth Beam	1	Cum	14.30	0.30	0.40	1.72	
	Lintel Beam	1	Cum	6.30	0.23	0.13	0.18	
	Roof Beam	1	Cum	14.30	0.30	0.40	1.72	
	Chajja - For Doors	2	Cum	1.30	0.50	0.125	0.16	
	Chajja - For Windows	0	Cum	0.30	0.50	0.125	0.00	
	Chajja - For Ventilators	2	Cum	0.90	0.50	0.125	0.11	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	1.200	1.80	
	Roof Slab	1	Cum	4.06	3.06	0.125	1.55	**8.52**
5	**Steel**		Tonn				1.26	**1.26**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	4.80		0.30	5.76	**5.76**
	Columns: C1	4	Sqm	1.20		6.53	31.32	**31.32**
		0		1.50		1.00	0	
		0		1.00		1.00	0	
	Beams: Plinth Beam	1	Sqm	14.30		1.10	15.73	
	Lintel Beam	1	Sqm	6.30		0.48	3.02	
	Roof Beam	1	Sqm	11.84		1.10	13.02	**31.77**
	Roof slab	1	Sqm	3.46	2.46		8.51	
	Suspended: Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**10.71**
7	**Brick Work Wall**							
	Wall	1	Cum	6.30	0.23	3.0	4.35	
	Internal wall	1	Cum	2.00	0.10	3.0	0.60	
	Wall- up to plinth level	1	Cum	8.90	0.23	0.6	1.23	
	Parapet wall	1	Cum	13.04	0.00	0.00	0.00	
	Deduction- Doors	-2	Cum	1.00	0.23	2.10	-0.97	
	Deduction- Windows	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Ventilator	-2	Cum	0.60	0.23	0.45	-0.12	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**5.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	6.30		3.00	19	
	Internal wall	2	Sqm	2.00		3.00	12	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
		0		1.50		1.00	0.00	
		0		1.00		1.00	0.00	
	Roof (Ceiling)	1	Sqm	2.90	2.00		5.80	
	Deduction- Doors	-2	Sqm	1		2.1	-4.20	

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
	Deduction- Windows	0	Sqm	0		0	0.00	
	Deduction- Ventilator	-2	Sqm	0.6		0.45	-0.54	
		0		2.46		3.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**31.96**
	External Plastering							
	Wall	1	Sqm	6.30		3.60	22.68	
	Wall- up to plinth level	1	Sqm	8.90		0.60	5.34	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
	Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	14.24	0.30		4.27	
	Deduction- Doors	-2	Sqm	1.00		2.10	-4.20	
	Deduction- Windows	0	Sqm	0.00		0.00	0.00	
	Deduction- Ventilator	-2	Sqm	0.60		0.45	-0.54	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**29.75**
9	**Painting**							
	Internal Painting	-1	Sqm	13.8		0.00	0	**11.3**
	External Painting							**29.75**
10	**Flooring**	1	Sqm	2.90	2.00		5.80	**5.80**
	dado		Sqm	13.80		1.50	20.70	
	deduct						0.00	**20.70**
11	**Openings**							
	Doors	2	Sqm	1.00		2.10	4.20	
	Windows	0	Sqm	0.00		0.00	0.00	
	Ventilators	2	Sqm	0.60		0.45	0.54	**4.74**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	3.96	3.06		12.12	**17.92**
	Water proofing below the flooring	1	Sqm	2.90	2.00		5.80	
14	**Skirting**	0	Sqm	9.80		0.15	0.00	**0.00**
15	**Boulders for Floor area**	1	Cum	2.90	2.00	0.60	3.48	**3.93**
	F1	1	Cum	1.40	1.40	0.23	0.45	

Rate Analysis for Soil disposal Soil density=1.

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Stone Boulder tone Boulder densi

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Sand Sand density=1

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1

2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for cement Cement density=

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for Aggregates Aggregates density

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

ity=1.84 T/m

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1 15

210.61

.84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8

7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

γ=1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART

COST SUMMARY -CIVIL WORK- PUMPING STATION- IPS A5

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station
		IPS A5
A	**Civil Works**	
1	Screen Chamber	6.17
2	Pump House (Wet well and Superstructure)	49.72
3	Manifold Chamber	2.96
4	Valve Chamber	1.36
5	Flowmeter Chamber	1.55
6	D.G. Room	12.96
7	Diesel Storage Room	5.80
8	Store Room	5.05
9	Metering Room	8.16
10	Internal Roads (3m wide)	2.41
11	Compound Wall	12.23
12	Toilet Block	3.53
13	Material Carrying Charges	5.31
	Total Cost of Civil Work	**117.21**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

Sr. No.	Pumping Stations	Qnty. from Estimate Sheet														RCC, Flooring and Sand Filling							Bricks				Plaster				Total Quantity in MT			Carriage Charges (In Lakh Rs.)				
		Concrete (C:S:A)				Bricks (m3)	Plaster (m2)	Flooring (52 mm thk) M15		Sand Filling	Rubble Solling	Aggregate for Internal Road Works (m3)				Cement		Sand		Aggregate			Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand									
		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M 25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (m2)	Volume (m3)	Volume (m3)	**Volume (m3)**	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ m3	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Volume (m3)	Wt (MT) 1870kg/ m3	**Wt (MT) 1870kg/ m3**	Wt (MT) 1920kg/ m3	MT	MT	MT	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Sand	Aggre gate	Bricks	Sand (9.40 Rs./t.km)	Aggregate (9.40 Rs./t.km)	Bricks (9.40 Rs./t.km)	**Rubble soling (9.40 Rs./t.km)**	Total (Rs. In Lakhs)
1	**IPS A5**																																				
	Screen Chamber	5.00			40.00	-	-		-		2.61				-	10.50	15.12	11.50	21.16	23.00	43.01	4.88	-	-	-	-	-	-	-	-	21.16	43.01	-	0.02	0.04	-	-	0.06
	Wetwell & Superstructure	23.00			162.00	22.00	216.00	32.00	1.28		1,980.00				-	42.98	61.89	47.77	87.90	95.53	178.64	3,702.60	42.24	0.92	3.67	37.65	0.65	0.94	1.94	3.57	95.14	178.64	42.24	0.09	0.17	0.04	3.48	0.30
	Manifold Chamber	3.00			19.00	-	-		-		7.12				-	5.05	7.27	5.65	10.40	11.30	21.13	13.32	-	-	-	-	-	-	-	-	10.40	21.13	-	0.01	0.02	-	0.01	0.03
	Valve Chamber	1.00			7.00	-	-		-		3.00				-	1.85	2.66	2.05	3.77	4.10	7.67	5.61	-	-	-	-	-	-	-	-	3.77	7.67	-	-	0.01	-	0.01	0.01
	Flow Meter Chamber	1.00			8.00	-	-		-		2.00				-	2.10	3.02	2.30	4.23	4.60	8.60	3.74	-	-	-	-	-	-	-	-	4.23	8.60	-	-	0.01	-	-	0.01
	D.G. Room	13.00			46.00	27.00	375.00	50.00	2.00		24.00				-	13.09	18.85	15.97	29.38	31.94	59.73	44.88	51.84	1.13	4.51	46.21	1.13	1.63	3.38	6.22	40.11	59.73	51.84	0.04	0.06	0.05	0.04	0.15
	Diesel Storage Room	5.00			20.00	16.00	168.00	20.00	0.80		11.00				-	5.61	8.08	6.73	12.38	13.46	25.17	20.57	30.72	0.67	2.67	27.38	0.50	0.72	1.51	2.78	17.83	25.17	30.72	0.02	0.02	0.03	0.02	0.07
	Store Room	5.00			15.00	14.00	155.00	14.00	0.56		8.00				-	4.33	6.24	5.41	9.95	10.82	20.23	14.96	26.88	0.58	2.34	23.96	0.47	0.68	1.40	2.58	14.87	20.23	26.88	0.01	0.02	0.03	0.01	0.06
	Metering Room	6.00			28.00	23.00	245.00	24.00	0.82		13.00				-	7.72	11.12	9.03	16.62	18.07	33.79	24.31	44.16	0.96	3.84	39.36	0.74	1.07	2.21	4.07	24.53	33.79	44.16	0.02	0.03	0.04	0.02	0.09
	Internal Roads											92.00	41.00	14.00	274.89							-									-	274.89	-	-	0.26	-	-	0.26
	Compound Wall	13.57		42.74		53.87	562.84		-						-	9.13	13.15	15.73	28.94	31.46	58.83	-	103.43	2.25	8.99	92.19	1.69	2.43	5.07	9.33	47.26	58.83	103.43	0.04	0.06	0.10	-	0.20
	Toilet Block	2.00			20.50	5.09	61.71	27.00	1.08		4.00				-	5.48	7.89	6.03	11.10	12.07	22.57	7.48	9.76	0.21	0.85	8.70	0.19	0.27	0.56	1.03	12.98	22.57	9.76	0.01	0.02	0.01	0.01	0.04
	Total	77.57	-	42.74	365.50	160.96	1,783.55	167.00	6.54	-	2,054.73	92.00	41.00	14.00	274.89	107.84	155.29	128.17	235.83	256.34	479.36	896.40	309.04	6.72	26.87	275.45	5.35	7.70	16.05	29.53	292.23	754.25	309.04	0.27	0.71	0.73	3.60	5.31

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- SCREEN CHAMBER IPS A5

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	up to 1.5 m	Cum	19.00	360.70	6853.00
b)	From 1.5 m to 3.0 m	Cum	19.00	407.00	7733.00
c)	From 3.0 m to 4.5 m	Cum	19.00	453.30	8613.00
d)	From 4.5 m to 6 m	Cum	6.00	499.60	2998.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	2.00	116.50	233.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	63.00	270.30	17029.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520.00
	BSR-BCD-20-Item 2.25; Pg-96				
7	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	40.00	5018.00	200720.00
	BSR-BCD-20; Item 5.33.1+5.34.1 ; Pg-108				
	For sulphate resisting cement	MT	15.00	800.00	12000.00
	RUIDP 2017, 3239 & 3237				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT - FE-500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	236.00	356.40	84110.00

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	4.00	412.20	1649.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
11	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	41.00	290.50	11911.00
	BSR-BCD-20; Item-19.16; Pg-296				
12	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
13	**Railing:** Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m center to center, complete as per approved drawings including all materi**al, labour. at walkway: Around platform**				
	RUIDP-2017, Item-10.20, Pg.-34	RM	8.00	2040.00	16320.00
14	**230mm thick Random rubble soling below PCC.**	Cum	2.61	191.14	499.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**617117.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- SCREEN CHAMBER IPS A5

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Excavation in soft/ ordinary soil					
a)	up to 1.5 m		4.40	2.92	1.50	19.27
b)	From 1.5 m to 3.0 m		4.40	2.92	1.50	19.27
c)	From 3.0 m to 4.5 m		4.40	2.92	1.50	19.27
d)	From 4.5 m to 6.0 m		4.40	2.92	0.52	6.75
e)	From 6.0 m to 7.5 m		4.40	2.92	0.00	0.00
f)	From 7.5 m to 9.0 m		4.40	2.92	0.00	0.00
g)	From 9.0 m to 10.5 m		4.40	2.92		0.00
						64.56
2	Refilling					1.94
3	Disposal		4.40	2.32	5.71	58.24
	PCC					1.06
	Base slab					3.33
	Total					**62.62**
4	PCC: M15		4.20	2.52	0.10	1.06
	Approach, Screen and railing- Haunch		7.64	0.75	0.75	4.30
	Total					**5.36**
5	RCC Grade M -30					
	Footing (Base slab)		4.10	2.32	0.35	3.33
	Benching	2.00	1.00	0.71	0.90	1.28
	Outer walls		11.12	0.30	7.66	25.54
	Inner wall		1.72	0.30	6.66	3.43
	Partition wall		2.80	0.30	7.66	6.43
	RCC Slab		0.50	1.72	0.15	0.13
	Slab for bar screen		1.20	1.72	0.15	0.31
	Grand Total					**40.45**
	Sulphate resisting cement					**14.56**
6	**Shuttering**					
	Footing (Base slab)		12.84		0.35	4.49
	Ramp	0.00	0.75		1.00	0.00
	Outer walls	2	11.12		7.66	170.25
	Inner wall	2	1.72		6.66	22.89
	Partition wall	2	2.80		7.66	42.87
	RCC Slab		0.80	1.72		1.38
	Slab for bar screen		1.80	1.72		3.10
	Grand Total					**244.98**
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					3.33
	Walls (any thickness) including attached plasters. Butteresses, plinth and string courses etc.					236.01
	Suspended floors, roofs, landings, balconies and access platform.					4.48
7	Reinforcement- Fe 500 TMT					**3.2**
8	Painting					
	Side wall	2.00	4.10	0.30		2.46
	Front wall	1.00	2.32	0.30		0.70

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
9	MS/CI foot rests	41				**41.00**
10	Providing and fixing G.I. pipe railing					**8.24**
11	Dewatering					**200.00**
	Rubble Soling	1	4.50	2.52	0.23	**2.6082**

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Qty.
Nos.
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KL
Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- WETWELL IPS A5

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	100 Sqm	1200.00	654.70	7856.00
	BSR-BCD-20- Item 2.32 pg 96				
2	**Earth work in excavation in foundation trenches or drains** (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	up to 1.5 m	Cum	102.00	360.70	36791.00
b)	From 1.5 m to 3.0 m	Cum	102.00	407.00	41514.00
c)	From 3.0 m to 4.5 m	Cum	102.00	453.30	46237.00
d)	From 4.5 m to 6.0 m	Cum	92.00	499.60	45963.00
e)	From 6.0 m to 7.5 m	Cum	92.00	545.90	50223.00
f)	From 7.5 m to 9.0 m	Cum	92.00	592.20	54482.00
g)	From 9.0 m to 10.5 m	Cum	21.00	638.50	13409.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock				
a)	From 4.5 m to 6.0 m	Cum	5.00	901.00	2646.00
b)	From 6.0 m to 7.5 m	Cum	5.00	984.10	2908.00
c)	From 7.5 m to 9.0 m	Cum	5.00	1067.20	3170.00
d)	From 9.0 m to 10.5 m	Cum	1.00	1150.30	686.00
e)	From 10.5 m to 12.0 m	Cum	5.09	1233.40	6284.00
	Hard Rock (Blasting prohibited)				
a)	From 4.5 m to 6.0 m	Cum	5.00	1500.50	4513.00
b)	From 6.0 m to 7.5 m	Cum	5.00	1583.60	4775.00
c)	From 7.5 m to 9.0 m	Cum	5.00	1666.70	5037.00
d)	From 9.0 m to 10.5 m	Cum	1.00	1749.80	1060.00
e)	From 10.5 m to 12.0 m	Cum	5.09	1832.90	5666.00
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	86.00	116.50	10019.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	548.00	270.30	148124.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000.00
	BSR-BCD-20-Item 2.25; Pg-96				
7	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	23.00	3953.40	90928.00
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
8	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
8.1	RCC Grade M-30	Cum	138.00	**5270.50**	727329.00
	For sulphate resisting cement	MT	50.00	800.00	40000.00
	RUIDP 2017, 3239 & 3237				
	All work above Plinth level up to floor V Level.				
8.2	RCC Grade M -25	Cum	24.00	5704.70	136913.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	18.00	68500.00	1233000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	27.00	203.00	5481.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	526.00	356.40	187466.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	145.00	412.20	59769.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	80.00	362.90	29032.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	69.00	470.60	32471.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	22.00	5840.00	128480.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sq m	216.00	157.40	33998.00
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	**Painting:** Distempering with **oil bound washable** distemper of approved brand and manufacture to give an even shade	Sq m	335.00	97.20	32562.00
	New work (two or more coats) over & including priming coat with cement primer.				
	BSR - BCD-20- Item- 13.77.2, P-206				
14	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	32.00	456.50	14608.00
	BSR-BCD-20; Item-11.4; Pg-174				
15	**Structural steel** work in single section fixed without connecting plate including cutting, hoisting,fixing in position and applying a priming coat of approved steel primer all complete.	M.T	1.00	65600.00	65600.00
	BSR-BCD-20; Item-10.1; Pg-168				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
16	Water proofing: Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	54.00	2553.30	137878.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
17	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	Sqm	15.00	3635.80	54537.00
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m c/c, complete as per approved drawings including all material, labour: **Around Opening in the floor platform**	RM	15.00	2040.00	30600.00
	RUIDP-2017, Item-10.20, Pg.-34				
19	Supplying and fixing- Rolling shutters of approved make.made of required size of M.S.Iaths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	2394.00	19152.00
	80x1.25mm MS Laths with 1.25mm thick top cover				
	BSR-BCD-20; Item-10.8.1; Pg-169				
20	Providing and fixing in position **Lightening arrester** set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthling pit at 3.5 meter depth, G.I. strip of size 25mmx5mm thick from earthing plate to top of Over head tank, G.I. Final made of GI bar 25mm dia and 2m long fixed on top of OH tank and connected to GI strip. The earthling set shall comply of IS:3043 complete in all respect as per specification and the direction of the Engineer.	No.	1.00	12500.00	12500.00
	RUIDP-2017, Item-19.80, Pg.-145				
21	Providing and fixing **M.S. chequerred plate** flooring of following thickness supported on M.S. angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plates to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge.	Sqm	7.00	3226.00	22582.00
	(Item No.6, (a) Section J, MJP Page 366 DSR 2017-18)				
22	230 thick rubble soling: Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	Cum	12.00	1235.90	14831.00
	BSR-BCD-20; Item-24.5, Pg-320				
23	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per Litre	2000.00	8.80	**17600.00**
	BSR-BCD-20; Item-18.48, Pg-274				
24	Providing and fixing 2HP centrifugal pump (6-20m head)	No	1.00	10000.00	**10000.00**
	Market Rate				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
25	**Overflow Arrangement**				
i	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
a)	up to 1.5 m	Cum	73.00	360.70	26331.00
b)	From 1.5 m to 3.0 m	Cum	32.55	407.40	13260.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	90.00	116.50	10485.00
	BSR-BCD-20-Item 2.26; Pg-96				
iii	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026.00
	BSR-BCD-20-Item 2.25; Pg-96				
iv	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.00	270.30	2433.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
v	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended up to date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	600 mm dia.	m	30.00	10402.40	312072.00
	BSR-BCD-18-Item 18.72.24; Pg-231				
vi	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification.	cum	7.00	217.00	1519.00
	BSR - RCD-18- Item- 12.3, P-222				
	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centring, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS: 4885	Each	1.00	6970.60	6970.60
	BSR - BCD-20- Item- 19.9.1.2, P-295				
26	Filling of total pumping station site up to finished ground level with Random Rubble soling	cum.	1980.00	**191.14**	378457.20
	BSR - RCD-18- Item- M-148, P-35				
	Total				**4971561.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- WETWELL IPS A5

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Site Clearing		40.00	30.00		Sqm
2	Excavation in soft or ordinary soil					
	Pump House					
a)	up to 1.5 m			9.30	1.50	Cum
b)	From 1.5 m to 3.0 m			9.30	1.50	Cum
c)	From 3.0 m to 4.5 m			9.30	1.50	Cum
d)	From 4.5 m to 6.0 m			9.30	1.50	Cum
e)	From 6.0 m to 7.5 m			9.30	1.50	Cum
f)	From 7.5 m to 9.0 m			9.30	1.50	Cum
g)	From 9.0 m to 10.5 m			9.30	0.34	Cum
h)	From 10.5 m to 12.0 m			9.30	0.00	Cum
i)	From 12.0 m to 13.5 m			9.30	0.00	Cum
j)	From 13.5 m to 15.0 m			9.30	0.00	Cum
	Total					Cum
3	**Refilling of Earth**					Cum
4	**Disposal of Earth**					
	Base Raft	1				
	Well	1		7.70	10.66	Cum
	PCC	1		7.90	0.10	Cum
	Rubble Soling	0		8.10	0.23	Cum
	Total					Cum
5	**Dewatering of water**					KL
6	PCC: Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering- M15					
	Below Base Raft			7.90	0.10	Cum
	Additional sloped portion in Base Raft					
	Total					
7	**Reinforced cement concrete**					
a	M 30: up to Plinth level					
	Base Raft			8.60	0.60	Cum
	Wall		23.09	0.35	11.26	Cum
	Floor Slab Beams- Peripheral		23.09	0.30	0.40	Cum
	Floor Slab Beams	1	12.30	0.30	0.45	Cum
	Floor Slab			7.00	0.20	Cum
	Ramp		1.50	2.50	0.60	Cum
	For platform		1.20	1.20	0.15	Cum
	Deduction for Floor Slab opening		-6.50	1.00	0.20	Cum
	Total					Cum
	Sulphate resisting cement					
b	M 25: Above Plinth level					
	Columns	8	0.30	0.40	5.62	Cum
	Corbels	8	0.65	0.65	0.45	Cum
	Lintel Beams		23.09	0.30	0.40	Cum
	Chajja		12.60	0.45	0.100	Cum
	Roof Slab Beams- Peripheral		23.09	0.30	0.45	Cum
	Roof Slab Beams- Circular inner		0.00	0.00	0.00	Cum
	Roof Slab Beams	1	22.71	0.30	0.45	Cum
	Roof Slab			8.30	0.13	Cum
	Parapet wall		0.00	0.15	0.90	Cum
	Screen Lifting Platform Slab		1.94	0.80	0.20	Cum
	Total					Cum

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
8	**Shuttering**					
a	Foundations, Footings, Bases of Columns, etc for mass concrete					
	Wall- Outer		24.19		11.26	Sqm
	Wall- Inner		21.99		10.66	Sqm
	Floor Slab Beams- Peripheral		23.09		1.10	Sqm
	Floor Slab Beams	1	12.30		1.20	Sqm
	Floor Slab			7.00		Sqm
	Ramp		5.50		0.60	Sqm
	For platform		1.20	1.20		Sqm
	For Floor Slab opening Sides		15.00		0.20	Sqm
	Deduction for Floor Slab opening		6.50	1.00		Sqm
	Total					
b	walls (any thickness), including attached pilasters, buttresses, plinth and string courses fillets etc.					
	Columns	8	1.40		5.62	Sqm
	Corbels	8	1.55		0.45	Sqm
	Lintel Beams		23.09		1.10	Sqm
	Chajja		12.60		0.55	Sqm
	Roof Slab Beams- Peripheral		23.09		1.20	Sqm
	Roof Slab Beams- Circular inner		0.00		0.00	Sqm
	Roof Slab Beams	1	22.71		1.20	Sqm
	Roof Slab			7.00		Sqm
	Roof Slab Projection		25.13	0.30		Sqm
	Parapet wall	2	25.58		0.90	Sqm
	Screen Lifting Platform Slab		2.14	1.00		Sqm
	Total					
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					Sqm
	Suspended floors, roofs, landings, balcnies and access platform.					Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.					Sqm
	Columns,Pillars, Piers, Abutments, Posts and Struts.					Sqm
9	**Type Item - Brick Work**					
	Brick wall		23.47	0.23	5.62	Cum
	Deduct opening					
	Rolling Shutter	-1	2.50	3.00	0.23	
	Windows	-6	1.50	1.20	0.23	
	Ventilator	-6	0.70	0.90	0.23	
	Deduct column	-8	0.30	5.62	0.23	
	Total					Cum
10	**Plaster work (Inner Face)**					
	Superstructure			21.99	5.62	
	less opening					Sq m
	Total					Sq m
11	**Plaster work (Outer Face)**					
	Superstructure			24.19	5.62	
	less opening					Sq m
	Total					Sq m
12	**Steel Reinforecement**					MT

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
13	**Painting:** Distempering with **oil bound was**hable distember of approved brand and manufacture to give an even shade					Sq m
14	**Cement concrete flooring**					
	Superstructure			38.48		Sq m
	deduct for opening					
	Total					Sq m
15	**Aluminium Window, door and ventilator**					
	Windows	6	1.50	1.20		Sqm
	Ventilator	6	0.70	0.90		Sqm
	Total					Sqm
16	MS/CI foot step	0				Nos.
17	Providing and fixing G.I. pipe railing				15.00	RM
18	Rolling Shutter	1	2.50	3.00		Sqm
19	Providing stuctural steel work in single stanchions composed of RSJ, channel, etc,					M.T
20	Providing and fixing in position copper lightening conductor					No.
21	**MS Chequerred Plate**					
	6 mm thk plate, 10 mm thk ISMC100 with epoxy painted	1	6.50	1.00		Sqm
22	Roof Water Proofing		8.30			Sqm
23	**Rubble Soling:** 230 mm thick rubble soling	1	51.53		0.23	Cum
24	Filling of total pumping station site up to finished ground level with Rubble soling		40.00	30.00	1.65	Cum

Total

Qty.
1200.00
101.89
101.89
101.89
101.89
101.89
101.89
23.10
0.00
0.00
0.00
634.44
86.44
34.85
496.40
4.90
11.85
548.00
5000.00
4.90
17.95
22.85
34.85
91.00
2.77
1.66
7.70
1.13
0.22
-1.30
138.03
49.69
5.40
1.52
2.77
0.57
3.12
0.00
3.07
6.76
0.00
0.31
23.52

Qty.
272.38
234.41
25.40
14.76
38.48
3.30
1.44
3.00
6.50
600.00
63.00
5.58
25.40
6.93
27.71
0.00
27.26
38.48
7.54
46.04
2.14
250.08
27.00
525.83
144.97
80.37
68.58
30.36
-1.73
-2.48
-0.87
-3.11
22.17
123.69
-22.08
101.61
136.07
-22.08
113.99
17.77

Qty.
334.92
38.48
-6.50
31.98
10.80
3.78
14.58
0.00
15.00
7.50
1.00
1.00
6.50
54.11
11.85
1980.00

1980.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- MANIFOLD CHAMBER IPS A5

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
	up to 1.5 m	Cum	17.00	360.70	6132.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	4.00	116.50	466.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	6.00	270.30	1622.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	3.00	3953.40	11860.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25: All works up to plinth level	Cum	19.00	4952.60	94099.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-18- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	86.00	356.40	30650.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	7.00	17.80	125.00
11	**230mm thick Random rubble soling below PCC.**	Cum	7.12	191.14	1361.07
	BSR - RCD-18- Item- M-148, P-35				
	Total				**295868.07**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- MANIFOLD CHAMBER IPS A5

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		9.20	4.20	0.43	16.62	Cum
b)	From 1.5 m to 3.0 m		9.20	4.20	0.00	0.00	Cum
c)	From 3.0 m to 4.5 m		9.20	4.20	0.00	0.00	Cum
2	Refilling					3.54	Cum
3	Disposal		0.00	0.00	0.00	0.00	Cum
	PCC					3.10	Cum
	Base slab		8.40	3.40	0.10	2.86	Cum
	Total					**5.96**	Cum
4	PCC: M15		8.60	3.60	0.10	3.10	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		8.40	3.40	0.30	8.57	Cum
	Outer walls		21.00	0.25	2.05	10.76	Cum
	Beam	4.00	2.50	0.25	0.30	0.75	
	Total					**19.33**	Cum
6	Shuttering						
	Footing (Base slab)		23.60		0.30	7.08	Sqm
	Outer walls	2	21.00		2.05	86.10	Sqm
	Beam	4	0.85		2.50	8.50	
	Total					**101.68**	Sqm
7	Reinforcement- Fe 500 TMT					**2**	MT
8	Painting						
	Side wall	2.00	8.00	0.30		4.80	Sq m
	Front and back wall	2.00	3.00	0.30		1.80	Sq m
	Total					**6.60**	Sqm
9	MS/CI foot rests	3				**3.00**	No.
10	Dewatering					**100.00**	KL
11	Random rubble soling below PCC	1	8.60	3.60	0.23	**7.1208**	Cum

SEWERAGE SYSTEM FOR GAYA EASTEN PART
COST ESTIMATE-CIVIL WORK- VALVE CHAMBER IPS A5

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
	up to 1.5 m	Cum	6.00	407.00	2442.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	2.00	116.50	233.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	4.00	270.30	1081.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	7.00	5018.60	35130.00
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	37.00	356.40	13187.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
	Total				**136320.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- BUTTERFLY VALVE CHAMBER IPS A5

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		3.70	3.70	0.43	5.89	Cum
b)	From 1.5 m to 3.0 m		3.70	3.70	0.00	0.00	Cum
c)	From 3.0 m to 4.5 m		3.70	3.70	0.00	0.00	Cum
2	Refilling					1.73	Cum
3	Disposal		2.50	2.50	0.10	0.62	Cum
	PCC					1.02	Cum
	Base slab					2.52	Cum
	Total					**4.16**	Cum
4	PCC: M15		3.20	3.20	0.10	1.02	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		2.90	2.90	0.30	2.52	Cum
	Outer walls		9.00	0.25	2.05	4.61	Cum
	Total					**7.13**	Cum
6	**Precast Cover**	6	2.14	0.33	0.10	0.42	Cum
7	**Shuttering**						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		2.05	36.90	Sqm
	Total					**40.38**	Sqm
8	**Reinforcement- Fe 500 TMT**					**1**	MT
9	**Painting**						
	Side wall	2.00	2.50	0.30		1.50	Sq m
	Front and back wall	2.00	2.50	0.30		1.50	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- CIVIL WORK- FLOW METER CHAMBER IPS A5

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	20.00	360.70	7214.00
b)	From 1.5 m to 3.0 m	Cum	12.00	407.00	4884.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	18.00	116.50	2097.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	14.00	270.30	3784.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -25	Cum	8.00	4952.60	39621.00
	BSR-BCD-20 Item-5.33.1 Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	203.00	609.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	37.00	356.40	13187.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	290.50	872.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	3.00	17.80	53.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.28
	BSR - RCD-18- Item- M-148, P-35				
	Total				**155416.28**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- FLOW METER CHAMBER IPS A5

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.20	3.20	1.50	20.16	Cum
b)	From 1.5 m to 3.0 m		4.20	3.20	0.88	11.83	Cum
c)	From 3.0 m to 4.5 m		4.20	3.20	0.00	0.00	Cum
2	Refilling					18.10	Cum
3	Disposal		3.00	2.00	1.75	10.50	Cum
	PCC					0.94	Cum
	Base slab					2.45	Cum
	Total					**13.89**	Cum
4	PCC: M15		3.60	2.60	0.10	0.94	Cum
5	RCC Grade M -20						
	Footing (Base slab)		3.40	2.40	0.30	2.45	Cum
	Outer walls		9.00	0.25	2.05	4.61	Cum
	Total					**7.36**	Cum
6	**Precast Cover**	8	1.65	0.30	0.08	0.30	Cum
7	Shuttering						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		2.05	36.90	Sqm
	Total					**40.38**	Sqm
8	Reinforcement- Fe 500 TMT					**0.59**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	2.00	0.30		1.20	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
10	Dewatering					**100.00**	KL

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- D.G. ROOM- IPS A5

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	34.00	360.70	12263.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	13.00	3953.40	51394.20
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	13.00	116.50	1514.50
	BSR-BCD-20-Item 2.26; Pg-96				
3a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	21.00	270.30	5676.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	13.00	4952.60	64383.80
	BSR-BCD-20; Item-5.33.1, Pg-104				
	RCC Grade M -25 Above Plinth	Cum	33.00	5704.70	188255.10
	BSR-BCD-20; Item-5.33.2, Pg-104				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	5.00	68500.00	342500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.00	203.00	3248.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	63.00	412.20	25968.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	133.00	362.90	48265.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	78.00	470.60	36706.80
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	27.00	5840.00	157680.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	375.00	157.40	59025.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	375.00	97.20	36450.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Water proofing: Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	67.00	2553.30	171071.10
	BSR-BCD-20; Item-22.8.1; Pg-311				
11	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	50.00	456.50	22825.00
	BSR-BCD-20; Item-11.4; Pg-174				
12	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	13.00	3635.80	47265.40
	BSR-BCD-20; Item-21.10; Pg-307				
13	Supplying and fixing-rolling shutters of approved make.made of required size of M.S.Iaths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	12.00	1106.50	13278.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	5.00	802.00	4010.00
	18mm thick with under layer 12mm thick cement plaster 1:3 (1 cement : 3coarse sand)				
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	24.00	191.14	4587.36
	BSR - RCD-20- Item- M-148, P-35				
	Total				**1296368.36**

D G Room:

	Nos	L	B	H	
Inner dimension		10.00	5.00	5.00	
Outer dimension		10.46	5.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	8.00	1.70	1.70	0.30	
Total no of Columns	8				
C1	8	0.30	0.30	8.10	
Plinth beam		42.76	0.30	0.40	
Lintel beam		31.84	0.30	0.40	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0.00	0.00		0.00	
Windows size	7.00	1.50		1.20	
Ventilators size	0.00	0.75		1.00	
Rolling Shutter	1	3.00		4.00	
Roof beam		42.76	0.30	0.45	
Roof slab		11.06	6.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		111.85			
Existing GL		104.60			
Finished GL		106.250			
Plinth level		106.850			
Top of Footing		102.900			
Footing Level		102.500			

MEASUREMENT SHEET FOR D G ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	8	Cum	2.50	2.50	0.68	34.00	**34.00**
2	**PCC**							
	F1	8	Cum	1.90	1.90	0.10	2.89	
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth protection	1	Cum	34.24	1.00	0.05	1.71	**13.17**
3	**Back Filling**							
	Earth work qty		Cum				13.90	
	Deduction C1	-8	Cum	0.30	0.30	1.00	-0.72	**13.18**
4	**RCC M25**							
	Column foundation F1	8	Cum	1.70	1.70	0.30	6.94	
	Columns C1	8	Cum	0.30	0.30	8.10	5.83	**12.77**
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth Beam	1	Cum	42.76	0.30	0.40	5.13	
	Lintel Beam	1	Cum	31.84	0.30	0.40	3.82	
	Roof Beam	1	Cum	42.76	0.30	0.45	5.77	
	Chajja - For Doors	0	Cum	0.00	0.45	0.125	0.00	
	Chajja - For Windows	7	Cum	1.80	0.45	0.125	0.71	
	Chajja - For Ventilators	0	Cum	1.05	0.45	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	3.30	0.45	0.125	0.19	
	Ramp/Steps	1	Cum	3.00	1.00	0.600	0.90	
	Roof Slab	1	Cum	11.06	6.06	0.125	8.38	**33.47**
5	**Steel**		Tonn				4.62	**4.62**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	8	Sqm	6.80		0.30	16.32	**16.32**
	Columns: C1	8	Sqm	1.20		8.10	77.76	**77.76**
	Beams: Plinth Beam	1	Sqm	42.76		1.10	47.04	
	Lintel Beam	1	Sqm	31.84		1.10	35.02	
	Roof Beam	1	Sqm	42.76		1.20	51.31	**133.37**
	Roof slab	1	Sqm	10.46	5.46		57.11	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.50	0.45		4.73	
	Chajja - For Ventilators	0	Sqm	0.75	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.00	0.45		1.35	**63.19**
7	**Brick Work Wall**							
	Wall	1	Cum	31.84	0.23	5.0	36.62	
	Wall- up to plinth level	1	Cum	31.84	0.23	0.6	4.39	
	Parapet wall	0	Cum	16.52	0.00	0.00	0.00	
	Deduction- Lintel beam	-1	Cum	31.84	0.23	0.40	-2.93	
	Deduction- Floor PCC & floor slab	-1	Cum	31.84	0.23	0.25	-1.83	
	Deduction- Roof beam	-1	Cum	31.84	0.23	0.45	-3.30	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-7	Cum	1.50	0.23	1.20	-2.90	
	Deduction- Ventilator	0	Cum	0.75	0.00	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	3.00	0.23	4.00	-2.76	**27.30**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	31.84		5.00	159	
	Parapet wall	0	Sqm	16.52		0.00	0.00	
	Roof (Ceiling)	1	Sqm	10.00	5.00		50.00	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-7	Sqm	1.5		1.2	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3		4	-12.0	**184.60**
	External Plastering							
	Wall	1	Sqm	31.84		5.00	159.20	
	Wall- up to plinth level	1	Sqm	31.84		0.60	19.10	
	Parapet wall	1	Sqm	16.52		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.80	0.45		22.47	
	Chajja - For Ventilators	0	Sqm	1.05	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.30	0.45		3.89	
	Roof Slab Projection	1	Sqm	34.24	0.30		10.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-7	Sqm	1.50		1.20	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3.00		4.00	-12.00	**190.33**
9	**Painting**							
	Internal Painting							**184.6**
	External Painting							**190.33**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
10	**Flooring**	1	Sqm	10.00	5.00		50.00	**50.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	7	Sqm	1.50		1.20	12.60	
	Ventilators	0	Sqm	0.75		1.00	0.00	**12.60**
12	**Rolling Shutter**	1	Sqm	3.00		4.00	12.00	**12.00**
13	**Water proofing at top of roof**	1	Sqm	11.06	6.06		67.02	**67.02**
14	**Skirting**	1	Sqm	30.00		0.15	4.50	**4.50**
15	**Boulders for Floor area**	1	Sqm	10.46	5.46	0.30	17.13	**23.78**
	F1	8.00	Sqm	1.9	1.90	0.23	6.64	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- DIESEL STORE ROOM- IPS A5

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	17.00	360.70	6131.90
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	8.00	116.50	932.00
	BSR-BCD-20-Item 2.26; Pg-96				
4	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.00	270.30	2433.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	6.00	4952.60	29715.60
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	14.00	5704.70	79865.80
	BSR-BCD-20; Item-5.33.2, Pg-108				
6	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
7	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.00	203.00	1624.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	23.00	412.20	9480.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	48.00	362.90	17419.20
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	36.00	470.60	16941.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				
8	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	16.00	5840.00	93440.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
9	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	168.00	157.40	26443.20
	BSR-BCD-20;Item-13.11.1; Pg-202				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
10	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	168.00	97.20	16329.60
	BSR - BCD-20- Item- 13.77.2, P-206				
11	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	20.00	456.50	9130.00
	BSR-BCD-20; Item-11.4; Pg-174				
12	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
13	Supplying and fixing-rolling shutters of approved make. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	6.00	2394.00	14364.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
14	Water proofing: Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	31.00	2553.30	79152.30
	BSR-BCD-20; Item-22.8.1; Pg-311				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	11.00	191.14	2102.54
	BSR - RCD-18- Item- M-148, P-35				
	Total				**5,80,451.34**

Diesel Store Room:

	Nos	L	B	H
Inner dimension		5.00	4.00	3.50
Outer dimension		5.46	4.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.70	1.70	0.30
Total no of Columns	4			
C1	4	0.30	0.30	7.45
Plinth beam		19.84	0.30	0.40
Local lintel beam		7.70	0.23	0.20
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	0	1.20		2.10
Windows size	3	1.50		1.20
Ventilators size	0	0.75		1.00
Rolling Shutter	1	2.00		3.00
Roof beam		19.84	0.30	0.40
Roof slab		6.06	5.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		110.350		
Existing GL		104.600		
Finished GL		106.250		
Plinth level		106.850		
Top of Footing		102.900		
Footing Level		102.500		

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.50	2.50	0.68	17.00	**17.00**
2	**PCC**							
	F1	4	Cum	1.90	1.90	0.10	1.44	
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth protection	1	Cum	19.84	1.00	0.05	0.99	**5.43**
3	**Back Filling**							
	Earth work qty		Cum				8.10	
	Deduction C1	-4	Cum	0.30	0.30	0.68	-0.24	**7.85**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.70	1.70	0.30	3.47	
	Columns C1	4	Cum	0.30	0.30	7.45	2.68	**6.15**
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth Beam	1	Cum	19.84	0.30	0.40	2.38	
	Lintel Beam	3	Cum	7.70	0.23	0.20	1.06	
	Roof Beam	1	Cum	19.84	0.30	0.40	2.38	
	Chajja - For Doors	0	Cum	1.50	0.50	0.125	0.00	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.30	0.50	0.125	0.14	
	Ramp/Steps	1	Cum	2.00	1.00	0.600	0.60	
	Roof Slab	1	Cum	6.06	5.06	0.125	3.83	**13.73**
5	**Steel**		Tonn				1.99	**1.99**

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.80		0.30	8.16	**8.16**
	Columns: C1	4	Sqm	1.20		7.45	35.76	**35.76**
	Beams: Plinth Beam	1	Sqm	19.84		1.10	21.82	
	Lintel Beam	1	Sqm	7.70		0.63	4.85	
	Roof Beam	1	Sqm	19.84		1.10	21.82	**48.50**
	Roof slab	1	Sqm	5.00	4.00		20.00	
	Suspended: Chajja - For Doors	0	Sqm	1.20	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.00	0.50		1.00	**23.25**
7	**Brick Work Wall**							
	Wall	1	Cum	19.84	0.23	3.5	15.97	
	Wall- up to plinth level	1	Cum	19.84	0.23	0.6	2.74	
	Parapet wall	1	Cum	19.84	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	1.20	0.23	2.10	0.00	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.00	0.23	3.00	-1.38	**16.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	19.84		3.50	69	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Roof (Ceiling)	1	Sqm	5.00	4.00		20.00	
	Deduction- Doors	0	Sqm	1.2		2.1	0.00	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2		3	-6.0	**78.04**
	External Plastering							
	Wall	1	Sqm	19.84		3.50	69.44	
	Wall- up to plinth level	1	Sqm	19.84		0.60	11.90	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Chajja - For Doors	0	Sqm	1.50	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.30	0.50		3.55	
	Roof Slab Projection	1	Sqm	22.24	0.30		6.67	
	Deduction- Doors	0	Sqm	1.20		2.10	0.00	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.00		3.00	-6.00	**90.06**
9	**Painting**							
	Internal Painting	-1	Sqm	2		3	-6	**78.0**
	External Painting							**90.06**
10	**Flooring**	1	Sqm	5.00	4.00		20.00	**20.00**

MEASUREMENT SHEET FOR DIESEL STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	0	Sqm	1.20		2.10	0.00	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**5.40**
12	**Rolling Shutter**	1	Sqm	2.00		3.00	6.00	**6.00**
13	**Water proofing at top of roof**	1	Sqm	6.06	5.06		30.66	**30.66**
14	**Skirting**	1	Sqm	18.00		0.15	2.70	**2.70**
15	**Boulders for Floor area**	1	Sqm	5.46	4.46	0.30	7.31	**10.63**
	F1	4	Sqm	1.9	1.90	0.23	3.32	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- STORE ROOM- IPS A5

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	14.00	360.70	5049.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	7.00	116.50	815.50
	BSR-BCD-20-Item 2.26; Pg-96				
a)	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	7.00	270.30	1892.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	4.00	4952.60	19810.40
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	11.00	5704.70	62751.70
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	16.00	412.20	6595.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	41.00	362.90	14878.90
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	36.00	470.60	16941.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	14.00	5840.00	81760.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	155.00	157.40	24397.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	155.00	97.20	15066.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	14.00	456.50	6391.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	8.00	3635.80	29086.40
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	23.00	2553.30	58725.90
	BSR-BCD-20; Item-22.8.1; Pg-311				
13	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	2.00	802.00	1604.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	8.00	191.14	1529.12
	BSR - RCD-18- Item- M-148, P-35				
	Total				**505482.52**

Store Room:

	Nos	L	B	H	
Inner dimension		4.50	3.00	3.50	
Outer dimension		4.96	3.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	4	1.50	1.50	0.30	
Total no of Columns	4				
C1	4	0.30	0.30	7.45	4.93
Plinth beam		16.84	0.30	0.40	
Local lintel beam	3	6.90	0.23	0.20	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	1	1.20		2.10	
Windows size	3	1.50		1.20	
Ventilators size	0	0.75		1.00	
Rolling Shutter	0	0.00		0.00	
Roof beam		16.84	0.30	0.40	
Roof slab		5.56	4.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		110.350			
Existing GL		104.600			
Finished GL		106.250			
Plinth level		106.850			
Top of Footing		102.900			
Footing Level		102.500			

MEASUREMENT SHEET FOR STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.30	2.30	0.68	14.39	**14.39**
2	**PCC**							
	F1	4	Cum	1.70	1.70	0.10	1.16	
	Floor Slab	1	Cum	4.96	3.46	0.15	2.57	
	Plinth protection	1	Cum	16.84	1.00	0.05	0.84	**4.57**
3	**Back Filling**							
	Earth work qty		Cum				7.12	
	Deduction C1	-4	Cum	0.30	0.30	0.68	-0.24	**6.88**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.50	1.50	0.30	2.70	
	Columns C1	4	Cum	0.30	0.30	4.93	1.77	**4.47**
	Floor Slab	1	Cum	4.50	3.00	0.15	2.03	
	Plinth Beam	1	Cum	16.84	0.30	0.40	2.02	
	Lintel Beam	3	Cum	6.90	0.23	0.20	0.95	
	Roof Beam	1	Cum	16.84	0.30	0.40	2.02	
	Chajja - For Doors	1	Cum	1.50	0.50	0.125	0.09	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	0.600	0.90	
	Roof Slab	1	Cum	5.56	4.06	0.125	2.82	**11.17**
5	**Steel**		Tonn				1.56	**1.56**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.00		0.30	7.2	**7.20**
	Columns: C1	4	Sqm	1.20		7.45	35.76	**35.76**
	Beams: Plinth Beam	1	Sqm	16.84		1.10	18.52	
	Lintel Beam	1	Sqm	6.90		0.63	4.35	
	Roof Beam	1	Sqm	16.84		1.10	18.52	**41.39**
	Roof slab	1	Sqm	4.50	3.00		13.50	
	Suspended: Chajja - For Doors	1	Sqm	1.20	0.50		0.60	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**16.35**
7	**Brick Work Wall**							
	Wall	1	Cum	16.84	0.23	3.5	13.56	
	Wall- up to plinth level	1	Cum	16.84	0.23	0.6	2.32	
	Parapet wall	1	Cum	18.04	0.00	0.00	0.00	
	Deduction- Doors	-1	Cum	1.20	0.23	2.10	-0.58	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**14.06**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	16.84		3.50	59	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	4.50	3.00		13.50	
	Deduction- Doors	-1	Sqm	1.2		2.1	-2.52	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**64.52**
	External Plastering							
	Wall	1	Sqm	16.84		4.10	69.04	
	Wall- up to plinth level	1	Sqm	16.84		0.60	10.10	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Chajja - For Doors	1	Sqm	1.50	0.50		3.15	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	19.24	0.30		5.77	
	Deduction- Doors	-1	Sqm	1.20		2.10	-2.52	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**90.05**
9	**Painting**							
	Internal Painting	0	Sqm	0		0	0	**64.5**
	External Painting							**90.05**
10	**Flooring**	1	Sqm	4.50	3.00		13.50	**13.50**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	1	Sqm	1.20		2.10	2.52	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**7.92**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	5.56	4.06		22.57	**22.57**
14	**Skirting**	1	Sqm	15.00		0.15	2.25	**2.25**
15	**Boulders for Floor area**	1	Sqm	4.96	3.46	0.30	5.15	**7.81**
	F1	4	Sqm	1.7	1.70	0.23	2.66	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- METERING ROOM- IPS A5

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	74.00	360.70	26691.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	6.00	3953.00	23718.00
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	63.00	116.50	7339.50
	BSR-BCD-20-Item 2.26; Pg-96				
a)	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	11.00	270.30	2973.30
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	8.00	4952.00	39616.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.00	5704.70	114094.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.00	203.00	2233.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.00	412.20	16900.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	73.00	362.90	26491.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	48.00	470.60	22588.80
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	23.00	5840.00	134320.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	245.00	157.40	38563.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	245.00	97.20	23814.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm	24.00	534.60	12830.40
	BSR-BCD-20; Item-11.9.1; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	9.00	3635.80	32722.20
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make.made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	2394.00	19152.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	24.00	2553.30	61279.20
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	13.00	191.14	2484.82
	BSR - RCD-18- Item- M-148, P-35				
	Total				**8,15,717.92**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	6	Cum	2.30	2.30	2.33	73.95	**73.95**
2	**PCC**							
	F1	6	Cum	1.90	1.90	0.10	2.17	
	Floor Slab	1	Cum	6.46	4.46	0.10	2.88	
	Plinth protection	1	Cum	21.84	1.00	0.05	1.09	**6.14**
3	**Back Filling**							
	Earth work qty		Cum				63.76	
	Deduction C1	-6	Cum	0.30	0.30	1.00	-0.54	**63.22**
4	**RCC M25**							
	Column foundation F1	6	Cum	1.50	1.50	0.30	4.05	
	Columns C1	6	Cum	0.30	0.30	6.60	3.56	**7.61**
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth Beam	1	Cum	28.30	0.30	0.40	3.40	
	Lintel Beam	1	Cum	11.80	0.23	0.20	0.54	
	Roof Beam	1	Cum	28.30	0.30	0.45	3.82	
	Chajja - For Doors	0	Cum	0.00	0.50	0.125	0.00	
	Chajja - For Windows	5	Cum	1.80	0.50	0.125	0.56	
	Chajja - For Ventilators	0	Cum	1.00	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.80	0.50	0.125	0.18	
	Ramp/Steps	1	Cum	2.00	2.50	1.200	3.00	
	Roof Slab	1	Cum	7.06	5.06	0.125	4.47	**20.29**
5	**Steel**		MT				2.79	**2.79**
6	**Formwork**							
	Foundation: Column foundation F1	6	Sqm	6.00		0.30	10.8	**10.80**
	Columns: C1	6	Sqm	1.20		6.60	47.52	**47.52**
	Beams: Plinth Beam	1	Sqm	28.30		1.10	31.13	
	Lintel Beam	1	Sqm	11.80		0.63	7.43	
	Roof Beam	1	Sqm	28.30		1.20	33.96	**72.52**
	Roof slab	1	Sqm	7.06	5.06		35.72	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.50	0.50		3.75	
	Chajja - For Ventilators	0	Sqm	0.70	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.50	0.50		1.25	**40.72**
7	**Brick Work Wall**							
	Wall	1	Cum	28.30	0.23	3.50	22.78	
	Wall- up to plinth level	1	Cum	28.30	0.23	0.60	3.91	
	Parapet wall	1	Cum	23.04	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-5	Cum	1.50	0.23	1.20	-2.07	
	Deduction- Ventilator	0	Cum	0.70	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.50	0.23	3.00	-1.73	**22.89**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	28.30		3.50	99	
	Parapet wall	0	Sqm	23.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	7.06	5.06		35.72	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-5	Sqm	1.5		1.2	-9.00	
	Deduction- Ventilator	0	Sqm	0.7		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.5		3	-7.5	**118.27**
	External Plastering							
	Wall	1	Sqm	28.30		3.50	99.05	
	Wall- up to plinth level	1	Sqm	28.30		0.60	16.98	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
	Parapet wall	1	Sqm	23.04		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.80	0.50		16.50	
	Chajja - For Ventilators	0	Sqm	1.00	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.80	0.50		3.80	
	Roof Slab Projection	1	Sqm	24.24	0.30		7.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-5	Sqm	1.50		1.20	-9.00	
	Deduction- Ventilator	0	Sqm	0.70		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.50		3.00	-7.50	**127.10**
9	**Painting**							
	Internal Painting							**118.3**
	External Painting							**127.10**
10	**Flooring**	1	Sqm	6.00	4.00		24.00	**24.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	5	Sqm	1.50		1.20	9.00	
	Ventilators	0	Sqm	0.70		0.90	0.00	**9.00**
12	**Rolling Shutter**	1	Sqm	2.50		3.00	7.50	**7.50**
13	**Water proofing at top of roof**	1	Sqm	6.00	4.00		24.00	**24.00**
14	**Skirting**	1	Sqm	20.00		0.15	3.00	**3.00**
15	**Boulders for Floor area**	1	Sqm	6.46	4.46	0.30	8.64	**12.63**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- INTERNAL ROAD IPS A5

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	92.00	637.00	58604.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	41.00	888.00	36408.00
	SOR-RCD-18; Item-4.12; Pg.-76				
3	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	276.00	30.30	8363.00
	BSR-RCD-18-Item 5.1, Pg-84				
4	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	276.00	11.10	3064.00
	BSR-RCD-18-Item 5.2, Pg-84				
5	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	14.00	5406.00	75684.00
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying **Tack Coat with bitumen emulsion grade 60/70 for BUSG** @ 5Kg/10Sqm. area using emulsion pressure distributor on the prepared bituminus/granular surface cleaned with mechanical broom and as per eelevant clauses MOSRTH specification clause No. 503 complete in all respects.	Sqm	276.00	31.05	8570.00
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects. Note: *1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. for grading (10mm nominal size)	Cum	7.00	7142.00	49994.00
	BSR-RCD-2018-Item-5.7 P-84				
	Total				**240687.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- COMPOUND WALL- IPS A5

Sr. no.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	330.66	360.70	119269.49
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	13.57	3953.00	53661.23
3	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	53.87	5840.00	314601
	Superstructure above plinth level up to floor V				
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarse sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	Sqm	562.84	146.00	82174.64
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Sqm	47.25	270.30	12772.73
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	283.41	116.50	33016.95
	BSR-BCD-18-Item 2.26; Pg-96				
7	RCC: Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, required grade of reinforced cement concrete:				
	RCC Grade M -20 Below Plinth	Cum	34.32	4952.00	169955
	RCC Grade M -20 Above Plinth	Cum	8.42	5194.80	43749.96
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	73.50	203.00	14920.50
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	88.15	362.90	31988.73
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	134.75	470.60	63413.35
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.42	68500.00	234228.08
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	Painting: White washing with lime to give an ever shade: New work (three or more coats): BSR-BCD-20; Item-13.70.1; Pg-206	Cum	562.84	17.80	10018.55
				Cost of Compound Wall (without gates)	1183770.15
				Boundary length	140.00
				Cost of 1 m Compound Wall (without gates)	8455.50
11	**Gates:** Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.				

Sr. no.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	MJP 2018-19, Section H, Item No 3; Pg- 58.	No.	1	25303.00	25303.00
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.	1	13651.00	13651.00
	MJP 2018-19, Section H, Item No 4; Pg- 58.				
	Total				**1222724.15**

A

Boundary Wall length	**140**	m	L= 40
Column spacing	3	m c/c	W= 30
No. of columns total	46.0	Nos.	
No. of Expansion joint	3.0	Nos.	
Total No. of columns	49.0	Nos.	
Column ht	2.0	m	
Col W	0.25	m	
Col D	0.25	m	
Beam W	0.23	m	
Beam D	0.23	m	
Column footing L	1.5	m	
Column footing W	1.5	m	
Footing thk	0.25	m	
Depth of foundation	1	m	
PCC proj & thk	0.075	m	
Working space	0.3	m	

S.No	Description					Quantity
		No.s	L	B	D	
1	Earth work excavation of foundation for structures as per drawing and technical specification including setting out, construction of shoring and bracing,removal of stumps and other deleterious mattar, dressing of sides and bottom and backfilling with approved material etc. and as per relevent clause of section 300 and 2100 - Ordinary Soil (upto 1.5m)					
	Footing	49.00	2.25	2.25	1.33	328.68
	Walls	1.00	29.75	0.38	0.18	1.98
	Total					**330.66**
2	Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centering and shuttering - In plinth and foundation - M - 10 Grade.					
	Footing	49.00	1.65	1.65	0.075	10.01
	Walls	1.00	127.75	0.38	0.075	3.64
	Deduction for Gate	-1.00	2.50	0.38	0.075	-0.07
	Total					**13.57**
3	Brick work with well burnt chimney bricks having crushing strength not less than 25kg/cm2 and water absorption not more than 20% above plinth level including cost of form work					
	Wall	1.00	127.75	0.23	1.870	**54.95**
	Deduction for Gate	-1.00	2.50	0.23	1.870	-1.08
	Total					53.87
4	12 mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete					
	In cement mortar 1:6					
	Two Side Wall	2.00	140.00		2.00	560.00

S.No	Description					Quantity
		No.s	L	B	D	
	Column sides	49.00	0.080		2.00	7.84
	Deduction for Gate	-1.00	2.50		2.00	-5.00
	Total					**562.84**
5	Disposal					
	Footing	49.00	1.50	1.50	0.250	27.56
	Column	49.00	0.25	0.25	0.750	2.30
	Plinth beam	1.00	127.75	0.23	0.130	3.82
	All PCC					13.57
	Total					**47.25**
6	Back filling: Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20 cm in depth including consolidation of each layer by ramming watering, lead up to 50 m and lift upto 1.5 m in all kinds of soils					
		Total				**283.41**
7	**RCC**					
	Footing	49.00	1.50	1.50	0.250	27.56
	Column	49.00	0.25	0.25	2.750	8.42
	Plinth beam	1.00	127.75	0.23	0.230	6.76
	Total					**42.74**
8	**Shuttering**					
	Footing	49.00	6.00		0.250	73.50
	Column	49.00	1.00		2.750	134.75
	Plinth beam	1.00	127.75		0.690	88.15
	Total					**296.40**
9	**Reinforcement**					**3.42**
10	Providing and applying one coat of approved colour and shade to new surface including scaffolding brushing and brooming down including two coats of whitewash as base cost etc., complete					**562.84**

Unit
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Unit
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SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- TOILET BLOCK - IPS A5

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	11.00	360.70	3967.70
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	2.00	3953.40	7906.80
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	10.00	116.50	1165.00
	BSR-BCD-20-Item 2.26; Pg-96				
a)	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1.00	270.30	270.30
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	4.00	4952.60	19810.40
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	9.00	5704.70	51342.30
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**				
	BSR-BCD-20; Item-5.22.7, Pg-106	Tonn	1.00	68500.00	68500.00
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	203.00	1218.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	11.00	412.20	4534.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	32.00	362.90	11612.80
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	30.00	470.60	14118.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	5.00	5840.00	29200.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	62.00	157.40	9758.80
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade				
	BSR - BCD-20- Item- 13.77.2, P-206	Sqm	41.00	97.20	3985.20
10	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
11	Water proofing: Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.				
	BSR-BCD-20; Item-22.8.1; Pg-311	Sqm	18.00	2553.30	45959.40
12	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacture) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	Sqm	21.00	797.50	16747.50
	BSR-BCD-20; Item-11.36; Pg-179				
13	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	Sqm	6.00	712.20	4273.20
	BSR-BCD-20; Item-11.37; Pg-179				
14	Providing and fixing vitreous china dual purpose closet suitable for use as squatting pan or European type water closet (Anglo Indian W.C pan) with seat lid with C.P. brass hinges and rubber buffers, 10 litre low level flushing cistern with fitting and brackets, 40mm flush bend 20mm over flow pipe with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required :				
	White vitreous china dual purpose WC pan with white solid plastic seat and lid with white vitreous china flushing cistern and C.P. flush bend.	each	1.00	8734.10	8734.10
15	BSR-BCD-20; Item-17.68.1; Pg-260				
16	**Filling up to floor finish level with Random rubble masonry.**	Cum	4.00	191.14	764.56
	BSR - RCD-18- Item- M-148, P-35				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
17	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.				
	External work				
	15mm Dia	m	10.00	187.90	1879.00
	25 mm	m	10.00	303.20	3032.00
	BSR-BCD-20; Item- 18.12.1 & 18.12.3, P-267				
18	Providing and fixing brass stop cock of approved quality :				
	External work				
	15mm Dia	no	1.00	302.50	302.50
	20 mm	no	1.00	326.40	326.40
	BSR-BCD-20; Item- 18.16.1 & 18.16.2, P-267				
19	Providing, lowering, laying in trenches, aligning, fixing in position and jointing ISI marked uPVC pipe fittings/ accessories of class III (6 Kg/sqcm) suitable for potable water with rubber rings joints in uPVC pipe line at all levels/ depth including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	110 mm dia. (O.D) pipe	m	25.00	273.00	6825.00
	RUIDP-17- Item- 19.1.2				
20	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931				
	15 mm nominal bore	each	3.00	419.00	1257.00
	BSR - BCD-20- Item- 18.49 , P-274				
21	Providing and fixing square-mouth S.W. gully trap grade 'A" complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	100mmx100mm size P type				
	With Sewer bricks conforming to IS : 4885	each	1.00	1831.90	1831.90
	BSR - BCD-20- Item- 19.4.1.2 P-292				
22	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand : 4 graded stone aggregate 20 mm nominal size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design :				
	Inside dimensions 455x610 mm and 45 cm deep for single pipe line :				
	with bricks	each	3.00	4228.40	12685.20
	BSR - BCD-20- Item- 19.30.1.1 P-299				
23	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require :				
	White Vitreous China Wash basin size 630x450 mm with a pair of 15 mm C.P. brass pillar taps.	each	1.00	2538.80	2538.80
	BSR - BCD-20- Item- 17.7.1, P-248				
	Total				**352725.06**

TOILET BLOCK :

	Nos	L	B	H
Inner dimension		2.90	2.00	3.00
Outer dimension		3.46	2.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.20	1.20	0.30
Total no of Columns	4			
C1	4	0.30	0.30	6.28
Plinth beam		14.30	0.30	0.40
Lintel beam		6.30	0.23	0.13
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	2	1.00		2.10
Windows size	0	0.00		0.00
Ventilators size	2	0.60		0.45
Rolling Shutter	0	0.00		0.00
Roof beam		11.84	0.30	0.40
Roof slab		4.06	3.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		109.850		
Existing GL		104.600		
Finished GL		106.250		
Plinth level		106.850		
Top of Footing		102.900		
Footing Level		102.600		

MEASUREMENT SHEET FOR TOILET BLOCK

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1- up to 1.5 m	4	Cum	2.00	2.00	0.68	10.88	**10.88**
	From 1.5 m to 3.0 m	0		2.00	2.00	0.00	0.00	
		0	Cum	0.00	0.00	0.00	0.00	
1A	Excavation in soft soil							
a)	up to 1.5 m		Cum			10.88		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1B	Excavation in soft rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1C	Excavation in hard rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
	Total		Cum					**10.88**
2	**PCC**							
	F1	4	Cum	1.40	1.40	0.10	0.78	
	Floor Slab	1	Cum	3.46	2.46	0.10	0.85	
	Plinth protection	1	Cum	11.84	1.00	0.05	0.59	**2.22**
3	**Back Filling**							
	Earth work qty		Cum				6.93	
	Deduction C1	-4	Cum	0.30	0.30	1.00	-0.36	**9.74**
3a	**Disposal**		Cum				1.14	**1.14**

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.20	1.20	0.30	1.73	
	Columns C1	4	Cum	0.30	0.30	6.28	2.26	**3.99**
		0		1.50	1.00	0.15	0.00	
		0		1.00	1.00	0.15	0.00	
	Floor Slab	1	Cum	3.46	2.46	0.15	1.28	
	Plinth Beam	1	Cum	14.30	0.30	0.40	1.72	
	Lintel Beam	1	Cum	6.30	0.23	0.13	0.18	
	Roof Beam	1	Cum	14.30	0.30	0.40	1.72	
	Chajja - For Doors	2	Cum	1.30	0.50	0.125	0.16	
	Chajja - For Windows	0	Cum	0.30	0.50	0.125	0.00	
	Chajja - For Ventilators	2	Cum	0.90	0.50	0.125	0.11	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	1.200	1.80	
	Roof Slab	1	Cum	4.06	3.06	0.125	1.55	**8.52**
							0.94	
5	**Steel**		Tonn				1.25	**1.25**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	4.80		0.30	5.76	**5.76**
	Columns: C1	4	Sqm	1.20		6.28	30.12	**30.12**
		0		1.50		1.00	0	
		0		1.00		1.00	0	
	Beams: Plinth Beam	1	Sqm	14.30		1.10	15.73	
	Lintel Beam	1	Sqm	6.30		0.48	3.02	
	Roof Beam	1	Sqm	11.84		1.10	13.02	**31.77**
	Roof slab	1	Sqm	3.46	2.46		8.51	
	Suspended: Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**10.71**
7	**Brick Work Wall**							
	Wall	1	Cum	6.30	0.23	3.0	4.35	
	Internal wall	1	Cum	2.00	0.10	3.0	0.60	
	Wall- up to plinth level	1	Cum	8.90	0.23	0.6	1.23	
	Parapet wall	1	Cum	13.04	0.00	0.00	0.00	
	Deduction- Doors	-2	Cum	1.00	0.23	2.10	-0.97	
	Deduction- Windows	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Ventilator	-2	Cum	0.60	0.23	0.45	-0.12	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**5.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	6.30		3.00	19	
	Internal wall	2	Sqm	2.00		3.00	12	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
		0		1.50		1.00	0.00	
		0		1.00		1.00	0.00	
	Roof (Ceiling)	1	Sqm	2.90	2.00		5.80	
	Deduction- Doors	-2	Sqm	1		2.1	-4.20	

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
	Deduction- Windows	0	Sqm	0		0	0.00	
	Deduction- Ventilator	-2	Sqm	0.6		0.45	-0.54	
		0		2.46		3.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**31.96**
	External Plastering							
	Wall	1	Sqm	6.30		3.60	22.68	
	Wall- up to plinth level	1	Sqm	8.90		0.60	5.34	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
	Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	14.24	0.30		4.27	
	Deduction- Doors	-2	Sqm	1.00		2.10	-4.20	
	Deduction- Windows	0	Sqm	0.00		0.00	0.00	
	Deduction- Ventilator	-2	Sqm	0.60		0.45	-0.54	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**29.75**
9	**Painting**							
	Internal Painting	-1	Sqm	13.8		0.00	0	**11.3**
	External Painting							**29.75**
10	**Flooring**	1	Sqm	2.90	2.00		5.80	**5.80**
	dado		Sqm	13.80		1.50	20.70	
	deduct						0.00	**20.70**
11	**Openings**							
	Doors	2	Sqm	1.00		2.10	4.20	
	Windows	0	Sqm	0.00		0.00	0.00	
	Ventilators	2	Sqm	0.60		0.45	0.54	**4.74**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	3.96	3.06		12.12	**17.92**
	Water proofing below the flooring	1	Sqm	2.90	2.00		5.80	
14	**Skirting**	0	Sqm	9.80		0.15	0.00	**0.00**
15	**Boulders for Floor area**	1	Cum	2.90	2.00	0.60	3.48	**3.93**
	F1	1	Cum	1.40	1.40	0.23	0.45	

Rate Analysis for Soil disposal Soil density=1.

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Stone Boulder tone Boulder densi

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Sand Sand density=1

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1

2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for cement Cement density=

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for Aggregates Aggregates density

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

ity=1.84 T/m

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1 15

210.61

.84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8

7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

γ=1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART

COST SUMMARY -CIVIL WORK- PUMPING STATION- IPS A6

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station MPS A6
A	**Civil Works**	
1	Screen Chamber	12.31
2	Pump House (Wet well and Superstructure)	82.01
3	Manifold Chamber	13.23
4	Valve Chamber	1.78
5	Flowmeter Chamber	1.76
6	D.G. Room	12.64
7	Diesel Storage Room	5.84
8	Store Room	5.22
9	Metering Room	8.44
10	Internal Roads (3m wide)	2.21
11	Compound Wall	13.01
12	Toilet Block	3.36
13	Material Carrying Charges	1.64
	Total Cost of Civil Work	**163.46**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

Sr. No.	Pumping Stations	Qty. from Estimate Sheet														RCC, Flooring and Sand Filling						Bricks				Plaster				Total Quantity in MT			Carriage Charges (In Lakh Rs.)			
		Concrete (C:S:A)				Bricks (cum)	Plaster (Sq m)	Flooring (52 mm thk) M15		Sand Filling	Rubble Solling	Aggregate for Internal Road Works (cum)				Cement		Sand		Aggregate		Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand									
Sr. No.		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (Sq m)	Volume (cum)	Volume (cum)	Volume (cum)	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ cum	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum	Volume (cum)	Wt (MT) 1870kg/ cum	Wt (MT) 1920kg/ cum	MT	MT	MT	Volume (cum)	Wt (MT) 1440kg/ cum	Volume (cum)	Wt (MT) 1840kg/ cum	Sand	Aggregate	Bricks	Sand (9.40 Rs./t.km)	Aggregate (9.40 Rs./t.km)	Bricks (9.40 Rs./t.km)	Total (Rs. in Lakhs)
1	MPS A6																																94.0		94.0	
2	Screen Chamber	8.00	-		74.00	-	-		-		6.00				-	19.30	27.79	20.90	38.46	41.80	78.17	-	-	-	-	-	-	-	-	38.46	78.17	-	0.04	0.07	-	0.11
3	Wetwell & Superstructure	46.00	-		284.00	29.00	282.00	56.00	2.24		28.00				-	75.92	109.32	85.44	157.21	170.88	319.55	55.68	1.21	4.84	49.63	0.85	1.22	2.54	4.67	166.72	319.55	55.68	0.16	0.30	0.05	0.51
4	Manifold Chamber	5.00	-		107.00	-	-		-		12.00				-	27.25	39.24	28.25	51.98	56.50	105.66	-	-	-	-	-	-	-	-	51.98	105.66	-	0.05	0.10	-	0.15
5	Valve Chamber	1.00	-		10.00	-	-		-		3.00				-	2.60	3.74	2.80	5.15	5.60	10.47	-	-	-	-	-	-	-	-	5.15	10.47	-	-	0.01	-	0.01
6	Flow Meter Chamber	1.00	-		10.00	-	-		-		3.00				-	2.60	3.74	2.80	5.15	5.60	10.47	-	-	-	-	-	-	-	-	5.15	10.47	-	-	0.01	-	0.01
7	D.G. Room	13.00	-		44.00	27.00	375.00	50.00	2.00		24.00				-	12.59	18.13	15.47	28.46	30.94	57.86	51.84	1.13	4.51	46.21	1.13	1.63	3.38	6.22	39.19	57.86	51.84	0.04	0.05	0.05	0.14
8	Diesel Storage Room	5.00	-		19.00	16.00	168.00	20.00	0.80		11.00				-	5.36	7.72	6.48	11.92	12.96	24.24	30.72	0.67	2.67	27.38	0.50	0.72	1.51	2.78	17.37	24.24	30.72	0.02	0.02	0.03	0.07
9	Store Room	5.00	-		16.00	14.00	155.00	14.00	0.56		8.00				-	4.58	6.60	5.66	10.41	11.32	21.17	26.88	0.58	2.34	23.96	0.47	0.68	1.40	2.58	15.33	21.17	26.88	0.01	0.02	0.03	0.06
10	Metering Room	8.00	-		27.00	23.00	245.00	24.00	0.82		13.00				-	7.67	11.04	9.38	17.26	18.77	35.10	44.16	0.96	3.84	39.36	0.74	1.07	2.21	4.07	25.17	35.10	44.16	0.02	0.03	0.04	0.09
11	Internal Roads											86.00	39.00	13.00	258.06															-	258.06	-	-	0.24	-	0.24
12	Compound Wall	14.00	-	45.00		57.00	595.00		-						-	9.58	13.80	16.47	30.30	32.95	61.62	109.44	2.38	9.52	97.54	1.79	2.58	5.36	9.86	49.68	61.62	109.44	0.05	0.06	0.10	0.21
13	Toilet Block	2.00	-		18.91	-	-	27.00	1.08		4.00				-	5.08	7.32	5.64	10.38	11.27	21.07	-	-	-	-	-	-	-	-	10.38	21.07	-	0.01	0.02	-	0.03
	Total	108.00	-	45.00	609.91	166.00	1,820.00	191.00	7.50	-	112.00	86.00	39.00	13.00	258.06	172.53	248.44	199.29	366.69	398.59	745.36	318.72	6.93	27.71	284.08	5.46	7.86	16.38	30.14	424.54	1,003.42	318.72	0.40	0.94	0.30	1.64

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- SCREEN CHAMBER MPS A6

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	up to 1.5 m	Cum	53.00	360.70	19117.00
b)	From 1.5 m to 3.0 m	Cum	53.00	407.00	21571.00
c)	From 3.0 m to 4.5 m	Cum	53.00	453.30	24025.00
d)	From 4.5 m to 6 m	Cum	48.00	499.60	23981.00
e)	From 6 m to 7.5 m	Cum	48.00	545.90	26203.00
f)	From 7.5 m to 9.0 m	Cum	22.00	592.20	13028.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock (Blasting Prohibited)				
a)	From 4.5 m to 6 m	Cum	3.00	901.20	2703.60
b)	From 6 m to 7.5 m	Cum	3.00	984.30	2952.90
c)	From 7.5 m to 9.0 m	Cum	1.00	1067.40	1067.40
	BSR-BCD-20-Item 2.9.1; Pg-93 & 2.27.2; Pg.-96				
	Hard rock (blasting prohibited)				
a)	From 4.5 m to 6 m	Cum	3.00	1500.50	4501.50
b)	From 6 m to 7.5 m	Cum	3.00	1583.60	4750.80
c)	From 7.5 m to 9.0 m	Cum	1.00	1666.70	1666.70
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93 & 2.27.2 pg 96				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	109.00	116.50	12699.00
	BSR-BCD-20-Item 2.26; Pg-96				
4	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	182.00	270.30	49195.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520.00
	BSR-BCD-20-Item 2.25; Pg-96				
6	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	8.00	3953.40	31627.00
	BSR-BCD-20; Item 4.1.3; Pg-119				
7	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	74.00	**5018.60**	371376.00
	BSR-BCD-20; Item 5.33.1&5.34.1 ; Pg-88				
	For sulphate resisting cement	MT	27.00	800.00	21600.00
	RUIDP 2017, 3239 & 3237				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
8	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT - FE-500**	MT	6.00	68500.00	411000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	9.00	203.00	1827.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	356.00	356.40	126878.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	7.00	412.20	2885.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	42.00	290.50	12201.00
	BSR-BCD-20; Item-19.16; Pg-296				
11	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	5.00	17.80	89.00
12	**Railing:** Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m center to center, complete as per approved drawings including all materi**al, labour. at walkway: Around platform**				
	RUIDP-2017, Item-10.20, Pg.-34	RM	11.00	2040.00	22440.00
13	**230mm thick Random rubble soling below PCC.**	Cum	6.00	191.14	1147.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**1231051.90**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- SCREEN CHAMBER MPS A6

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		7.55	4.70	1.50	53.23	Cum
b)	From 1.5 m to 3.0 m		7.55	4.70	1.50	53.23	Cum
c)	From 3.0 m to 4.5 m		7.55	4.70	1.50	53.23	Cum
d)	From 4.5 m to 6.0 m		7.55	4.70	1.50	53.23	Cum
e)	From 6.0 m to 7.5 m		7.55	4.70	1.50	53.23	Cum
f)	From 7.5 m to 9.0 m		7.55	4.70	0.70	24.98	
g)	From 9.0 m to 10.5 m		7.55	4.70		0.00	
	Total					**291.12**	
2	Refilling					**108.97**	Cum
3	Disposal		6.60	3.40	7.47	167.72	Cum
	PCC					3.03	Cum
	Base slab					11.40	Cum
	Total					**182.15**	Cum
4	PCC: M15		7.05	4.30	0.10	3.03	Cum
	Approach, Screen and railing- Haunch		9.60	0.75	0.75	5.40	Cum
	Total					**8.43**	Cum
5	RCC Grade M -30						
	Footing (Base slab)		6.95	4.10	0.40	11.40	Cum
	Benching	2.00	1.50	0.85	1.30	1.66	Cum
	Outer walls		16.60	0.35	7.47	43.42	Cum
	Inner wall		2.70	0.30	6.36	5.15	Cum
	Partition wall		4.90	0.30	7.47	10.99	Cum
	RCC Slab		1.00	2.70	0.20	0.54	Cum
	Slab for bar screen		1.50	2.70	0.20	0.81	Cum
	Grand Total					**73.97**	Cum
	Sulphate resisting cement					**26.63**	Mt
6	**Shuttering**						
	Footing (Base slab)		22.10		0.40	8.84	Sqm
	Ramp	0.00	0.75		1.00	0.00	Sqm
	Outer walls	2	16.60		7.47	248.14	Sqm
	Inner wall	2	2.70		6.36	34.37	Sqm
	Partition wall	2	4.90		7.47	73.25	Sqm
	RCC Slab		1.00	2.70		2.70	Sqm
	Slab for bar screen		1.50	2.70		4.05	Sqm
	Grand Total					**371.35**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					8.84	Sqm
	Walls (any thickness) including attached plasters. Butteresses, plinth and string courses etc.					355.76	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					6.75	Sqm
7	Reinforcement- Fe 500 TMT					**5.9**	MT
8	Painting						
	Side wall	2.00	6.25	0.30		3.75	Sq m
	Front wall	1.00	3.40	0.30		1.02	Sq m

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
9	MS/CI foot rests	42				**42.00**	Nos.
10	Providing and fixing G.I. pipe railing					**10.50**	RM
11	Dewatering					**200.00**	KL
	Rubble Soling	1	6.70	3.60	0.23	**5.5476**	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- WETWELL MPS A6

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	100 Sqm	1360.00	654.70	8904.00
	BSR-BCD-20- Item 2.32 pg 96				
2	**Earth work in excavation in foundation trenches or drains** (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	up to 1.5 m	Cum	196.00	360.70	70697.00
b)	From 1.5 m to 3.0 m	Cum	196.00	407.00	79772.00
c)	From 3.0 m to 4.5 m	Cum	196.00	453.30	88847.00
d)	From 4.5 m to 6.0 m	Cum	176.00	499.60	87930.00
e)	From 6.0 m to 7.5 m	Cum	176.00	545.90	96078.00
f)	From 7.5 m to 9.0 m	Cum	176.00	592.20	104227.00
g)	From 9.0 m to 10.5 m	Cum	176.00	638.50	112376.00
h)	From 10.5 m to 12.0 m	Cum	176.00	684.80	120525.00
i)	From 12.0 m to 13.5 m	Cum	27.00	731.10	19740.00
j)	From 13.5 m to 15.0 m	Cum	196.05	777.40	152409.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock				
a)	From 4.5 m to 6.0 m	Cum	10.00	901.00	9010.00
b)	From 6.0 m to 7.5 m	Cum	10.00	984.10	9841.00
c)	From 7.5 m to 9.0 m	Cum	10.00	1067.20	10672.00
d)	From 9.0 m to 10.5 m	Cum	10.00	1150.30	11503.00
e)	From 10.5 m to 12.0 m	Cum	10.00	1233.40	12334.00
f)	From 12.0 m to 13.5 m	Cum	2.00	1316.50	2633.00
	Hard Rock (Blasting prohibited)				
a)	From 4.5 m to 6.0 m	Cum	10.00	1500.50	15005.00
b)	From 6.0 m to 7.5 m	Cum	10.00	1583.60	15836.00
c)	From 7.5 m to 9.0 m	Cum	10.00	1666.70	16667.00
d)	From 9.0 m to 10.5 m	Cum	10.00	1749.80	17498.00
e)	From 10.5 m to 12.0 m	Cum	10.00	1832.90	18329.00
f)	From 12.0 m to 13.5 m	Cum	2.00	1916.00	3832.00
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	644.00	116.50	75026.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	955.00	270.30	258137.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000.00
	BSR-BCD-20-Item 2.25; Pg-96				
7	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	46.00	3953.40	181856.00
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
8	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
8.1	RCC Grade M-30	Cum	243.00	**5270.50**	1280732.00
	For sulphate resisting cement	MT	88.00	800.00	70400.00
	RUIDP 2017, 3239 & 3237				
	All work above Plinth level up to floor V Level.				
8.2	RCC Grade M -25	Cum	41.00	5704.70	233893.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	31.00	68500.00	2123500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	41.00	203.00	8323.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	656.00	356.40	233798.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	246.00	412.20	101401.00
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	95.00	362.90	34476.00
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	93.00	470.60	43766.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	29.00	5840.00	169360.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sq m	282.00	157.40	44387.00
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	**Painting:** Distempering with **oil bound washable** distemper of approved brand and manufacture to give an even shade	Sq m	379.00	97.20	36839.00
	New work (two or more coats) over & including priming coat with cement primer.				
	BSR - BCD-20- Item- 13.77.2, P-206				
14	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	56.00	456.50	25564.00
	BSR-BCD-20; Item-11.4; Pg-174				
15	**Structural steel** work in single section fixed without connecting plate including cutting, hoisting,fixing in position and applying a priming coat of approved steel primer all complete.	M.T	1.00	68200.00	68200.00
	BSR-BCD-20; Item-10.1; Pg-168				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
16	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	85.00	2553.30	217031.00
	BSR-BCD-20; Item-22.8.1; Pg-311				
17	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	Sqm	22.00	3635.80	79988.00
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m c/c, complete as per approved drawings including all material, labour: **Around Opening in the floor platform**	RM	18.00	2040.00	36720.00
	RUIDP-2017, Item-10.20, Pg.-34				
19	Supplying and fixing- Rolling shutters of approved make.made of required size of M.S.Iaths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	1106.50	8852.00
	80x1.25mm MS Laths with 1.25mm thick top cover				
	BSR-BCD-20; Item-10.8.1; Pg-169				
23	Providing and fixing **M.S. chequerred plate** flooring of following thickness supported on M.S. angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plates to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge. (6 mm Thick)	Sqm	8.00	3226.00	25808.00
	(Item No.6, (a) Section J, MJP Page 366 DSR 2017-18)				
24	**230mm thick Random rubble soling below PCC.**	Cum	28.00	191.14	5352.00
	BSR - RCD-18- Item- M-148, P-35				
25	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per Litre	2000.00	8.80	**17600.00**
	BSR-BCD-20; Item-18.48, Pg-274				
26	Providing and fixing 2HP centrifugal pump (6-20m head)	No	1.00	10000.00	**10000.00**
	Market Rate				
25	**Overflow Arrangement**				
i	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
a)	up to 1.5 m	Cum	152.00	360.70	54826.00
b)	From 1.5 m to 3.0 m	Cum	100.00	407.00	40700.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	196.00	116.50	22834.00
	BSR-BCD-20-Item 2.26; Pg-96				
iii	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026.00

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
	BSR-BCD-20-Item 2.25; Pg-96				
iv	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	41.00	270.30	11082.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
v	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended up to date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	1000 mm dia.	m	50.00	21440.20	1072010.00
	BSR-BCD-18-Item 18.72.29; Pg-232				
vi	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification.	cum	15.00	217.00	3255.00
	BSR - RCD-18- Item- 12.3, P-222				
vii	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer in-charge :				
	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centring, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS: 4885	Each	1.00	**6970.60**	6970.60
	BSR - BCD-20- Item- 19.9.1.2, P-295				
	Total				**8201378.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- WETWELL MPS A6

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Site Clearing		40.00	34.00		Sqm
2	Excavation in soft or ordinary soil					
	Pump House					
a)	up to 1.5 m			12.90	1.50	Cum
b)	From 1.5 m to 3.0 m			12.90	1.50	Cum
c)	From 3.0 m to 4.5 m			12.90	1.50	Cum
d)	From 4.5 m to 6.0 m			12.90	1.50	Cum
e)	From 6.0 m to 7.5 m			12.90	1.50	Cum
f)	From 7.5 m to 9.0 m			12.90	1.50	Cum
g)	From 9.0 m to 10.5 m			12.90	1.5	Cum
h)	From 10.5 m to 12.0 m			12.90	1.50	Cum
i)	From 12.0 m to 13.5 m			12.90	0.23	Cum
j)	From 13.5 m to 15.0 m			12.90	0.00	Cum
	Total					Cum
3	**Refilling of Earth**					Cum
4	**Disposal of Earth**					
	Base Raft	1				
	Well	1		9.80	11.20	Cum
	PCC	1		10.00	0.10	Cum
	Rubble Soling	0		10.20	0.23	Cum
	Total					Cum
5	**Dewatering of water**					KL
6	PCC: Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering- M15					
	Below Base Raft			10.00	0.10	Cum
	Additional sloped portion in Base Raft					
	Total					
7	**Reinforced cement concrete**					
a	M 30: up to Plinth level					
	Base Raft			12.30	0.70	Cum
	Wall		29.53	0.40	11.80	Cum
	Floor Slab Beams- Peripheral		29.53	0.30	0.60	Cum
	Floor Slab Beams	1	23.80	0.30	0.60	Cum
	Floor Slab			9.00	0.20	Cum
	For platform		1.20	1.20	0.15	Cum
	Deduction for Floor Slab opening		-8.10	1.00	0.20	Cum
	Total					Cum
	Sulphate resisting cement					
b	M 25: Above Plinth level					
	Columns	10	0.30	0.50	5.77	Cum
	Corbels	1	28.27	0.65	0.45	Cum
	Lintel Beams		29.53	0.30	0.40	Cum
	Chajja		18.90	0.45	0.100	Cum
	Roof Slab Beams- Peripheral		29.53	0.30	0.50	Cum
	Roof Slab Beams- Circular inner		0.00	0.00	0.00	Cum
	Roof Slab Beams	1	18.32	0.30	0.50	Cum
	Roof Slab			10.40	0.13	Cum
	Parapet wall		0.00	0.15	0.90	Cum
	Screen Lifting Platform Slab		3.30	1.50	0.20	Cum
	Ramp		1.50	2.50	0.60	Cum
	Total					Cum

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
8	**Shuttering**					
a	Foundations, Footings, Bases of Columns, etc for mass concrete					
	Wall- Outer		30.79		11.80	Sqm
	Wall- Inner		28.27		11.80	Sqm
	Floor Slab Beams- Peripheral		29.53		1.50	Sqm
	Floor Slab Beams	1	23.80		1.50	Sqm
	Floor Slab			9.00		Sqm
	Ramp		5.50		0.60	Sqm
	For platform		1.20	1.20		Sqm
	For Floor Slab opening Sides		18.20		0.20	Sqm
	Deduction for Floor Slab opening		8.10	1.00		Sqm
	Total					
b	walls (any thickness), including attached pilasters, buttresses, plinth and string courses fillets etc.					
	Columns	10	1.60		5.77	Sqm
	Corbels	1	1.55		0.45	Sqm
	Lintel Beams		29.53		1.10	Sqm
	Chajja		18.90		0.55	Sqm
	Roof Slab Beams- Peripheral		29.53		1.30	Sqm
	Roof Slab Beams- Circular inner		0.00		0.00	Sqm
	Roof Slab Beams	1	18.32		1.30	Sqm
	Roof Slab			9.00		Sqm
	Roof Slab Projection		31.73	0.30		Sqm
	Parapet wall	0	32.18		0.90	Sqm
	Screen Lifting Platform Slab		3.50	1.70		Sqm
	Total					
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					Sqm
	Suspended floors, roofs, landings, balcnies and access platform.					Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.					Sqm
	Columns,Pillars, Piers, Abutments, Posts and Struts.					Sqm
9	**Type Item - Brick Work**					
	Brick wall		30.07	0.23	5.77	Cum
	Deduct opening					
	Rolling Shutter	-1	2.50	3.00	0.23	
	Windows	-9	1.50	1.20	0.23	
	Ventilator	-9	0.70	0.90	0.23	
	Deduct column	-10	0.30	5.77	0.23	
	Total					Cum
10	**Plaster work (Inner Face)**					
	Superstructure			28.27	5.77	
	less opening					Sq m
	Total					Sq m
11	**Plaster work (Outer Face)**					
	Superstructure			30.79	5.77	
	less opening					Sq m
	Total					Sq m
12	**Steel Reinforecement**					MT

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
13	**Painting:** Distempering with **oil bound was**hable distember of approved brand and manufacture to give an even shade					Sq m
14	**Cement concrete flooring**					
	Superstructure			63.62		Sq m
	deduct for opening					
	Total					Sq m
15	**Aluminium Window, door and ventilator**					
	Windows	9	1.50		1.20	Sqm
	Ventilator	9	0.70		0.90	Sqm
	Total					Sqm
16	MS/CI foot step					Nos.
17	Providing and fixing G.I. pipe railing				18.20	RM
18	Rolling Shutter	1	2.50		3.00	Sqm
19	Providing stuctural steel work in single stanchions composed of RSJ, channel, etc,					M.T
20	Providing and fixing in position copper lightening conductor					No.
21	**MS Chequerred Plate**					
	6 mm thk plate, 10 mm thk ISMC100 with epoxy painted	1	8.10	1.00		Sqm
22	Roof Water Proofing		10.40			Sqm
23	**Rubble Soling:** 230 mm thick rubble soling	1	122.72		0.23	Cum

Qty.
1360.00
196.05
196.05
196.05
196.05
196.05
196.05
196.05
196.05
30.06
0.00
1598.46
643.83
83.18
844.81
7.85
18.79
954.63
5000.00
7.85
38.15
46.00
83.18
139.38
5.32
4.28
12.72
0.22
-1.62
243.48
87.65
8.66
8.27
3.54
0.85
4.43
0.00
2.75
10.62
0.00
0.99
1.13
41.24

Qty.
363.32
333.59
44.30
35.70
63.62
3.30
1.44
3.64
8.10
857.00
92.40
0.70
32.48
10.40
38.39
0.00
23.82
63.62
9.52
0.00
5.95
277.28
41.34
655.57
245.95
94.69
93.10
39.93
-1.73
-3.73
-1.30
-3.98
29.19
163.26
-29.37
133.89
177.81
-29.37
148.44
31.32

Qty.
379.29
63.62
-8.10
55.52
16.20
5.67
21.87
0.00
18.20
7.50
1.00
1.00
8.10
84.95
28.23

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- MANIFOLD CHAMBER MPS A6

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	92.00	360.70	33184.00
b)	From 1.5 m to 3.0 m	Cum	72.00	407.00	29304.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	55.00	116.50	6408.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	109.00	270.30	29463.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25: All works up to plinth level	Cum	107.00	4952.60	529928.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	9.00	68500.00	616500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.00	203.00	2436.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	119.00	356.40	42412.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	4.00	290.50	1162.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	8.00	17.80	142.00
11	**230mm thick Random rubble soling below PCC.**	Cum	12.00	191.14	2294.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**1323260.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- MANIFOLD CHAMBER MPS A6

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		10.40	5.90	1.50	92.04	Cum
b)	From 1.5 m to 3.0 m		10.40	5.90	1.18	72.40	Cum
c)	From 3.0 m to 4.5 m		10.40	5.90	0.00	0.00	Cum
2	Refilling					55.35	Cum
3	Disposal		9.20	4.70	1.95	84.32	Cum
	PCC					5.19	Cum
	Base slab					19.58	Cum
	Total					**109.09**	Cum
4	PCC: M15		9.80	5.30	0.10	5.19	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		9.60	5.10	0.40	19.58	Cum
	Outer walls		26.40	0.35	2.25	83.16	Cum
	Beam	4.00	4.00	0.25	0.30	1.20	
	Total					**107.13**	Cum
6	Precast Cover						
		26	1.44	0.30	0.10	1.12	
		13	1.14	0.30	0.10	0.44	
		26	2.09	0.30	0.10	1.63	
	Total					**3.19**	Cum
7	Shuttering						
	Footing (Base slab)		29.40		0.40	11.76	Sqm
	Outer walls	2	26.40		2.25	118.80	Sqm
	Beam	4	0.85		4.00	13.60	
	Total					**144.16**	Sqm
9	Reinforcement- Fe 500 TMT					**9**	MT
10	Painting						
	Side wall	2.00	9.20	0.30		5.52	Sq m
	Front and back wall	2.00	4.70	0.30		2.82	Sq m
	Total					**8.34**	Sqm
11	MS/CI foot rests	4				**4.00**	No.
12	Dewatering					**100.00**	KL
13	Random rubble soilng		9.80	5.30	0.23	11.95	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- VALVE CHAMBER MPS A6

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	26.00	360.70	9378.00
b)	From 1.5 m to 3.0 m	Cum	19.00	407.00	7733.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	23.00	116.50	2680.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.00	270.30	5947.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	10.00	5018.60	50186.00
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.00	203.00	812.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	50.00	356.40	17820.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	4.00	290.50	1162.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	4.00	17.80	71.00
11	**230mm thick layer of Random rubble soling below PCC.**	Cum	3.00	191.14	573.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**178035.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- BUTTERFLY VALVE CHAMBER MPS A6

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.70	3.70	1.50	26.09	Cum
b)	From 1.5 m to 3.0 m		4.70	3.70	1.08	18.78	Cum
c)	From 3.0 m to 4.5 m		4.70	3.70	0.00	0.00	Cum
2	Refilling					23.15	Cum
3	Disposal		3.50	2.50	1.95	17.06	Cum
	PCC					1.27	Cum
	Base slab					3.39	Cum
	Total					**21.72**	Cum
4	PCC: M15		4.10	3.10	0.10	1.27	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		3.90	2.90	0.30	3.39	Cum
	Outer walls		11.00	0.25	2.25	6.19	Cum
	Total					**10.21**	Cum
6	**Precast Cover**	9	2.14	0.33	0.10	0.63	Cum
6	**Shuttering**						
	Footing (Base slab)		13.60		0.30	4.08	Sqm
	Outer walls	2	11.00		2.25	49.50	Sqm
	Total					**53.58**	Sqm
7	**Reinforcement- Fe 500 TMT**					**1**	MT
8	**Painting**						
	Side wall	2.00	3.50	0.30		2.10	Sq m
	Front and back wall	2.00	2.50	0.30		1.50	Sq m
	Total					**3.60**	Sqm
9	MS/CI foot rests	4				**4.00**	No.
10	Dewatering					**100.00**	KL
11	Random rubble soilng		4.10	3.10	0.23	2.92	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- FLOW METER CHAMBER MPS A6

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	24.00	360.70	8657.00
b)	From 1.5 m to 3.0 m	Cum	18.00	407.00	7326.00
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	25.00	116.50	2913.00
	BSR-BCD-20-Item 2.26; Pg-96				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	17.00	270.30	4595.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260.00
	BSR-BCD-20-Item 2.25; Pg-96				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	3953.40	3953.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	10.00	5018.60	50186.00
	BSR-BCD-20 Item-5.33.1 + Item- 5.34.1, Pg-108				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	68500.00	68500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.00	203.00	812.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	49.00	356.40	17464.00
	BSR - BCD-20- Item- 5.9.2, Pg-104				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	4.00	290.50	1162.00
	BSR-BCD-20; Item-19.16; Pg-296				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-20; Item-13.70.1; Pg-206	Sq m	4.00	17.80	71.00
11	**230mm thick Random rubble soling below PCC.**	Cum	3.00	191.14	573.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**176472.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET-CIVIL WORK- FLOW METER CHAMBER MPS A6

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		5.10	3.20	1.50	24.48	Cum
b)	From 1.5 m to 3.0 m		5.10	3.20	1.08	17.63	Cum
c)	From 3.0 m to 4.5 m		5.10	3.20	0.00	0.00	Cum
2	Refilling					24.97	Cum
3	Disposal		3.90	2.00	1.65	12.87	Cum
	PCC					1.17	Cum
	Base slab					3.10	Cum
	Total					**17.14**	Cum
4	PCC: M15		4.50	2.60	0.10	1.17	Cum
5	RCC Grade M -20						
	Footing (Base slab)		4.30	2.40	0.30	3.10	Cum
	Outer walls		10.80	0.25	2.25	6.08	Cum
	Total					**9.59**	Cum
6	**Precast Cover**	11	1.64	0.30	0.08	0.41	Cum
7	Shuttering						
	Footing (Base slab)		13.40		0.30	4.02	Sqm
	Outer walls	2	10.80		2.25	48.60	Sqm
	Total					**52.62**	Sqm
8	Reinforcement- Fe 500 TMT					**0.77**	MT
9	Painting						
	Side wall	2.00	3.90	0.30		2.34	Sq m
	Front and back wall	2.00	2.00	0.30		1.20	Sq m
	Total					**3.54**	Sqm
10	MS/CI foot rests	4				**4.00**	No.
11	Dewatering					**100.00**	KL
12	Random rubble soilng		4.50	2.60	0.23	2.69	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- D.G. ROOM- MPS A6

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	117.00	360.70	42201.90
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	13.00	3953.40	51394.20
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	95.00	116.50	11067.50
	BSR-BCD-20-Item 2.26; Pg-96				
3a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.00	270.30	5947.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	11.00	4952.60	54478.60
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	33.00	5704.70	188255.10
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	4.00	68500.00	274000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.00	203.00	3248.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	63.00	412.20	25968.60
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	133.00	362.90	48265.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	58.00	470.60	27294.80
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	27.00	5840.00	157680.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	375.00	157.40	59025.00

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	375.00	97.20	36450.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	**Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.**	Sqm	67.00	2553.30	171071.10
	BSR-BCD-20; Item-22.8.1; Pg-311				
11	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	50.00	456.50	22825.00
	BSR-BCD-20; Item-11.4; Pg-174				
12	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	13.00	3635.80	47265.40
	BSR-BCD-20; Item-21.10; Pg-307				
13	Supplying and fixing-rolling shutters of approved make.made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	12.00	2394.00	28728.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	5.00	802.00	4010.00
	18mm thick with under layer 12mm thick cement plaster 1:3 (1 cement : 3coarse sand)				
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	24.00	191.14	4587.36
	BSR - RCD-18- Item- M-148, P-35				
	Total				**1263763.26**

D G Room:

	Nos	L	B	H	
Inner dimension		10.00	5.00	5.00	
Outer dimension		10.46	5.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	8.00	1.70	1.70	0.30	
Total no of Columns	8				
C1	8	0.30	0.30	6.05	
Plinth beam		42.76	0.30	0.40	
Lintel beam		31.84	0.30	0.40	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0.00	0.00		0.00	
Windows size	7.00	1.50		1.20	
Ventilators size	0.00	0.75		0.90	
Rolling Shutter	1	3.00		4.00	
Roof beam		42.76	0.30	0.45	
Roof slab		11.06	6.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		109.60			
Existing GL		104.00			
Finished GL		104.000			
Plinth level		104.600			
Top of Footing		102.300			
Footing Level		101.900			

MEASUREMENT SHEET FOR D G ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	8	Cum	2.50	2.50	2.33	116.50	**116.50**
2	**PCC**							
	F1	8	Cum	1.90	1.90	0.10	2.89	
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth protection	1	Cum	31.84	1.00	0.05	1.59	**13.05**
3	**Back Filling**							
	Earth work qty		Cum				96.52	
	Deduction C1	-8	Cum	0.30	0.30	1.70	-1.22	**95.29**
4	**RCC M25**							
	Column foundation F1	8	Cum	1.70	1.70	0.30	6.94	
	Columns C1	8	Cum	0.30	0.30	6.05	4.36	**11.29**
	Floor Slab	1	Cum	10.46	5.46	0.15	8.57	
	Plinth Beam	1	Cum	42.76	0.30	0.40	5.13	
	Lintel Beam	1	Cum	31.84	0.30	0.40	3.82	
	Roof Beam	1	Cum	42.76	0.30	0.45	5.77	
	Chajja - For Doors	0	Cum	0.00	0.45	0.125	0.00	
	Chajja - For Windows	7	Cum	1.80	0.45	0.125	0.71	
	Chajja - For Ventilators	0	Cum	1.05	0.45	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	3.30	0.45	0.125	0.19	
	Ramp/Steps	1	Cum	3.00	1.00	0.600	0.90	
	Roof Slab	1	Cum	11.06	6.06	0.125	8.38	**33.47**
5	**Steel**		Tonn				4.48	**4.48**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	8	Sqm	6.80		0.30	16.32	**16.32**
	Columns: C1	8	Sqm	1.20		6.05	58.08	**58.08**
	Beams: Plinth Beam	1	Sqm	42.76		1.10	47.04	
	Lintel Beam	1	Sqm	31.84		1.10	35.02	
	Roof Beam	1	Sqm	42.76		1.20	51.31	**133.37**
	Roof slab	1	Sqm	10.46	5.46		57.11	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.50	0.45		4.73	
	Chajja - For Ventilators	0	Sqm	0.75	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.00	0.45		1.35	**63.19**
7	**Brick Work Wall**							
	Wall	1	Cum	31.84	0.23	5.0	36.62	
	Wall- up to plinth level	1	Cum	31.84	0.23	0.6	4.39	
	Parapet wall	0	Cum	16.52	0.00	0.00	0.00	
	Deduction- Lintel beam	-1	Cum	31.84	0.23	0.40	-2.93	
	Deduction- Floor PCC & floor slab	-1	Cum	31.84	0.23	0.25	-1.83	
	Deduction- Roof beam	-1	Cum	31.84	0.23	0.45	-3.30	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-7	Cum	1.50	0.23	1.20	-2.90	
	Deduction- Ventilator	0	Cum	0.75	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	3.00	0.23	4.00	-2.76	**27.30**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	31.84		5.00	159	
	Parapet wall	0	Sqm	16.52		0.00	0.00	
	Roof (Ceiling)	1	Sqm	10.00	5.00		50.00	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-7	Sqm	1.5		1.2	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3		4	-12.0	**184.60**
	External Plastering							
	Wall	1	Sqm	31.84		5.00	159.20	
	Wall- up to plinth level	1	Sqm	31.84		0.60	19.10	
	Parapet wall	1	Sqm	16.52		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.45		0.00	
	Chajja - For Windows	7	Sqm	1.80	0.45		22.47	
	Chajja - For Ventilators	0	Sqm	1.05	0.45		0.00	
	Chajja - For Rolling Shutter	1	Sqm	3.30	0.45		3.89	
	Roof Slab Projection	1	Sqm	34.24	0.30		10.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-7	Sqm	1.50		1.20	-12.60	
	Deduction- Ventilator	0	Sqm	0.75		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	3.00		4.00	-12.00	**190.33**
9	**Painting**							
	Internal Painting							**184.6**
	External Painting							**190.33**

MEASUREMENT SHEET FOR D G ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
10	**Flooring**	1	Sqm	10.00	5.00		50.00	**50.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	7	Sqm	1.50		1.20	12.60	
	Ventilators	0	Sqm	0.75		0.90	0.00	**12.60**
12	**Rolling Shutter**	1	Sqm	3.00		4.00	12.00	**12.00**
13	**Water proofing at top of roof**	1	Sqm	11.06	6.06		67.02	**67.02**
14	**Skirting**	1	Sqm	30.00		0.15	4.50	**4.50**
15	**Boulders for Floor area**	1	Sqm	10.46	5.46	0.30	17.13	**23.78**
	F1	8.00	Sqm	1.9	1.90	0.23	6.64	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- DIESEL STORE ROOM- MPS A6

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	58.00	360.70	20920.60
	BSR-BCD-20-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-79				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	49.00	116.50	5708.50
	BSR-BCD-20-Item 2.26; Pg-75				
4	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.00	270.30	2433.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	5.00	4952.60	24763.00
	BSR-BCD-20; Item-5.33.1, Pg-88				
	RCC Grade M -25 Above Plinth	Cum	14.00	5704.70	79865.80
	BSR-BCD-20; Item-5.33.2, Pg-88				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-86				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.00	203.00	1624.00
	BSR - BCD-20- Item- 5.9.1, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	23.00	412.20	9480.60
	BSR - BCD-20- Item- 5.9.3, Pg-84				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	48.00	362.90	17419.20
	BSR - BCD-20- Item- 5.9.5, Pg-84				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	24.00	470.60	11294.40
	BSR - BCD-20- Item- 5.9.6, Pg-84				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	16.00	5840.00	93440.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-93				
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	168.00	157.40	26443.20

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	BSR-BCD-20;Item-13.11.1; Pg-167				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	168.00	97.20	16329.60
	BSR - BCD-20- Item- 13.77.2, P-171				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	20.00	456.50	9130.00
	BSR-BCD-18; Item-11.4; Pg-144				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-254				
12	Supplying and fixing-rolling shutters of approved make. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	6.00	1106.50	6639.00
	BSR-BCD-20; Item-10.8.1; Pg-139				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	31.00	2553.30	79152.30
	BSR-BCD-20; Item-22.8.1; Pg-257				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-146				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	11.00	191.14	2102.54
	BSR - RCD-18- Item- M-148, P-35				
	Total				**584097.74**

Diesel Store Room:

	Nos	L	B	H	
Inner dimension		5.00	4.00	3.50	
Outer dimension		5.46	4.46		
PCC thickness		0.10			
PCC projection		0.10			
Footing dimensions					
F1	4	1.70	1.70	0.30	
Total no of Columns	4				
C1	4	0.30	0.30	5.00	4.93
Plinth beam		19.84	0.30	0.40	
Local lintel beam		7.70	0.23	0.20	
Floor slab thickness		0.15			
Wall thickness		0.23			
Door size	0	1.20		2.10	
Windows size	3	1.50		1.20	
Ventilators size	0	0.75		1.00	
Rolling Shutter	1	2.00		3.00	
Roof beam		19.84	0.30	0.40	
Roof slab		6.06	5.06	0.125	
Roof slab offset		0.30			
Parapet wall thickness		0.00			
Paraper wall height		0.00			
Top level of the building		108.100			
Existing GL		104.000			
Finished GL		104.000			
Plinth level		104.600			
Top of Footing		102.300			
Footing Level		101.900			

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.50	2.50	2.33	58.25	**58.25**
2	**PCC**							
	F1	4	Cum	1.90	1.90	0.10	1.44	
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth protection	1	Cum	19.84	1.00	0.05	0.99	**5.43**
3	**Back Filling**							
	Earth work qty		Cum				49.35	
	Deduction C1	-4	Cum	0.30	0.30	1.70	-0.61	**48.74**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.70	1.70	0.30	3.47	
	Columns C1	4	Cum	0.30	0.30	5.00	1.80	**5.27**
	Floor Slab	1	Cum	5.00	4.00	0.15	3.00	
	Plinth Beam	1	Cum	19.84	0.30	0.40	2.38	
	Lintel Beam	3	Cum	7.70	0.23	0.20	1.06	
	Roof Beam	1	Cum	19.84	0.30	0.40	2.38	
	Chajja - For Doors	0	Cum	1.50	0.50	0.125	0.00	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.30	0.50	0.125	0.14	
	Ramp/Steps	1	Cum	2.00	1.00	0.600	0.60	
	Roof Slab	1	Cum	6.06	5.06	0.125	3.83	**13.73**
5	**Steel**		Tonn				1.90	**1.90**

MEASUREMENT SHEET FOR DIESEL STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.80		0.30	8.16	**8.16**
	Columns: C1	4	Sqm	1.20		5.00	24	**24.00**
	Beams: Plinth Beam	1	Sqm	19.84		1.10	21.82	
	Lintel Beam	1	Sqm	7.70		0.63	4.85	
	Roof Beam	1	Sqm	19.84		1.10	21.82	**48.50**
	Roof slab	1	Sqm	5.00	4.00		20.00	
	Suspended: Chajja - For Doors	0	Sqm	1.20	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.00	0.50		1.00	**23.25**
7	**Brick Work Wall**							
	Wall	1	Cum	19.84	0.23	3.5	15.97	
	Wall- up to plinth level	1	Cum	19.84	0.23	0.6	2.74	
	Parapet wall	0	Cum	19.84	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	1.20	0.23	2.10	0.00	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	1.00	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.00	0.23	3.00	-1.38	**16.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	19.84		3.50	69	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Roof (Ceiling)	1	Sqm	5.00	4.00		20.00	
	Deduction- Doors	0	Sqm	1.2		2.1	0.00	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2		3	-6.0	**78.04**
	External Plastering							
	Wall	1	Sqm	19.84		3.50	69.44	
	Wall- up to plinth level	1	Sqm	19.84		0.60	11.90	
	Parapet wall	1	Sqm	19.84		0.00	0.00	
	Chajja - For Doors	0	Sqm	1.50	0.50		0.00	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.30	0.50		3.55	
	Roof Slab Projection	1	Sqm	22.24	0.30		6.67	
	Deduction- Doors	0	Sqm	1.20		2.10	0.00	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		1.00	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.00		3.00	-6.00	**90.06**
9	**Painting**							
	Internal Painting	-1	Sqm	2		3	-6	**78.0**
	External Painting							**90.06**
10	**Flooring**	1	Sqm	5.00	4.00		20.00	**20.00**

MEASUREMENT SHEET FOR DIESEL STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	0	Sqm	1.20		2.10	0.00	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**5.40**
12	**Rolling Shutter**	1	Sqm	2.00		3.00	6.00	**6.00**
13	**Water proofing at top of roof**	1	Sqm	6.06	5.06		30.66	**30.66**
14	**Skirting**	1	Sqm	18.00		0.15	2.70	**2.70**
15	**Boulders for Floor area**	1	Sqm	5.46	4.46	0.30	7.31	**10.63**
	F1	4	Sqm	1.9	1.90	0.23	3.32	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- STORE ROOM- MPS A6

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	49.00	360.70	17674.30
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	3953.40	19767.00
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	41.00	116.50	4776.50
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	8.00	270.30	2162.00
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	5.00	4952.60	24763.00
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	11.00	5704.70	62751.70
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	Tonn	2.00	68500.00	137000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.00	203.00	1421.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	16.00	412.20	6595.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	41.00	362.90	14878.90
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	24.00	470.60	11294.40
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	14.00	5840.00	81760.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	155.00	157.40	24397.00
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	155.00	97.20	15066.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	14.00	456.50	6391.00
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	8.00	3635.80	29086.40
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	23.00	2553.30	58725.90
	BSR-BCD-20; Item-22.8.1; Pg-311				
13	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	2.00	802.00	1604.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
14	**Filling up to floor finish level with Random rubble masonry.**	Cum	8.00	191.14	1529.12
	BSR - RCD-18- Item- M-148, P-35				
	Total				**521643.42**

Store Room:

	Nos	L	B	H
Inner dimension		4.50	3.00	3.50
Outer dimension		4.96	3.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.50	1.50	0.30
Total no of Columns	4			
C1	4	0.30	0.30	5.00
Plinth beam		16.84	0.30	0.40
Local lintel beam		6.90	0.23	0.20
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	1	1.20		2.10
Windows size	3	1.50		1.20
Ventilators size	0	0.75		1.00
Rolling Shutter	0	0.00		0.00
Roof beam		16.84	0.30	0.40
Roof slab		5.56	4.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		108.100		
Existing GL		104.000		
Finished GL		104.000		
Plinth level		104.600		
Top of Footing		102.300		
Footing Level		101.900		

MEASUREMENT SHEET FOR STORE ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	4	Cum	2.30	2.30	2.33	49.30	**49.30**
2	**PCC**							
	F1	4	Cum	1.70	1.70	0.10	1.16	
	Floor Slab	1	Cum	4.96	3.46	0.15	2.57	
	Plinth protection	1	Cum	16.84	1.00	0.05	0.84	**4.57**
3	**Back Filling**							
	Earth work qty		Cum				42.04	
	Deduction C1	-4	Cum	0.30	0.30	2.33	-0.84	**41.20**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.50	1.50	0.30	2.70	
	Columns C1	4	Cum	0.30	0.30	5.00	1.80	**4.50**
	Floor Slab	1	Cum	4.50	3.00	0.15	2.03	
	Plinth Beam	1	Cum	16.84	0.30	0.40	2.02	
	Lintel Beam	3	Cum	6.90	0.23	0.20	0.95	
	Roof Beam	1	Cum	16.84	0.30	0.40	2.02	
	Chajja - For Doors	1	Cum	1.50	0.50	0.125	0.09	
	Chajja - For Windows	3	Cum	1.80	0.50	0.125	0.34	
	Chajja - For Ventilators	0	Cum	1.05	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	1.20	1.00	0.600	0.36	
	Roof Slab	1	Cum	5.56	4.06	0.125	2.82	**10.63**
5	**Steel**		Tonn				1.51	**1.51**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	6.00		0.30	7.2	**7.20**
	Columns: C1	4	Sqm	1.20		5.00	24	**24.00**
	Beams: Plinth Beam	1	Sqm	16.84		1.10	18.52	
	Lintel Beam	1	Sqm	6.90		0.63	4.35	
	Roof Beam	1	Sqm	16.84		1.10	18.52	**41.39**
	Roof slab	1	Sqm	4.50	3.00		13.50	
	Suspended: Chajja - For Doors	1	Sqm	1.20	0.50		0.60	
	Chajja - For Windows	3	Sqm	1.50	0.50		2.25	
	Chajja - For Ventilators	0	Sqm	0.75	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**16.35**
7	**Brick Work Wall**							
	Wall	1	Cum	16.84	0.23	3.5	13.56	
	Wall- up to plinth level	1	Cum	16.84	0.23	0.6	2.32	
	Parapet wall	0	Cum	18.04	0.00	0.00	0.00	
	Deduction- Doors	-1	Cum	1.20	0.23	2.10	-0.58	
	Deduction- Windows	-3	Cum	1.50	0.23	1.20	-1.24	
	Deduction- Ventilator	0	Cum	0.75	0.23	0.90	0.00	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**14.06**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	16.84		3.50	59	
	Parapet wall	0	Sqm	18.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	4.50	3.00		13.50	
	Deduction- Doors	-1	Sqm	1.2		2.1	-2.52	
	Deduction- Windows	-3	Sqm	1.5		1.2	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		0.9	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**64.52**
	External Plastering							
	Wall	1	Sqm	16.84		4.10	69.04	
	Wall- up to plinth level	1	Sqm	16.84		0.60	10.10	
	Parapet wall	1	Sqm	18.04		0.00	0.00	
	Chajja - For Doors	1	Sqm	1.50	0.50		3.15	
	Chajja - For Windows	3	Sqm	1.80	0.50		9.90	
	Chajja - For Ventilators	0	Sqm	1.05	0.50		0.00	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	19.24	0.30		5.77	
	Deduction- Doors	-1	Sqm	1.20		2.10	-2.52	
	Deduction- Windows	-3	Sqm	1.50		1.20	-5.40	
	Deduction- Ventilator	0	Sqm	0.75		0.90	0.00	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**90.05**
9	**Painting**							
	Internal Painting	0	Sqm	0		0	0	**64.5**
	External Painting							**90.05**
10	**Flooring**	1	Sqm	4.50	3.00		13.50	**13.50**

MEASUREMENT SHEET FOR STORE ROOM								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
11	**Openings**							
	Doors	1	Sqm	1.20		2.10	2.52	
	Windows	3	Sqm	1.50		1.20	5.40	
	Ventilators	0	Sqm	0.75		1.00	0.00	**7.92**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	5.56	4.06		22.57	**22.57**
14	**Skirting**	1	Sqm	15.00		0.15	2.25	**2.25**
15	**Boulders for Floor area**	1	Sqm	4.96	3.46	0.30	5.15	**7.81**
	F1	4	Sqm	1.7	1.70	0.23	2.66	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- METERING ROOM- MPS A6

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	Cum	74.00	360.70	26691.80
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	8.00	3953.40	31627.20
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	61.00	116.50	7106.50
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	270.30	3513.90
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	7.00	4952.60	34668.20
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.00	5704.70	114094.00
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	3.00	68500.00	205500.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.00	203.00	2233.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.00	412.20	16900.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	73.00	362.90	26491.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	36.00	470.60	16941.60
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	23.00	5840.00	134320.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	245.00	157.40	38563.00
	BSR-BCD-20;Item-13.11.1; Pg-167				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	245.00	97.20	23814.00
	BSR - BCD-20- Item- 13.77.2, P-206				
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm	24.00	534.60	12830.40
	BSR-BCD-20; Item-11.9.1; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	9.00	3635.80	32722.20
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing-rolling shutters of approved make.made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	2394.00	19152.00
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	36.00	2553.30	91918.80
	BSR-BCD-20; Item-22.8.1; Pg-311				
14	Marble chips skirting (up to 30 cm height) rubbed and polished to granolithic finish, top layer 6mm thick with white, black, chocolate, grey, yellow or green marble chips of sizes from smallest to 4mm nominal size laid in cement marble powder mix 3:1 (3 cement: 1 marble powder) by weight in proportion of 4:7 94 cement marble powder mix: 7 barbie chips) by volume.	Sqm	3.00	802.00	2406.00
	BSR-BCD-20; Item-11.12.1; Pg-175				
15	**Filling up to floor finish level with Random rubble masonry.**	Cum	13.00	191.14	2484.82
	BSR - RCD-18- Item- M-148, P-35				
	Total				**843979.32**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1	6	Cum	2.30	2.30	2.33	73.95	**73.95**
2	**PCC**							
	F1	6	Cum	1.90	1.90	0.10	2.17	
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth protection	1	Cum	21.84	1.00	0.05	1.09	**7.58**
3	**Back Filling**							
	Earth work qty		Cum				62.32	
	Deduction C1	-6	Cum	0.30	0.30	1.70	-0.92	**61.40**
4	**RCC M25**							
	Column foundation F1	6	Cum	1.50	1.50	0.30	4.05	
	Columns C1	6	Cum	0.30	0.30	4.95	2.67	**6.72**
	Floor Slab	1	Cum	6.46	4.46	0.15	4.32	
	Plinth Beam	1	Cum	28.30	0.30	0.40	3.40	
	Lintel Beam	1	Cum	11.80	0.23	0.20	0.54	
	Roof Beam	1	Cum	28.30	0.30	0.45	3.82	
	Chajja - For Doors	0	Cum	0.00	0.50	0.125	0.00	
	Chajja - For Windows	5	Cum	1.80	0.50	0.125	0.56	
	Chajja - For Ventilators	0	Cum	1.00	0.50	0.125	0.00	
	Chajja - For Rolling Shutter	1	Cum	2.80	0.50	0.125	0.18	
	Ramp/Steps	1	Cum	2.00	2.50	1.200	3.00	
	Roof Slab	1	Cum	7.06	5.06	0.125	4.47	**20.29**
5	**Steel**		MT				2.70	**2.70**
6	**Formwork**							
	Foundation: Column foundation F1	6	Sqm	6.00		0.30	10.8	**10.80**
	Columns: C1	6	Sqm	1.20		4.95	35.64	**35.64**
	Beams: Plinth Beam	1	Sqm	28.30		1.10	31.13	
	Lintel Beam	1	Sqm	11.80		0.63	7.43	
	Roof Beam	1	Sqm	28.30		1.20	33.96	**72.52**
	Roof slab	1	Sqm	7.06	5.06		35.72	
	Suspended: Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.50	0.50		3.75	
	Chajja - For Ventilators	0	Sqm	0.70	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.50	0.50		1.25	**40.72**
7	**Brick Work Wall**							
	Wall	1	Cum	28.30	0.23	3.50	22.78	
	Wall- up to plinth level	1	Cum	28.30	0.23	0.60	3.91	
	Parapet wall	0	Cum	23.04	0.00	0.00	0.00	
	Deduction- Doors	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Windows	-5	Cum	1.50	0.23	1.20	-2.07	
	Deduction- Ventilator	0	Cum	0.70	0.00	0.90	0.00	
	Deduction- Rolling Shutter	-1	Cum	2.50	0.23	3.00	-1.73	**22.89**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	28.30		3.50	99	
	Parapet wall	0	Sqm	23.04		0.00	0.00	
	Roof (Ceiling)	1	Sqm	7.06	5.06		35.72	
	Deduction- Doors	0	Sqm	0		0	0.00	
	Deduction- Windows	-5	Sqm	1.5		1.2	-9.00	
	Deduction- Ventilator	0	Sqm	0.7		0.9	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.5		3	-7.5	**118.27**
	External Plastering							
	Wall	1	Sqm	28.30		3.50	99.05	
	Wall- up to plinth level	1	Sqm	28.30		0.60	16.98	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- METERING ROOM

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
	Parapet wall	1	Sqm	23.04		0.00	0.00	
	Chajja - For Doors	0	Sqm	0.00	0.50		0.00	
	Chajja - For Windows	5	Sqm	1.80	0.50		16.50	
	Chajja - For Ventilators	0	Sqm	1.00	0.50		0.00	
	Chajja - For Rolling Shutter	1	Sqm	2.80	0.50		3.80	
	Roof Slab Projection	1	Sqm	24.24	0.30		7.27	
	Deduction- Doors	0	Sqm	0.00		0.00	0.00	
	Deduction- Windows	-5	Sqm	1.50		1.20	-9.00	
	Deduction- Ventilator	0	Sqm	0.70		0.90	0.00	
	Deduction- Rolling Shutter	-1	Sqm	2.50		3.00	-7.50	**127.10**
9	**Painting**							
	Internal Painting							**118.3**
	External Painting							**127.10**
10	**Flooring**	1	Sqm	6.00	4.00		24.00	**24.00**
11	**Openings**							
	Doors	0	Sqm	0.00		0.00	0.00	
	Windows	5	Sqm	1.50		1.20	9.00	
	Ventilators	0	Sqm	0.70		0.90	0.00	**9.00**
12	**Rolling Shutter**	1	Sqm	2.50		3.00	7.50	**7.50**
13	**Water proofing at top of roof**	1	Sqm	7.06	5.06		35.72	**35.72**
14	**Skirting**	1	Sqm	20.00		0.15	3.00	**3.00**
15	**Boulders for Floor area**	1	Sqm	6.46	4.46	0.30	8.64	**12.63**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- INTERNAL ROAD MPS A6

Sr. No.	Item Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	86.00	637.00	54782.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	39.00	888.00	34632.00
	SOR-RCD-18; Item-4.12; Pg.-76				
3	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	258.00	30.30	7817.00
	BSR-RCD-18-Item 5.1, Pg-84				
4	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	258.00	11.10	2864.00
	BSR-RCD-18-Item 5.2, Pg-84				
5	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	13.00	5406.00	70278.00
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying **Tack Coat with bitumen emulsion grade 60/70 for BUSG** @ 5Kg/10Sqm. area using emulsion pressure distributor on the prepared bituminus/granular surface cleaned with mechanical broom and as per eelevant clauses MOSRTH specification clause No. 503 complete in all respects.	Sqm	258.00	31.05	8011.00
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects. Note: *1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. for grading (10mm nominal size)	Cum	6.00	7142.00	42852.00
	BSR-RCD-2018-Item-5.7 P-84				
	Total				**221236.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART					
COST ESTIMATE-CIVIL WORK- COMPOUND WALL- MPS A6					
Sr. No.	**Description**	**Unit**	**Qty**	**Rate in Rs.**	**Amount in Rs.**
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	344.00	360.70	124080.80
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	14.00	3953.40	55347.60
3	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	57.00	5840.00	332880.00
	Superstructure above plinth level up to floor V				
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarse sand)				
	BSR-BCD20;Item-13.11.2; Pg-202	Cum	595.00	146.00	86870.00
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	49.00	270.30	13244.70
	BSR - RCD-20- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	295.00	116.50	34367.50
	BSR-BCD-20-Item 2.26; Pg-96				
7	RCC: Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, required grade of reinforced cement concrete:				
	RCC Grade M -20 Below Plinth	Cum	36.00	4689.20	168811.20
	RCC Grade M -20 Above Plinth	Cum	9.00	5194.80	46753.20
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Cum	77.00	203.00	15631.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Cum	93.00	362.90	33749.70
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Cum	140.00	470.60	65884.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	4.00	68500.00	274000.00
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	Painting: White washing with lime to give an ever shade: New work (three or more coats): BSR-BCD-20; Item-13.70.1; Pg-206	Cum	595.00	17.80	10591.00
				Cost of Compound Wall (without gates)	1262210.70
				Boundary length	148.00
				Cost of 1 m Compound Wall (without gates)	8528.45
11	**Gates:** Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	MJP 2018-19, Section H, Item No 3; Pg- 58.	No.	1.00	25303.00	25303.00
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.	1.00	13651.00	13651.00
	MJP 2018-19, Section H, Item No 4; Pg- 58.				
	Total				**1301164.70**

A

Boundary Wall length	**148**	m	L= 40
Column spacing	3	m c/c	W= 34
No. of columns total	48.0	Nos.	
No. of Expansion joint	3.0	Nos.	
Total No. of columns	51.0	Nos.	
Column ht	2.0	m	
Col W	0.25	m	
Col D	0.25	m	
Beam W	0.23	m	
Beam D	0.23	m	
Column footing L	1.5	m	
Column footing W	1.5	m	
Footing thk	0.25	m	
Depth of foundation	1	m	
PCC proj & thk	0.075	m	
Working space	0.3	m	

S.No	Description					Quantity	Unit
		No.s	L	B	D		
1	Earth work excavation of foundation for structures as per drawing and technical specification including setting out, construction of shoring and bracing,removal of stumps and other deleterious mattar, dressing of sides and bottom and backfilling with approved material etc. and as per relevent clause of section 300 and 2100 - Ordinary Soil (upto 1.5m)						
	Footing	51.00	2.25	2.25	1.33	342.10	m^3
	Walls	1.00	33.25	0.38	0.18	2.21	m^3
	Total					**344.31**	m^3
2	Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centering and shuttering - In plinth and foundation - M - 10 Grade.						
	Footing	51.00	1.65	1.65	0.075	10.41	m^3
	Walls	1.00	135.25	0.38	0.075	3.85	m^3
	Deduction for Gate	-1.00	2.50	0.38	0.075	-0.07	m^3
	Total					**14.20**	m^3
3	Brick work with well burnt chimney bricks having crushing strength not less than 25kg/cm2 and water absorption not more than 20% above plinth level including cost of form work						
	Wall	1.00	135.25	0.23	1.870	**58.17**	m^3
	Deduction for Gate	-1.00	2.50	0.23	1.870	-1.08	m^3
	Total					57.10	
4	12 mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete						
	In cement mortar 1:6						
	Two Side Wall	2.00	148.00		2.00	592.00	

S.No	Description					Quantity	Unit
		No.s	L	B	D		
	Column sides	51.00	0.080		2.00	8.16	
	Deduction for Gate	-1.00	2.50		2.00	-5.00	
	Total					**595.16**	m^2
5	Disposal						
	Footing	51.00	1.50	1.50	0.250	28.69	
	Column	51.00	0.25	0.25	0.750	2.39	
	Plinth beam	1.00	135.25	0.23	0.130	4.04	m^3
	All PCC					14.20	
	Total					**49.32**	m^3
6	Back filling: Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20 cm in depth including consolidation of each layer by ramming watering, lead up to 50 m and lift upto 1.5 m in all kinds of soils						
		Total				**294.99**	m^3
7	**RCC**						
	Footing	51.00	1.50	1.50	0.250	28.69	
	Column	51.00	0.25	0.25	2.750	8.77	
	Plinth beam	1.00	135.25	0.23	0.230	7.15	
	Total					**44.61**	m^3
8	**Shuttering**						
	Footing	51.00	6.00		0.250	76.50	
	Column	51.00	1.00		2.750	140.25	
	Plinth beam	1.00	135.25		0.690	93.32	
	Total					**310.07**	m^2
9	**Reinforcement**					**3.57**	MT
10	Providing and applying one coat of approved colour and shade to new surface including scaffolding brushing and brooming down including two coats of whitewash as base cost etc., complete					**595.16**	m^3

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- TOILET BLOCK - MPS A6

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96	Cum	27.00	360.70	9738.90
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	2.00	3953.40	7906.80
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	26.00	116.50	3029.00
	BSR-BCD-20-Item 2.26; Pg-96				
a	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1.00	270.30	270.30
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25 up to Plinth	Cum	3.00	4952.60	14857.80
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	9.00	5704.70	51342.30
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**				
	BSR-BCD-20; Item-5.22.7, Pg-106	Tonn	1.00	68500.00	68500.00
6	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	203.00	1218.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	11.00	412.20	4534.20
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	32.00	352.90	11292.80
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	22.00	470.60	10353.20
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)				
	Superstructure above plinth level up to floor V	Cum	5.00	5840.00	29200.00
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sqm	62.00	157.40	9758.80
	BSR-BCD-20;Item-13.11.1; Pg-202				
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade				
	BSR - BCD-20- Item- 13.77.2, P-206	Sqm	41.00	97.20	3985.20
10	Flooring: 40 mm thick marble chips flooring rubbed and polished to granolithic finish, under layer 34 mm thick cement concrete 1:2:4(1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) and top layer 6 mm thick.	Sqm	-	534.60	0.00
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer- in-charge complete.	Sqm	5.00	3635.80	18179.00
	BSR-BCD-20; Item-21.10; Pg-307				
12	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.				
	BSR-BCD-20; Item-22.8.1; Pg-311	Sqm	12.00	2553.30	30639.60
13	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacture) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	Sqm	21.00	797.50	16747.50
	BSR-BCD-20; Item-11.36; Pg-179				
14	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	Sqm	6.00	712.20	4273.20
	BSR-BCD-20; Item-11.37; Pg-179				
15	Providing and fixing vitreous china dual purpose closet suitable for use as squatting pan or European type water closet (Anglo Indian W.C pan) with seat lid with C.P. brass hinges and rubber buffers, 10 litre low level flushing cistern with fitting and brackets, 40mm flush bend 20mm over flow pipe with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required :				
	White vitreous china dual purpose WC pan with white solid plastic seat and lid with white vitreous china flushing cistern and C.P. flush bend.	each	1.00	8734.10	8734.10
	BSR-BCD-20; Item-17.68.1; Pg-260				
16	**Filling up to floor finish level with Random rubble masonry.**	Cum	4.00	191.14	764.56
	BSR - RCD-18- Item- M-148, P-35				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
17	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.				
	External work				
	15mm Dia	m	10.00	187.90	1879.00
	25 mm	m	10.00	303.20	3032.00
	BSR-BCD-20; Item- 18.12.1 & 18.12.3, P-267				
18	Providing and fixing brass stop cock of approved quality :				
	External work				
	15mm Dia	no	1.00	302.50	302.50
	20 mm	no	1.00	326.40	326.40
	BSR-BCD-20; Item- 18.16.1 & 18.16.2, P-267				
19	Providing, lowering, laying in trenches, aligning, fixing in position and jointing ISI marked uPVC pipe fittings/ accessories of class III (6 Kg/sqcm) suitable for potable water with rubber rings joints in uPVC pipe line at all levels/ depth including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	110 mm dia. (O.D) pipe	m	25.00	273.00	6825.00
	RUIDP-17- Item- 19.1.2 PG-104				
20	Providing and fixing C.P. brass bib cock of approved quality conforming to IS:8931				
	15 mm nominal bore	each	3.00	419.00	1257.00
	BSR - BCD-20- Item- 18.49 , P-274				
21	Providing and fixing square-mouth S.W. gully trap grade 'A" complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design :				
	100mmx100mm size P type				
	With Sewer bricks conforming to IS : 4885	each	1.00	1831.90	1831.90
	BSR - BCD-20- Item- 19.4.1.2 P-292				
22	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with 75 class designation bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand : 4 graded stone aggregate 20 mm nominal size) foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design :				
	Inside dimensions 455x610 mm and 45 cm deep for single pipe line :				
	with bricks	each	3.00	4228.40	12685.20
	BSR - BCD-20- Item- 19.30.1.1 P-299				
23	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps,32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require :				
	White Vitreous China Wash basin size 630x450 mm with a pair of 15 mm C.P. brass pillar taps.	each	1.00	2538.80	2538.80
	BSR - BCD-20- Item- 17.7.1, P-248				
	Total				**336003.06**

TOILET BLOCK :

	Nos	L	B	H
Inner dimension		2.90	2.00	3.00
Outer dimension		3.46	2.46	
PCC thickness		0.10		
PCC projection		0.10		
Footing dimensions				
F1	4	1.20	1.20	0.30
Total no of Columns	4			
C1	4	0.30	0.30	4.63
Plinth beam		14.30	0.30	0.40
Lintel beam		6.30	0.23	0.13
Floor slab thickness		0.15		
Wall thickness		0.23		
Door size	2	1.00		2.10
Windows size	0	0.00		0.00
Ventilators size	2	0.60		0.45
Rolling Shutter	0	0.00		0.00
Roof beam		11.84	0.30	0.40
Roof slab		4.06	3.06	0.125
Roof slab offset		0.30		
Parapet wall thickness		0.00		
Paraper wall height		0.00		
Top level of the building		107.600		
Existing GL		104.000		
Finished GL		104.000		
Plinth level		104.600		
Top of Footing		102.300		
Footing Level		102.000		

MEASUREMENT SHEET FOR TOILET BLOCK

Sl. No.	Description	Nos.	Units	Length m	Breadth m	Height m	Quantity	Total Quantity
1	**Earthwork Excavation**							
	F1- up to 1.5 m	4	Cum	2.00	2.00	1.50	24.00	**27.32**
	From 1.5 m to 3.0 m	0		2.00	2.00	0.83	3.32	
		0	Cum	0.00	0.00	0.00	0.00	
1A	Excavation in soft soil							
a)	up to 1.5 m		Cum			24.00		
b)	From 1.5 m to 3.0 m		Cum			3.32		
1B	Excavation in soft rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
1C	Excavation in hard rock							
a)	up to 1.5 m		Cum			0.00		
b)	From 1.5 m to 3.0 m		Cum			0.00		
	Total		Cum					**27.32**
2	**PCC**							
	F1	4	Cum	1.40	1.40	0.10	0.78	
	Floor Slab	1	Cum	3.46	2.46	0.10	0.85	
	Plinth protection	1	Cum	11.84	1.00	0.05	0.59	**2.22**
3	**Back Filling**							
	Earth work qty		Cum				23.37	
	Deduction C1	-4	Cum	0.30	0.30	1.00	-0.36	**26.18**
3a	**Disposal**		Cum				1.14	**1.14**

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
4	**RCC M25**							
	Column foundation F1	4	Cum	1.20	1.20	0.30	1.73	
	Columns C1	4	Cum	0.30	0.30	4.63	1.67	**3.39**
		0		1.50	1.00	0.15	0.00	
		0		1.00	1.00	0.15	0.00	
	Floor Slab	1	Cum	3.46	2.46	0.15	1.28	
	Plinth Beam	1	Cum	14.30	0.30	0.40	1.72	
	Lintel Beam	1	Cum	6.30	0.23	0.13	0.18	
	Roof Beam	1	Cum	14.30	0.30	0.40	1.72	
	Chajja - For Doors	2	Cum	1.30	0.50	0.125	0.16	
	Chajja - For Windows	0	Cum	0.30	0.50	0.125	0.00	
	Chajja - For Ventilators	2	Cum	0.90	0.50	0.125	0.11	
	Chajja - For Rolling Shutter	0	Cum	0.00	0.50	0.125	0.00	
	Ramp/Steps	1	Cum	2.00	1.50	1.200	1.80	
	Roof Slab	1	Cum	4.06	3.06	0.125	1.55	**8.52**
							0.94	
5	**Steel**		Tonn				1.19	**1.19**
6	**Formwork**							
	Foundation: Column foundation F1	4	Sqm	4.80		0.30	5.76	**5.76**
	Columns: C1	4	Sqm	1.20		4.63	22.2	**22.20**
		0		1.50		1.00	0	
		0		1.00		1.00	0	
	Beams: Plinth Beam	1	Sqm	14.30		1.10	15.73	
	Lintel Beam	1	Sqm	6.30		0.48	3.02	
	Roof Beam	1	Sqm	11.84		1.10	13.02	**31.77**
	Roof slab	1	Sqm	3.46	2.46		8.51	
	Suspended: Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	**10.71**
7	**Brick Work Wall**							
	Wall	1	Cum	6.30	0.23	3.0	4.35	
	Internal wall	1	Cum	2.00	0.10	3.0	0.60	
	Wall- up to plinth level	1	Cum	8.90	0.23	0.6	1.23	
	Parapet wall	1	Cum	13.04	0.00	0.00	0.00	
	Deduction- Doors	-2	Cum	1.00	0.23	2.10	-0.97	
	Deduction- Windows	0	Cum	0.00	0.23	0.00	0.00	
	Deduction- Ventilator	-2	Cum	0.60	0.23	0.45	-0.12	
	Deduction- Rolling Shutter	0	Cum	0.00	0.23	0.00	0.00	**5.09**
8	**Plastering**							
	Internal Plastering							
	Wall	1	Sqm	6.30		3.00	19	
	Internal wall	2	Sqm	2.00		3.00	12	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
		0		1.50		1.00	0.00	
		0		1.00		1.00	0.00	
	Roof (Ceiling)	1	Sqm	2.90	2.00		5.80	
	Deduction- Doors	-2	Sqm	1		2.1	-4.20	

MEASUREMENT SHEET FOR TOILET BLOCK								
Sl. No.	**Description**	**Nos.**	**Units**	**Length m**	**Breadth m**	**Height m**	**Quantity**	**Total Quantity**
	Deduction- Windows	0	Sqm	0		0	0.00	
	Deduction- Ventilator	-2	Sqm	0.6		0.45	-0.54	
		0		2.46		3.00	0.00	
	Deduction- Rolling Shutter	0	Sqm	0		0	0.0	**31.96**
	External Plastering							
	Wall	1	Sqm	6.30		3.60	22.68	
	Wall- up to plinth level	1	Sqm	8.90		0.60	5.34	
	Parapet wall	0	Sqm	13.04		0.00	0.00	
	Chajja - For Doors	2	Sqm	1.30	0.50		1.30	
	Chajja - For Windows	0	Sqm	0.30	0.50		0.00	
	Chajja - For Ventilators	2	Sqm	0.90	0.50		0.90	
	Chajja - For Rolling Shutter	0	Sqm	0.00	0.50		0.00	
	Roof Slab Projection	1	Sqm	14.24	0.30		4.27	
	Deduction- Doors	-2	Sqm	1.00		2.10	-4.20	
	Deduction- Windows	0	Sqm	0.00		0.00	0.00	
	Deduction- Ventilator	-2	Sqm	0.60		0.45	-0.54	
	Deduction- Rolling Shutter	0	Sqm	0.00		0.00	0.00	**29.75**
9	**Painting**							
	Internal Painting	-1	Sqm	13.8		0.00	0	**11.3**
	External Painting							**29.75**
10	**Flooring**	1	Sqm	2.90	2.00		5.80	**5.80**
	dado		Sqm	13.80		1.50	20.70	
	deduct						0.00	**20.70**
11	**Openings**							
	Doors	2	Sqm	1.00		2.10	4.20	
	Windows	0	Sqm	0.00		0.00	0.00	
	Ventilators	2	Sqm	0.60		0.45	0.54	**4.74**
12	**Rolling Shutter**	0	Sqm	0.00		0.00	0.00	**0.00**
13	**Water proofing at top of roof**	1	Sqm	3.96	3.06		12.12	**12.12**
14	**Skirting**	0	Sqm	9.80		0.15	0.00	**0.00**

Rate Analysis for Soil disposal Soil density=1.

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Stone Boulder tone Boulder densi

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	**Cum**	**1**

Rate Analysis for Sand Sand density=1

Sr. No.	Description	Unit	Quantity

1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Cost of loading and transporation of sand**	tonne	**1**

Rate Analysis for cement Cement density=

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Cost of loading and transporation of cement**	tonne	**1**

Rate Analysis for Aggregates Aggregates density

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Cost of loading and transporation of Aggregates**	tonne	**1**

84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

ity=1.84 T/m

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1 15

210.61

.84 T/m3

Rate (Rs.)	Amount	Reference

148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

=1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART

Cost Summary - Pumping Station

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station						
		IPS A1	IPS A2	IPS A3	IPS A4	IPS A5	MPS A6	Total
A	Civil Works	93.42	100.66	118.83	111.18	118.05	164.80	**706.94**
B	Mechanical Works	23.58	28.07	39.32	30.29	30.48	97.48	**249.23**
C	Electrical Works	39.27	42.00	41.76	39.95	40.66	50.75	**254.40**
D	Instrumentation and Control	38.49	41.33	48.25	48.25	48.25	52.56	**277.12**
	Total	**194.76**	**212.06**	**248.17**	**229.67**	**237.44**	**365.59**	**1487.69**

A	Civil Wor	76.7789	87.5205	98.3275
B	Mechanica	23.582	28.071	39.324
C	Electrical W	39.271	42.00074	41.76365
D	Instrument	38.48895	41.32963	48.24893
	Total	178.1209	198.9219	227.664

100.403	97.4547	139.506	599.99
30.294	30.476	97.48	249.227
39.95295	40.66468	50.74679	254.3998
48.24893	48.24893	52.55573	277.1211
218.8985	216.8443	340.2884	1380.738

SEWERAGE SYSTEM FOR GAYA EASTERN PART

Cost Summary - Pumping Station

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station					
		IPS A1	IPS A2	IPS A3	IPS A4	IPS A5	MPS A6
A	**Civil Works**						
1	Screen Chamber	4.92	4.61	4.74	3.97	6.17	12.31
2	Pump House (Wet well and Superstructure)	32.77	33.90	56.96	44.72	49.72	82.01
3	Manifold Chamber	1.92	2.32	3.54	2.88	2.96	13.23
4	Valve Chamber	1.48	1.51	1.56	1.52	1.36	1.78
5	Flowmeter Chamber	1.49	1.57	1.55	1.55	1.55	1.76
6	D.G. Room	11.31	11.82	12.74	13.06	12.96	12.64
7	Diesel Storage Room	5.30	5.72	5.71	5.80	5.80	5.84
8	Store Room	4.82	5.10	5.18	5.04	5.05	5.22
9	Metering Room	7.71	8.35	8.44	8.16	8.16	8.44
10	Internal Roads (3m wide)	1.85	2.21	1.86	2.43	2.41	2.21
11	Compound Wall	12.01	13.23	10.87	12.16	12.23	13.01
12	Toilet Block	3.19	4.13	3.62	3.55	3.53	3.36
13	Material Carrying Charges	1.17	3.63	1.38	5.41	5.31	1.64
	Civil Works sub total	**89.94**	**98.12**	**118.15**	**110.25**	**117.21**	**163.46**
B	**Mechanical Works**	23.58	28.07	39.32	30.29	30.48	97.48
C	**Electrical Works**	39.27	42.00	41.76	39.95	40.66	50.75
D	**Instrumentation and Control**	38.49	41.33	48.25	48.25	48.25	52.56
	Total for Pumping Station	**191.27**	**209.52**	**247.48**	**228.74**	**236.60**	**364.25**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST SUMMARY - PUMPING MAIN & COLLECTION CHAMBER

Cost in Rs. Lakh

Sr. No.	Description	Estimated Cost	Carriage Cost	Total Cost
A	**IPS A1**			
1	Pumping Main for IPS A1 to GC.1403	87.89	0.49	88.38
2	Collection Chamber for IPS A1	0.84	0.01	0.85
	Total A			**89.24**
B	**IPS A2**			
1	Pumping Main for IPS A2 to GN.925	54.95	0.43	55.38
2	Collection Chamber for IPS A2	0.80	0.01	0.81
	Total B			**56.19**
C	**IPS A3**			
1	Pumping Main for IPS A2 to GC.439	109.25	0.28	109.53
2	Collection Chamber for IPS A3	1.18	0.01	1.20
	Total C			**110.73**
D	**IPS A4**			
1	Pumping Main for IPS A4 to GC.442	108.40	0.35	108.74
2	Collection Chamber for IPS A4	1.18	0.01	1.20
	Total D			**109.94**
E	**IPS A5**			
1	Pumping Main for IPS A5 to GC.238	55.85	0.29	56.14
2	Collection Chamber for IPS A5	1.18	0.01	1.20
	Total E			**57.34**
F	**IPS A6**			
1	Pumping Main for IPS A6 to STP	204.23	0.68	204.91
	Total F			**204.91**
	Total for Pumping Main & Collection Chamber	**625.76**	**2.58**	**628.35**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
SUMMARY FOR CARRIAGE OF MATERIAL: PUMPING MAIN

	IPS A1 to GC.1403			
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	0	60		59.71
Aggregate	0	121	343	464.15
Bricks	0			0.00
	IPS A2 to GN.925			
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	0	23		22.58
Aggregate	0	46	389	434.68
Bricks	0			0.00
	IPS A3 to GC.439			
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.61	57		58.32
Aggregate	0.92	115	116	232.00
Bricks	9.08			9.08
	IPS A4 to GC.442			
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.61	28		29.21
Aggregate	0.92	56	273	329.59
Bricks	9.08			9.08
	IPS A5 to GC.238			
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	0	36		35.62
Aggregate	0	72	202	274.80
Bricks	0			0.00
	IPS A6 to STP			
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	0	14		14.06
Aggregate	0	29	683	711.83
Bricks	0			0.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE -PUMPING MAIN FROM IPS A1 TO MH NO. GC.1403

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	250 mm dia.	m	1860.00	2936.00	5460960.00
	BSR-BCD-18-Item 18.72.18 Pg-231				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	1674.00	319.60	535010.40
b)	From 1.5 m to 3.0 m	Cum	587.00	360.60	211672.20
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	2189.00	103.30	226123.70
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grade reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	12.00	4924.00	59088.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7E TO H; Pg-86	Kg	365.00	76.00	27740.00
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	92.20	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				
7	**Centring and shuttering** including strutting, propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sqm	46.00	186.30	8569.80
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
8	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	Cum	213.00	217.00	46221.00
	BSR - RCD-18- Item- 12.3, P-222				
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	315.00	270.30	85144.50
	ROAD RESTORATION AND DISMENTLING WORKS				
10	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	295.00	342.00	100890.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
11	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	161.00	1520.00	244720.00
	RCD/SOR-18; Item-2.6; Pg-29				
11a	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sqm	293.00	74.90	21945.70
	BSR-BCD-18; Item-15.43.1, Pg-188				
	Cement concrete road Restoration				
12	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage, loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	64.00	10.00	640.00
	BSR-BCD-18; Item-2.39, Pg-77				
13	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	54.00	103.30	5578.20
	BSR-BCD-18; Item-2.40, Pg 77				
14	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing) Restoration of WMM Road	Cum	107.00	4461.00	477327.00
	BSR-RCD-18; Item-6.2, Pg138				
14a	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	73.00	637.00	46501.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
14b	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	44.00	888.00	39072.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	Reconstruction of Bituminous Asphalt Roads				
15	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	59.00	904.00	53336.00
	Grading III: 100 mm thick	Cum	59.00	949.00	55991.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
16	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	590.00	30.30	17877.00
	BSR-RCD-18-Item 5.1, Pg-87				
17	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	590.00	11.10	6549.00
	BSR-RCD-18-Item 5.2, Pg-87				
18	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	24.00	5406.00	129744.00
	BSR-RCD-18-Item 5.3 (I), Pg-88				
19	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	590.00	246.00	145140.00
	BSR-RCD-18-Item 5.4 A, Pg-89				
20	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	590.00	128.00	75520.00
	SOR-RCD-GoB-18-Item 5.9 B I, Pg- 132				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
21	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioning along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	4.94	17389.00	85901.66
	BSR - BCD-18-Item- 18.69.1, P-231				
22	**Water Hammer Control Device (Two Way Surge Tank)**				
a)	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	250 mm dia	m	6.00	2936.00	17616.00
	150 mm dia	m	70.00	1532.20	107254.00
	BSR-BCD-18-Item 18.72.18; Pg-231				
b)	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioning along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9 for water hammer control devices as required as per drawing	LS			12487.00
c)	**Gate Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	100 mm dia	No.	4.00	11200.00	44800.00
	150 mm dia	No.	4.00	16800.00	67200.00
	RUIDP 2017 19.20.1.6, page 120				
d)	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	150 mm dia	No.	2.00	17900.00	35800.00
	RUIDP 2017 19.34.1.4,8 page 132				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
e)	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	150 mm dia	No.	4.00	3750.00	15000.00
	RUIDP 2017 19. 40.6,12, 136				
f)	**Air Valve**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia Iincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	100 mm dia	No.	3.00	25400.00	76200.00
	RUIDP 17-18 Item No. 19.31.1.4 Page No. 131				
g)	**CC support**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20				
	RCC M20 grade	Cum	3.30	4580.00	15114.00
	RUIDP 2017 13.4.5 page 39				
			Sub Total A		**8789233.00**
23	**Carriage of Material**				
	Sand	t.km	597.10	9.40	5612.74
	Aggregate	t.km	4641.50	9.40	43630.10
	Bricks	t.km	0.00	9.40	0.00
			Sub Total B		**49243.00**
	Total Cost (A+B)				**8838476.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS A1 to GC.1403

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width
	1,860	0.250	6.80	0.264	0.2568	0.764

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.						
i	250 mm dia	RMT	1.00	1860.000			1860.00
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.						
	All types of Soil						
a)	Upto 1.5 m	Cum	1.00	1860	0.76	1.50	2130.00
b)	From 1.5 m to 3.0 m	Cum	1.00	1860	0.76	0.41	587.00
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.						
		Cum		2717.00		528.00	2189.00
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:						
	ii) M-20	Cum					12.00

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**						
		Kg					365.00
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500
7	Centring and shuttering including strutting, propping etc. and removal of formwork.						
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					46.0
8	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	1860.00	0.76	0.15	213.00
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.						
		Cum	1	1,860.00	0.05		315.00
10	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost					
G)	ROAD RESTORATION AND DISMENTLING WORKS						
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum		773	0.764	0.5	295.00
	RCD/SOR-14; Item-2.5-II A; Pg-29						
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum		703	0.764	0.3	161.00
	RCD/SOR-14; Item-2.6; Pg-29						
	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	sqm		384	0.764		293.00
	Cement concrete road Restoration						
	Water bound macadam road						

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
13	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum		703	0.764	0.1	64.00
	BSR-BCD-14; Item-2.39, Pg-86						
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum		703	0.764	0.1	54.00
	BSR-BCD-14; Item-2.40, Pg-86						
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum		703	0.764	0.2	107.00
	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum		384	0.764	0.25	73.00

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum		384	0.764	0.15	44.00
	Reconstruction of Bituminous Asphalt Roads						
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)						
	Grading II: 100 mm thick	cum		773	0.764	0.1	59.00
	Grading III: 100 mm thick	cum		773	0.764	0.1	59.00
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71						
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm		773	0.764		590.00
	BSR-RCD-14-Item 5.1, Pg-86						
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm		773	0.764		590.00
	BSR-RCD-14-Item 5.2, Pg-86						
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum		773	0.764	0.04	24.00
	BSR-RCD-14-Item 5.3 (I), Pg-87						

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm		773	0.764		590.00
	BSR-RCD-14-Item 5.4 A, Pg-87						
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm		773	0.764		590.00
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125						

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - PUMPING MAIN FROM IPS A2 to MH NO.GN.925

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	250 mm dia.	m	1095.00	2936.00	3214920.00
	BSR-BCD-18-Item 18.72.18 Pg-231				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	869.00	319.60	277732.40
b)	From 1.5 m to 3.0 m	Cum	346.00	360.60	124767.60
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	1290.00	103.30	133257.00
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grde reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	12.00	4924.00	59088.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7E TO H; Pg-86	Kg	313.00	76.00	23788.00
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	92.20	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				
7	**Centring and shuttering** including strutting, propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sqm	40.00	186.30	7452.00
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
8	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	Cum	125.00	217.00	27125.00
	BSR - RCD-18- Item- 12.3, P-222				
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	185.00	270.30	50005.50
	ROAD RESTORATION AND DISMENTLING WORKS				
10	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	335.00	342.00	114570.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
11	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	50.00	1520.00	76000.00
	RCD/SOR-18; Item-2.6; Pg-29				
11a	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sqm	0.00	74.90	0.00
	BSR-BCD-18; Item-15.43.1, Pg-188				
	Cement concrete road Restoration				
12	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	20.00	10.00	200.00
	BSR-BCD-18; Item-2.39, Pg-77				
13	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	17.00	103.30	1756.10
	BSR-BCD-18; Item-2.40, Pg 77				
14	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing) Restoration of WMM Road	Cum	33.00	4461.00	147213.00
	BSR-RCD-18; Item-6.2, Pg138				
	Reconstruction of Bituminous Asphalt Roads				
15	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	67.00	904.00	60568.00
	Grading III: 100 mm thick	Cum	67.00	949.00	63583.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
16	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	670.00	30.30	20301.00
	BSR-RCD-18-Item 5.1, Pg-87				
17	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	670.00	11.10	7437.00
	BSR-RCD-18-Item 5.2, Pg-87				
18	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	27.00	5406.00	145962.00
	BSR-RCD-18-Item 5.3 (I), Pg-88				
19	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	670.00	246.00	164820.00
	BSR-RCD-18-Item 5.4 A, Pg-89				
20	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	670.00	125.00	83750.00
	SOR-RCD-GoB-18-Item 5.10 A ii, Pg- 98				
21	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	3.97	17389.00	69034.33
	BSR - BCD-18-Item- 18.69.1, P-231				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
22	**Water Hammer Control Device (Two Way Surge Tank)**				
a)	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	250 mm dia	m	6.00	2936.00	17616.00
	150 mm dia	m	70.00	1532.20	107254.00
	BSR-BCD-18-Item 18.72.18; Pg-231				
b)	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioning along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9 for water hammer control devices as required as per drawing	LS			12487.00
c)	**Gate Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	100 mm dia	No.	4.00	11200.00	44800.00
	150 mm dia	No.	4.00	16800.00	67200.00
	RUIDP 2017 19.20.1.6, page 120				
d)	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	150 mm dia	No.	2.00	17900.00	35800.00
	RUIDP 2017 19.34.1.4,8 page 132				
e)	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	150 mm dia	No.	4.00	3750.00	15000.00
	RUIDP 2017 19. 40.6,12, 136				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
f)	**Air Valve**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia lincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	100 mm dia	No.	3.00	25400.00	76200.00
	RUIDP 17-18 Item No. 19.31.1.4 Page No. 131				
g)	**CC support**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20				
	RCC M20 grade	Cum	3.30	4580.00	15114.00
	RUIDP 2017 13.4.5 page 39				
			Sub Total A		**5495301.00**
23	**Carriage of Material**				
	Sand	t.km	225.80	9.40	2122.52
	Aggregate	t.km	4346.80	9.40	40859.92
	Bricks	t.km	0.00	9.40	0.00
			Sub Total B		**42982.00**
	Total Cost (A+B)				**5538283.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS2 to GN.925

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width
	1,095	0.250	6.80	0.264	0.2568	0.764

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.						
i	250 mm dia	M		1095.00	0.00		1095.00
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.						
	All types of Soil						
a)	Upto 1.5 m	Cum	1.00	1095	0.76	1.50	1254.00
b)	From 1.5 m to 3.0 m	Cum	1.00	1095	0.76	0.41	346.00
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.						
		Cum		1600.00		310.00	1290.00
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:						
	ii) M-20	Cum					12.00
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**						
		Kg					313.00

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500
7	Centring and shuttering including strutting, propping etc. and removal of formwork.						
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					40.00
8	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	1095.00	0.76	0.15	125.00
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.						
		Cum	1	1,095.00	0.05		185.00
10	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost					
G)	ROAD RESTORATION AND DISMENTLING WORKS						
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum		878	0.764	0.5	335.00
	RCD/SOR-14; Item-2.5-II A; Pg-29						
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum		217	0.764	0.3	50.00
	RCD/SOR-14; Item-2.6; Pg-29						
	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	sqm		0	0.764		0
	Cement concrete road Restoration						
	Water bound macadam road						
13	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum		217	0.764	0.1	20.00
	BSR-BCD-14; Item-2.39, Pg-86						

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum		217	0.764	0.1	17.00
	BSR-BCD-14; Item-2.40, Pg-86						
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum		217	0.764	0.2	33.00
	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum		0	0.764	0.25	0
	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum		0	0.764	0.15	0

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
	Reconstruction of Bituminous Asphalt Roads						
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)						
	Grading II: 100 mm thick	cum		878	0.764	0.1	67.00
	Grading III: 100 mm thick	cum		878	0.764	0.1	67.00
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71						
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm		878	0.764		670.00
	BSR-RCD-14-Item 5.1, Pg-86						
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm		878	0.764		670.00
	BSR-RCD-14-Item 5.2, Pg-86						
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum		878	0.764	0.04	27.00
	BSR-RCD-14-Item 5.3 (I), Pg-87						
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm		878	0.764		670.00
	BSR-RCD-14-Item 5.4 A, Pg-87						

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm		878	0.764		670.00
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125						

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - PUMPING MAIN FROM IPS A3 TO MH NO. GC.439

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	350 mm dia.	m	800.00	4491.10	3592880.00
ii	150 mm dia.	m	300.00	1532.20	459660.00
	BSR-BCD-18-Item 18.72.18 Pg-231				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	1088.00	319.60	347724.80
b)	From 1.5 m to 3.0 m	Cum	419.00	360.60	151091.40
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	1463.00	103.30	151127.90
4	**Valve chamber with precast R.C.C. covers.**				
	Providing and constructing B.B. **masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion, 20mm thick cement plaster in CM 1:4 proportion on both side, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.				
	(Note : Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M)				
	As above of **90X90 cm** internal size and depth upto 1.5 M with precast R.C.C. slab cover.	No	1	12974.00	12974.00
	As above of **1.2mX1.2M** internal size and depth upto 1.5 M with precast R.C.C. slab cover.	No	1	17292.00	17292.00
	(Item No.1, SectionI Chambers Manholes and Drainage Drops, MJP DSR 2017-18) Pg no 357				
5	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grde reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	14.00	4924.00	68936.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
6	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7E TO H; Pg-86	Kg	364.00	76.00	27664.00
7	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	92.20	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sqm	48.00	186.30	8942.40
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
9	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	Cum	134.00	217.00	29078.00
	BSR - RCD-18- Item- 12.3, P-222				
10	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	188.00	270.30	50816.40
	ROAD RESTORATION AND DISMENTLING WORKS				
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	100.00	342.00	34200.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	148.00	1520.00	224960.00
	RCD/SOR-18; Item-2.6; Pg-29				
	Cement concrete road Restoration				
13	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	59.00	10.00	590.00
	BSR-BCD-18; Item-2.39, Pg-77				
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	49.00	103.30	5061.70
	BSR-BCD-18; Item-2.40, Pg 77				
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing) Restoration of WMM Road	Cum	99.00	4461.00	441639.00
	BSR-RCD-18; Item-6.2, Pg138				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
	Reconstruction of Bituminous Asphalt Roads				
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	20.00	904.00	18080.00
	Grading III: 100 mm thick	Cum	20.00	949.00	18980.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	199.00	30.30	6029.70
	BSR-RCD-18-Item 5.1, Pg-87				
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	199.00	11.10	2208.90
	BSR-RCD-18-Item 5.2, Pg-87				
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	8.00	5406.00	43248.00
	BSR-RCD-18-Item 5.3 (I), Pg-88				
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	199.00	246.00	48954.00
	BSR-RCD-18-Item 5.4 A, Pg-89				
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	199.00	125.00	24875.00
	SOR-RCD-GoB-18-Item 5.10 A ii, Pg- 98				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
22	Supply and Pushing of MS casing pipe of specified thickness by trenchless method adopting any suitable technology below ground at required depth under running traffic condition as per railway standard including carrying out survey work at the job site for determining underground cable trenches like telephone, cable, water & sanitary lines and resistivity test for finding the soil strata using necessary equipments for completion of works, mobilizing of machineries and specialized crew at the job site complete in all respect, including excavation of driven pit and exit pit (upto 3 metre depth) with proper protection at three sites with shoring sheets and ISMB's. Providing MS cutting edges for front shield and constructing thrust bed at designated level. Necessary de-watering and providing concrete foundation at the base of the driven pit, PVC/Rubber suddle as per the requirement of Railway Authority, crane for handing of pipe and any other machinery, tools, and tackles required, construction of temporary works as per requirement and as per approved by railway authorities, specification and the direction of the Engineer. (Protective coating/lining if done that will be paid extra) In all type soil RUIDP Page No 95				
	600mm dia 12 mm thick casing pipe	m	120.00	35400.00	4248000.00
	RUIDP 17 Item No. 17.78.1.1 Page- 91				
23	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.0 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	125mm Dia.	No.	1.00	13900	13900.00
	RUIDP 17 Item No.19.20.1.3 Page- 120				
24	Providing, lowering, laying, aligning, fixing in position and jointing CI dismantling joint (suitable for sluice valves etc.) as per IS specifications complete of the following sizes including all jointing material, cost of all labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	125mm Dia.				
	RUIDP 17 Item No. 3.32.1 Page- 8	No.	1.00	134.00	134.00
25	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia lincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	80 mm dia.	No.	1	20600.00	20600.00
	RUIDP 17-18 Item No. 19.31.1.2 Page No. 131				
26	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	12.38	17389.00	215275.82
	BSR - BCD-18-Item- 18.69.1, P-231				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
27	**Water Hammer Control Device (Two Way Surge Tank)**				
a)	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	350 mm dia	m	6.00	4491.10	26946.60
	150 mm dia	m	70.00	1532.20	107254.00
	BSR-BCD-18-Item 18.72.18; Pg-231				
b)	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioning along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9 for water hammer control devices as required as per drawing	LS			13420.00
c)	**Gate Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	100 mm dia	No.	4.00	11200.00	44800.00
	150 mm dia	No.	4.00	16800.00	67200.00
	RUIDP 2017 19.20.1.6, page 120				
d)	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	150 mm dia	No.	2.00	17900.00	35800.00
	RUIDP 2017 19.34.1.4,8 page 132				
e)	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	150 mm dia	No.	4.00	3750.00	15000.00
	RUIDP 2017 19. 40.6,12, 136				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
f)	**Air Valve**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia Iincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	100 mm dia	No.	3.00	25400.00	76200.00
	RUIDP 17-18 Item No. 19.31.1.4 Page No. 131				
g)	**CC support**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20				
		Cum	3.90	4580.00	17862.00
	RUIDP 2017 13.4.5 page 39				
			Sub Total A		**10924875.00**
28	**Carriage of Material**				
	Sand	t.km	583.20	9.40	5482.08
	Aggregate	t.km	2320.00	9.40	21808.00
	Bricks	t.km	90.80	9.40	853.52
			Sub Total B		**28144.00**
	Total Cost (A+B)				**10953019.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS3 to GM.485

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth	Encasement Width
	800	0.350	7.70	0.365	0.3577	0.865	2.015	0.865
	300	0.150	6.00	0.162	0.156	0.662	1.812	0.662

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.								
i	350 mm dia	M		800.000	0.0000		800.00		
ii	125 mm dia.	M		300.000			300.00		
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.								
	All types of Soil								
	Upto 1.5 m	Cum	1	300	0.66	1.5	298.00		
	From 1.5 m to 3.0 m	Cum	1	300	0.66	0.312	62.00		
a)	Upto 1.5 m	Cum	1.00	800	0.87	1.50	1038.00		
b)	From 1.5 m to 3.0 m	Cum	1.00	800	0.87	0.52	357.00		
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.								
		Cum		1755.00		292.00	1463.00		
4	Providing and constructing **B.B. masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.								
	Note : Wall thickness : 0.23 M for depth of 1.2M and 0.35M for balance depth exceeding 1.2M.								
a)	1.2 x 1.2 M internal size and depth upto 1.5M with precast R.C.C. slab cover.	No					1		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
5	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:								
	ii) M-20	Cum					14.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
6	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**								
		Kg					364.00		
7	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500		
8	Centring and shuttering including strutting, propping etc. and removal of formwork.								
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					48.00		
9	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	800.00	0.87	0.15	104.00		
			1	300.00	0.66	0.15	30.00		
10	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.								
		Cum	1	800.00	0.10		188.00		
11	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost							
G)	**ROAD RESTORATION AND DISMENTLING WORKS**								
12	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	230	0.865	0.5		100.00		
	RCD/SOR-14; Item-2.5-II A; Pg-29								
13	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	570	0.865	0.3		148.00		
	RCD/SOR-14; Item-2.6; Pg-29								
	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	sqm	0	0.865			0.00		
	Cement concrete road Restoration								
	Water bound macadam road								
14	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	570	0.865	0.1		59.00		
	BSR-BCD-14; Item-2.39, Pg-86								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
15	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	570	0.865	0.1		49.00		
	BSR-BCD-14; Item-2.40, Pg-86								
16	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	570	0.865	0.2		99.00		
	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum	0	0.865	0.25		0.00		
	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	0	0.865	0.15		0.00		
	Reconstruction of Bituminous Asphalt Roads								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
17	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)								
	Grading II: 100 mm thick	cum	230	0.865	0.1		20.00		
	Grading III: 100 mm thick	cum	230	0.865	0.1		20.00		
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71								
18	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	230	0.865			199.00		
	BSR-RCD-14-Item 5.1, Pg-86								
19	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	230	0.865			199.00		
	BSR-RCD-14-Item 5.2, Pg-86								
20	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum	230	0.865	0.04		8.00		
	BSR-RCD-14-Item 5.3 (I), Pg-87								
21	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	230	0.865			199.00		
	BSR-RCD-14-Item 5.4 A, Pg-87								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
22	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	230	0.865			199.00		
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125								

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - PUMPING MAIN FROM IPS A4 to MH NO. GC.442

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	350 mm dia.	m	850.00	4491.10	3817435.00
	150 mm dia	m	300.00	1532.20	459660.00
	BSR-BCD-18-Item 18.72.18 Pg-231				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	1102.00	319.60	352199.20
b)	From 1.5 m to 3.0 m	Cum	73.00	360.60	26323.80
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	1165.00	103.30	120344.50
4	**Valve chamber with precast R.C.C. covers.**				
	Providing and constructing B.B. **masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion, 20mm thick cement plaster in CM 1:4 proportion on both side, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.				
	(Note : Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M)				
	As above of **90X90 cm** internal size and depth upto 1.5 M with precast R.C.C. slab cover.	No	1	12974.00	12974.00
	As above of **1.2mX1.2M** internal size and depth upto 1.5 M with precast R.C.C. slab cover.	No	1	17292.00	17292.00
	(Item No.1, SectionI Chambers Manholes and Drainage Drops, MJP DSR 2017-18) Pg no 357				
5	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	12.00	4924.00	59088.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
6	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7E TO H; Pg-86	Kg	342.00	76.00	25992.00
7	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	92.20	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sqm	45.00	186.30	8383.50
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
9	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	Cum	140.00	217.00	30380.00
	BSR - RCD-18- Item- 12.3, P-222				
10	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	199.00	270.30	53789.70
	ROAD RESTORATION AND DISMENTLING WORKS				
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	234.00	342.00	80028.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	65.00	1520.00	98800.00
	RCD/SOR-18; Item-2.6; Pg-29				
12a	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sqm	52.00	74.90	3894.80
	BSR-BCD-16; Item-15.43.1, Pg-188				
	Cement concrete road Restoration				
13	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	26.00	10.00	260.00
	BSR-BCD-18; Item-2.39, Pg-77				
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	22.00	103.30	2272.60
	BSR-BCD-18; Item-2.40, Pg 77				
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing) Restoration of WMM Road	Cum	43.00	4461.00	191823.00
	BSR-RCD-18; Item-6.2, Pg138				
15a	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	13.00	637.00	8281.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
15b	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	8.00	888.00	7104.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	Reconstruction of Bituminous Asphalt Roads				
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	47.00	904.00	42488.00
	Grading III: 100 mm thick	Cum	47.00	949.00	44603.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	468.00	30.30	14180.40
	BSR-RCD-18-Item 5.1, Pg-87				
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	468.00	11.10	5194.80
	BSR-RCD-18-Item 5.2, Pg-87				
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	19.00	5406.00	102714.00
	BSR-RCD-18-Item 5.3 (I), Pg-88				
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	468.00	246.00	115128.00
	BSR-RCD-18-Item 5.4 A, Pg-89				
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	468.00	125.00	58500.00
	SOR-RCD-GoB-18-Item 5.10 A ii, Pg- 98				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
22	Supply and Pushing of MS casing pipe of specified thickness by trenchless method adopting any suitable technology below ground at required depth under running traffic condition as per railway standard including carrying out survey work at the job site for determining underground cable trenches like telephone, cable, water & sanitary lines and resistivity test for finding the soil strata using necessary equipments for completion of works, mobilizing of machineries and specialized crew at the job site complete in all respect, including excavation of driven pit and exit pit (upto 3 metre depth) with proper protection at three sites with shoring sheets and ISMB's. Providing MS cutting edges for front shield and constructing thrust bed at designated level. Necessary de-watering and providing concrete foundation at the base of the driven pit, PVC/Rubber suddle as per the requirement of Railway Authority, crane for handing of pipe and any other machinery, tools, and tackles required, construction of temporary works as per requirement and as per approved by railway authorities, specification and the direction of the Engineer. (Protective coating/lining if done that will be paid extra) In all type soil RUIDP Page No 95				
	600mm dia 12 mm thick casing pipe	m	120.00	35400.00	4248000.00
	RUIDP 17 Item No. 17.78.1.1 Page- 91				
23	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.0 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	125mm Dia.	No.	1.00	13900	13900.00
	RUIDP 17 Item No.19.20.1.3 Page- 120				
24	Providing, lowering, laying, aligning, fixing in position and jointing CI dismantling joint (suitable for sluice valves etc.) as per IS specifications complete of the following sizes including all jointing material, cost of all labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	125mm Dia.				
	RUIDP 17 Item No. 3.32.1 Page- 8	No.	1.00	134	134.00
25	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia lincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	80 mm dia.	No.	1.00	9120	9120.00
	RUIDP 17-18 Item No. 19.31.2.2Page No. 131				
26	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	10.03	17389.00	174411.67
	BSR - BCD-18-Item- 18.69.1, P-231				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
27	**Water Hammer Control Device (Two Way Surge Tank)**				
a)	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	350 mm dia	m	6.00	4491.10	26946.60
	150 mm dia	m	70.00	1532.20	107254.00
	BSR-BCD-18-Item 18.72.18; Pg-231				
b)	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioning along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9 for water hammer control devices as required as per drawing	LS			13420.00
c)	**Gate Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	100 mm dia	No.	4.00	11200.00	44800.00
	150 mm dia	No.	4.00	16800.00	67200.00
	RUIDP 2017 19.20.1.6, page 120				
d)	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	150 mm dia	No.	2.00	17900.00	35800.00
	RUIDP 2017 19.34.1.4,8 page 132				
e)	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	150 mm dia	No.	4.00	3750.00	15000.00
	RUIDP 2017 19. 40.6,12, 136				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
f)	**Air Valve**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia lincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	100 mm dia	No.	3.00	25400.00	76200.00
	RUIDP 17-18 Item No. 19.31.1.4 Page No. 131				
g)	**CC support**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20				
	RCC M20	Cum	3.90	4580.00	17862.00
	RUIDP 2017 13.4.5 page 39				
			Sub Total A		**10839682.00**
28	**Carriage of Material**				
	Sand	t.km	292.10	9.40	2745.74
	Aggregate	t.km	3295.90	9.40	30981.46
	Bricks	t.km	90.80	9.40	853.52
			Sub Total B		**34581.00**
	Total Cost (A+B)				**10874263.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS4 to GC.442

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth	Encasement Width
	850	0.350	7.70	0.365	0.3577	0.865	1.515	0.865
	300	0.15	6	0.162	0.156	0.662	1.812	0.662

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.								
i	350 mm dia	M		850.000	0.0000		850.00		
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.								
	All types of Soil								
a)	Upto 1.5 m	Cum	1	300	0.66	1.5	298.00		
b)	From 1.5 m to 3.0 m	Cum	1	300	0.66	0.312	62.00		
a)	Upto 1.5 m	Cum	1.00	850	0.87	1.50	1103.00		
b)	From 1.5 m to 3.0 m	Cum	1.00	850	0.87	0.02	11.00		
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.								
		Cum		1474.00		309.00	1165.00		
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:								
	ii) M-20	Cum					12.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**								
		Kg					342.00		
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500		
7	Centring and shuttering including strutting, propping etc. and removal of formwork.								
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					45.00		
8	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	850.00	0.87	0.15	110.00		
			1	300.00	0.66	0.15	30.00		
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.								
		Cum	1	850.00	0.10		199.00		
10	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost							
G)	ROAD RESTORATION AND DISMENTLING WORKS								
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	541	0.865	0.5		234.00		
	RCD/SOR-14; Item-2.5-II A; Pg-29								
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	249	0.865	0.3		65.00		
	RCD/SOR-14; Item-2.6; Pg-29								
	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	sqm	60	0.865			52.00		
	Cement concrete road Restoration								
	Water bound macadam road								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
13	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	249	0.865	0.1		26.00		
	BSR-BCD-14; Item-2.39, Pg-86								
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	249	0.865	0.1		22.00		
	BSR-BCD-14; Item-2.40, Pg-86								
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	249	0.865	0.2		43.00		
	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum	60	0.865	0.25		13.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	60	0.865	0.15		8.00		
	Reconstruction of Bituminous Asphalt Roads								
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)								
	Grading II: 100 mm thick	cum	541	0.865	0.1		47.00		
	Grading III: 100 mm thick	cum	541	0.865	0.1		47.00		
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71								
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	541	0.865			468.00		
	BSR-RCD-14-Item 5.1, Pg-86								
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	541	0.865			468.00		
	BSR-RCD-14-Item 5.2, Pg-86								
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum	541	0.865	0.04		19.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
	BSR-RCD-14-Item 5.3 (I), Pg-87								
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	541	0.865			468.00		
	BSR-RCD-14-Item 5.4 A, Pg-87								
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	541	0.865			468.00		
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125								

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - PUMPING MAIN FROM IPS A5 TO MH NO. GC.238

Sr. No.	Item Description as per BSR	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	350 mm dia.	m	750.00	4491.10	3368325.00
	BSR-BCD-18-Item 18.72.18 Pg-231				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	713.00	319.60	227874.80
b)	From 1.5 m to 3.0 m	Cum	335.00	360.60	120801.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	1036.00	103.30	107018.80
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grde reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	12.00	4924.00	59088.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7E TO H; Pg-86	Kg	383.00	76.00	29108.00
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	92.20	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				
7	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sqm	52.00	186.30	9687.60
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
8	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	Cum	97.00	217.00	21049.00
	BSR - RCD-18- Item- 12.3, P-222				
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	176.00	270.30	47572.80
	ROAD RESTORATION AND DISMENTLING WORKS				
10	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	173.00	342.00	59166.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate in Rs.	Amount in Rs.
11	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	88.00	1520.00	133760.00
	RCD/SOR-18; Item-2.6; Pg-29				
11a	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sqm	9.00	74.90	674.10
	BSR-BCD-18; Item-15.43.1, Pg-188				
	Cement concrete road Restoration				
12	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	35.00	10.00	350.00
	BSR-BCD-18; Item-2.39, Pg-77				
13	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	29.00	103.30	2995.70
	BSR-BCD-18; Item-2.40, Pg 77				
14	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing) Restoration of WMM Road	Cum	59.00	4461.00	263199.00
	BSR-RCD-18; Item-6.2, Pg138				
14a	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	2.00	637.00	1274.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
14b	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	1.00	888.00	888.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate in Rs.	Amount in Rs.
	Reconstruction of Bituminous Asphalt Roads				
15	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	35.00	904.00	31640.00
	Grading III: 100 mm thick	Cum	35.00	949.00	33215.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
16	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	346.00	30.30	10483.80
	BSR-RCD-18-Item 5.1, Pg-87				
17	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	346.00	11.10	3840.60
	BSR-RCD-18-Item 5.2, Pg-87				
18	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	14.00	5406.00	75684.00
	BSR-RCD-18-Item 5.3 (I), Pg-88				
19	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	346.00	246.00	85116.00
	BSR-RCD-18-Item 5.4 A, Pg-89				
20	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	346.00	125.00	43250.00
	SOR-RCD-GoB-18-Item 5.10 A ii, Pg- 98				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate in Rs.	Amount in Rs.
21	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	12.31	17389.00	214058.59
	Above 600mm dia	quintal	0.00	24798.30	0.00
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
22	**Water Hammer Control Device (Two Way Surge Tank)**				
a)	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	350 mm dia	m	6.00	4491.10	26946.60
	150 mm dia	m	70.00	1532.20	107254.00
	BSR-BCD-18-Item 18.72.18; Pg-231				
b)	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioning along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9 for water hammer control devices as required as per drawing	LS			13420.00
c)	**Gate Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	100 mm dia	No.	4.00	11200.00	44800.00
	150 mm dia	No.	4.00	16800.00	67200.00
	RUIDP 2017 19.20.1.6, page 120				
d)	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	150 mm dia	No.	2.00	17900.00	35800.00
	RUIDP 2017 19.34.1.4,8 page 132				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate in Rs.	Amount in Rs.
e)	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	150 mm dia	No.	4.00	3750.00	15000.00
	RUIDP 2017 19. 40.6,12, 136				
f)	**Air Valve**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia lincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	100 mm dia	No.	3.00	25400.00	76200.00
	RUIDP 17-18 Item No. 19.31.1.4 Page No. 131				
g)	**CC support**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20				
	RCC M20	Cum	3.90	4580.00	17862.00
	RUIDP 2017 13.4.5 page 39				
			Sub Total A		**5585102.00**
23	**Carriage of Material**				
	Sand	t.km	356.20	9.40	3348.28
	Aggregate	t.km	2748.00	9.40	25831.20
	Bricks	t.km	0.00	9.40	0.00
			Sub Total B		**29179.00**
	Total Cost (A+B)				**5614281.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Measurement Sheet -Pumping Main from IPS A5 to GC.238

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth	Encasement Width
	750	0.350	7.70	0.365	0.3577	0.865	2.015	0.865

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.								
i	350 mm dia	M		750.000	0.0000		750.00		
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.								
	All types of Soil								
a)	Upto 1.5 m	Cum	1.00	750	0.87	1.50	974.00		
b)	From 1.5 m to 3.0 m	Cum	1.00	750	0.87	0.52	335.00		
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.								
		Cum		1309.00		273.00	1036.00		
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:								
	ii) M-20	Cum					12.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**								
		Kg					383.00		
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500		
7	Centring and shuttering including strutting, propping etc. and removal of formwork.								
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					52.00		
8	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	750.00	0.87	0.15	97.00		
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.								
		Cum	1	750.00	0.10		176.00		
10	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost							
G)	ROAD RESTORATION AND DISMENTLING WORKS								
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	400	0.865	0.5		173.00		
	RCD/SOR-14; Item-2.5-II A; Pg-29								
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	340	0.865	0.3		88.00		
	RCD/SOR-14; Item-2.6; Pg-29								
	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	sqm	10	0.865			9.00		
	Cement concrete road Restoration								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
	Water bound macadam road								
13	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	340	0.865	0.1		35.00		
	BSR-BCD-14; Item-2.39, Pg-86								
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	340	0.865	0.1		29.00		
	BSR-BCD-14; Item-2.40, Pg-86								
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	340	0.865	0.2		59.00		
	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum	10	0.865	0.25		2.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	10	0.865	0.15		1.00		
	Reconstruction of Bituminous Asphalt Roads								
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)								
	Grading II: 100 mm thick	cum	400	0.865	0.1		35.00		
	Grading III: 100 mm thick	cum	400	0.865	0.1		35.00		
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71								
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	400	0.865			346.00		
	BSR-RCD-14-Item 5.1, Pg-86								
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	400	0.865			346.00		
	BSR-RCD-14-Item 5.2, Pg-86								
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum	400	0.865	0.04		14.00		
	BSR-RCD-14-Item 5.3 (I), Pg-87								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	400	0.865			346.00		
	BSR-RCD-14-Item 5.4 A, Pg-87								
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	400	0.865			346.00		
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125								

SEWERAGE SYSTEM FOR GAYA ESTERN PART
COST ESTIMATE - PUMPING MAIN FROM MPS A6 to STP

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	600 mm dia.	m	1540.00	10137.30	15611442.00
ii	200 mm dia	m	30.00	2108.20	63246.00
	BSR-BCD-18-Item 18.72.18 Pg-231				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	2013.00	319.60	643354.80
b)	From 1.5 m to 3.0 m	Cum	1336.00	360.60	481761.60
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	2972.00	103.30	307007.60
4	**Valve chamber with precast R.C.C. covers.**				
	Providing and constructing B.B. **masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion, 20mm thick cement plaster in CM 1:4 proportion on both side, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.				
	(Note : Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M)				
	As above of **90X90 cm** internal size and depth upto 1.5 M with precast R.C.C. slab cover.	No	1	12974.00	12974.00
	As above of **1.2mX1.2M** internal size and depth upto 1.5 M with precast R.C.C. slab cover.	No	1	17292.00	17292.00
	(Item No.1, SectionI Chambers Manholes and Drainage Drops, MJP DSR 2017-18) Pg no 357				
5	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grde reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	16.00	4924.00	78784.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
6	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7E TO H; Pg-86	Kg	549.00	76.00	41724.00
7	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	92.20	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sqm	76.00	186.30	14158.80
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
9	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	Cum	284.00	217.00	61628.00
	BSR - RCD-18- Item- 12.3, P-222				
10	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	724.00	270.30	195697.20
	ROAD RESTORATION AND DISMENTLING WORKS				
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	588.00	342.00	201096.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	18.00	1520.00	27360.00
	RCD/SOR-18; Item-2.6; Pg-29				
12a	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sqm	486.00	74.90	36401.40
	BSR-BCD-18; Item-15.43.1, Pg-188				
	Cement concrete road Restoration				
13	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	7.00	10.00	70.00
	BSR-BCD-18; Item-2.39, Pg-77				
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	6.00	103.30	619.80
	BSR-BCD-18; Item-2.40, Pg 77				
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing) Restoration of WMM Road	Cum	12.00	4461.00	53532.00
	BSR-RCD-18; Item-6.2, Pg138				
15a	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	121.00	637.00	77077.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
15b	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	**73.00**	888.00	64824.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	Reconstruction of Bituminous Asphalt Roads				
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	118.00	904.00	106672.00
	Grading III: 100 mm thick	Cum	118.00	949.00	111982.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	1177.00	30.30	35663.10
	BSR-RCD-18-Item 5.1, Pg-87				
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	1177.00	11.10	13064.70
	BSR-RCD-18-Item 5.2, Pg-87				
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	47.00	5406.00	254082.00
	BSR-RCD-18-Item 5.3 (I), Pg-88				
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	1177.00	246.00	289542.00
	BSR-RCD-18-Item 5.4 A, Pg-89				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	1177.00	125.00	147125.00
	SOR-RCD-GoB-18-Item 5.10 A ii, Pg- 98				
22	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.0 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	200mm Dia.	No.	1.00	27500	**27500.00**
	RUIDP 17 Item No.19.20.1.5 Page- 120				
23	Providing, lowering, laying, aligning, fixing in position and jointing CI dismantling joint (suitable for sluice valves etc.) as per IS specifications complete of the following sizes including all jointing material, cost of all labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	200mm Dia.				
	RUIDP 17 Item No. 3.32.2 Page- 8	No.	1.00	502	**502.00**
24	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	34.86	17389.00	606180.54
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
25	**Water Hammer Control Device (Two Way Surge Tank)**				
a)	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	600 mm dia	m	8.00	10137.30	81098.40
	200 mm dia	m	70.00	2108.20	147574.00
	BSR-BCD-18-Item 18.72.18 Pg-231				
b)	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioning along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9 for water hammer control devices as required as per drawing	LS			22867.00

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
c)	**Gate Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	100 mm dia	No.	4.00	11200.00	44800.00
	150 mm dia	No.	0.00	16800.00	0.00
	200 mm dia	No.	4.00	27500.00	110000.00
	RUIDP 2017 19.20.1.6, page 120				
d)	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
	150 mm dia	No.		17900.00	0.00
	200 mm dia	No.	2.00	40100.00	80200.00
	RUIDP 2017 19.34.1.4,8 page 132				
e)	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	150 mm dia	No.		3750.00	0.00
	200 mm dia	No.	4.00	5650.00	22600.00
	RUIDP 2017 19. 40.6,12, 136				
f)	**Air Valve**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia Iincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	100 mm dia	No.	3.00	25400.00	76200.00
	RUIDP 17-18 Item No. 19.31.1.4 Page No. 131				
g)	**CC support**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20				
	RCC M20	Cum	5.40	4580.00	24732.00
	RUIDP 2017 13.4.5 page 39				
			Sub Total A		**20422935.00**
26	**Carriage of Material**				
	Sand	t.km	140.60	9.4	1321.64
	Aggregate	t.km	7118.30	9.4	66912.02
	Bricks	t.km	0.00	9.4	0.00
			Sub Total B		**68234.00**
	Total Cost (A+B)				**20491169.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS6 to Inlet chamber of STP

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth	Encasement Width
	1,540	0.600	9.90	0.620	0.6099	1.120	2.270	1.120
	30	0.2	6.30	0.213	0.2063	0.713	1.863	0.713

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.								
i	600 mm dia	M		1540.000	0.0000		1540.00		
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.								
	All types of Soil								
	Upto 1.5 m	Cum	1.00	30	0.71	1.5	32.00		
	From 1.5 m to 3.0 m	Cum	1.00	30	0.71	0.363	8.00		
a)	Upto 1.5 m	Cum	1.00	1540	1.12	1.50	2587.00		
b)	From 1.5 m to 3.0 m	Cum	1.00	1540	1.12	0.77	1328.00		
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.								
		Cum		3955.00		983.00	2972.00		
4	Providing and constructing **B.B. masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
	Note : Wall thickness : 0.23 M for depth of 1.2M and 0.35M for balance depth exceeding 1.2M.								
a)	1.2 x 1.2 M internal size and depth upto 1.5M with precast R.C.C. slab cover.	No	1				1		
5	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:								
	ii) M-20	Cum					16.00		
6	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**								
		Kg					549.00		
7	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500		
8	Centring and shuttering including strutting, propping etc. and removal of formwork.								
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					76.00		
9	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	1540.00	1.12	0.15	259.00		
			1	30.00	0.71	1.15	25.00		
10	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.								
		Cum	1	1,540.00	0.30		724.00		
11	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost							
G)	ROAD RESTORATION AND DISMENTLING WORKS								
12	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum		1051	1.120	0.5	588.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
	RCD/SOR-14; Item-2.5-II A; Pg-29								
13	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum		55	1.120	0.3	18.00		
	RCD/SOR-14; Item-2.6; Pg-29								
	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	sqm		434	1.120		486.00		
	Cement concrete road Restoration								
	Water bound macadam road								
14	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum		55	1.120	0.1	7.00		
	BSR-BCD-14; Item-2.39, Pg-86								
15	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum		55	1.120	0.1	6.00		
	BSR-BCD-14; Item-2.40, Pg-86								
16	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum		55	1.120	0.2	12.00		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum		434	1.120	0.25	121.00		
	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum		434	1.120	0.15	73.00		
	Reconstruction of Bituminous Asphalt Roads								
17	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)								
	Grading II: 100 mm thick	cum		1051	1.120	0.1	118.00		
	Grading III: 100 mm thick	cum		1051	1.120	0.1	118.00		
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71								
18	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm		1051	1.120		1177.00		
	BSR-RCD-14-Item 5.1, Pg-86								
19	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm		1051	1.120		1177.00		
	BSR-RCD-14-Item 5.2, Pg-86								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
20	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum		1051	1.120	0.04	47.00		
	BSR-RCD-14-Item 5.3 (I), Pg-87								
21	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm		1051	1.120		1177.00		
	BSR-RCD-14-Item 5.4 A, Pg-87								
22	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm		1051	1.120		1177.00		
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125								

SEWERAGE SYSTEM FOR GAYA CITY

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Mains

		Qnty. from Estimate Sheet													RCC, Flooring and Sand Filling						Bricks				Plaster				**Total Quantity in MT**		
	Pumping Main dias	Concrete (C:S:A)				Bricks (m3)	Plaster (m2)	Flooring (40 mm thk) M15		Sand Filling	Aggregate for Internal Road Works (m3)				Cement		Sand		Aggregate		Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand				
		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (m2)	Volume (m3)	Volume (m3)	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ m3	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Volume (m3)	Wt (MT) 1870kg/ m3	Wt (MT) 1920kg/ m3	MT	MT	MT	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Sand	Aggregate	Bricks
1	**250 dia**		2.00		5.00										1.5	2.2	1.8	3.4	3.6	6.8	-	-	-	-	-	-	-	-	3.4	6.8	-
2	**250 dia**		2.03		4.62										1.5	2.1	1.7	3.2	3.5	6.5	-	-	-	-	-	-	-	-	3.2	6.5	-
3	**350 dia**		3.61		6.60										2.2	3.1	2.7	4.9	5.4	10.0									4.9	10.0	-
4	**350 dia**		3.61		6.60										2.2	3.1	2.7	4.9	5.4	10.0									4.9	10.0	-
5	**350 dia**		3.61		6.60										2.2	3.1	2.7	4.9	5.4	10.0									4.9	10.0	-
	Total	-	14.9	-	29.4	-	-	-	-	-	-	-	-	-	9.5	13.7	11.6	21.3	23.2	43.4	-	-	-	-	-	-	-	-	21.3	43.4	-
																												Rate (Rs/MT.KM)	9.4	9.4	9.4
																												Amount (Rs.)	201	408	0
																												Total amount (INR Lakh)	0.01		

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- COLLECTION CHAMBER (250 DIA) IPS A1 PM

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in **foundation trenches** including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	12.00	319.60	3835.00
b)	From 1.5 m to 3.0 m	Cum	5.00	360.60	1803.00
c)	From 3.0 m to 4.5 m	Cum	0.00	401.60	0.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	9.00	103.30	930.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	8.00	270.30	2162.00
	Rate Analysis : Removal of Unserviceable soil with Disposal				
4	**PCC:** Providing and laying in position cement concrete of specified grade exluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	2.00	4151.40	8303.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
5	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	5.00	5270.50	26353.00
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				
6	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	0.40	76000.00	30400.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
7	**Centering & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	2.00	186.30	373.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	16.00	321.30	5141.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	2.00	362.60	725.00
	BSR - BCD-18- Item- 5.9.3, Pg-84				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
8	Providing orange colour **safety foot rest of minimum 6 mm thick plastic encapsulated** as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm	each	3.00	240.90	723.00
	BSR-BCD-18; Item-19.16; Pg-245				
9	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	0.21	17389.00	3651.69
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
			Sub Total A		**84399.69**
10	**Carriage of Material**				
	Sand	t.km	33.50	9.4	314.90
	Aggregate	t.km	68.10	9.4	640.14
	Bricks	t.km		9.4	0.00
			Sub Total B		**955.00**
	Total Cost (A+B)				**85354.69**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- OUTLET COLLECTION CHAMBER (800 DIA)

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		2.80	2.80	1.50	12.00	Cum
b)	From 1.5 m to 3.0 m		2.80	2.80	0.61	5.00	Cum
c)	From 3.0 m to 4.5 m		2.80	2.80	0.00	0.00	Cum
	Total					**17.00**	Cum
2	Refilling					**9.00**	Cum
3	Disposal		1.90	1.90	2.01	7.26	
	Deduct the corner	-1	0.00	0.00	2.01	0.00	Cum
	PCC					0.48	Cum
	Total					**8.00**	Cum
4	PCC: M15 footing		2.20	2.20	0.10	0.48	Cum
	Deduct the corner	-1	0.00	0.00	0.10	0.00	Cum
	PCC filling		1.30	1.30	1.06	1.79	Cum
		0	0.47	0.05		0.00	Cum
	Deduct pipe volume	-1	1.12	0.05		-0.06	Cum
	Deduct the Channel	-1	1.30	0.25	0.50	-0.16	Cum
	Total					**2.00**	Cum
5	RCC Grade M -20						
	Footing (Base slab)		1.90	1.90	0.30	1.08	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Walls		5.80	0.30	1.41	2.45	Cum
	RCC Slab		1.90	1.90	0.30	1.08	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Grand Total					**5.00**	Cum
6	**Shuttering**						
	Footing (Base slab)		7.60		0.30	2.28	Sqm
	Walls	2	5.80		1.41	16.36	Sqm
	RCC Slab		1.30	1.30		1.69	Sqm
	Grand Total					**20.00**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					2.00	Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					16.00	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					2.00	Sqm
7	Reinforcement- Fe 500 TMT					**0.40**	MT
8	MS/CI foot rests	3				**3.00**	Nos.

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- COLLECTION CHAMBER (250 DIA) IPS A2 PM

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in **foundation trenches** including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	11.76	319.60	3758.00
b)	From 1.5 m to 3.0 m	Cum	4.78	360.60	1725.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	8.80	103.30	909.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	7.74	270.30	2092.00
	Rate Analysis : Removal of Unserviceable soil with Disposal				
4	**PCC:** Providing and laying in position cement concrete of specified grade exluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	2.03	4151.40	8441.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
5	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	4.62	5270.50	24347.00
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				
6	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	0.37	76000.00	28086.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
7	**Centering & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	2.28	186.30	425.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	16.36	321.30	5256.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	1.69	362.60	613.00
	BSR - BCD-18- Item- 5.9.3, Pg-84				
8	Providing orange colour **safety foot rest of minimum 6 mm thick plastic encapsulated** as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm	each	3.00	240.90	723.00
	BSR-BCD-18; Item-19.16; Pg-245				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	0.21	17389.00	3651.69
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
			Sub Total A		**80026.69**
10	**Carriage of Material**				
	Sand	t.km	32.00	9.4	300.80
	Aggregate	t.km	64.90	9.4	610.06
	Bricks	t.km		9.4	0.00
			Sub Total B		**911.00**
	Total Cost (A+B)				**80937.69**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- OUTLET COLLECTION CHAMBER (800 DIA)

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		2.80	2.80	1.50	11.76	Cum
b)	From 1.5 m to 3.0 m		2.80	2.80	0.61	4.78	Cum
c)	From 3.0 m to 4.5 m		2.80	2.80	0.00	0.00	Cum
	Total					**16.54**	Cum
2	Refilling					**8.80**	Cum
3	Disposal		1.90	1.90	2.01	7.26	
	Deduct the corner	-1	0.00	0.00	2.01	0.00	Cum
	PCC					0.48	Cum
	Total					**7.74**	Cum
4	PCC: M15 footing		2.20	2.20	0.10	0.48	Cum
	Deduct the corner	-1	0.00	0.00	0.10	0.00	Cum
	PCC filling		1.30	1.30	1.06	1.79	Cum
		-1	0.47	0.05		-0.02	Cum
	Deduct pipe volume	-1	1.12	0.05		-0.06	Cum
	Deduct the Channel	-1	1.30	0.25	0.50	-0.16	Cum
	Total					**2.03**	Cum
5	RCC Grade M -20						
	Footing (Base slab)		1.90	1.90	0.30	1.08	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Walls		5.80	0.30	1.41	2.45	Cum
	RCC Slab		1.90	1.90	0.30	1.08	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Grand Total					**4.62**	Cum
6	**Shuttering**						
	Footing (Base slab)		7.60		0.30	2.28	Sqm
	Walls	2	5.80		1.41	16.36	Sqm
	RCC Slab		1.30	1.30		1.69	Sqm
	Grand Total					**20.33**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					2.28	Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					16.36	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					1.69	Sqm
7	Reinforcement- Fe 500 TMT					**0.4**	MT
8	MS/CI foot rests	3				**3.00**	Nos.

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- COLLECTION CHAMBER (350 DIA) IPS A3 PM

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in **foundation trenches** including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	13.50	319.60	4315.00
b)	From 1.5 m to 3.0 m	Cum	8.06	360.60	2908.00
c)	From 3.0 m to 4.5 m	Cum	0.00	401.60	0.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	10.86	103.30	1122.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	10.70	270.30	2893.00
	Rate Analysis : Removal of Unserviceable soil with Disposal				
4	**PCC:** Providing and laying in position cement concrete of specified grade exluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	3.61	4151.40	14993.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
5	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	6.60	5270.50	34775.00
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				
6	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	0.53	76000.00	40116.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
7	**Centering & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	2.52	186.30	469.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	26.35	321.30	8466.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	2.25	362.60	816.00
	BSR - BCD-18- Item- 5.9.3, Pg-84				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Providing orange colour **safety foot rest of minimum 6 mm thick plastic encapsulated** as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm	each	3.00	240.90	723.00
	BSR-BCD-18; Item-19.16; Pg-245				
9	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	0.38	17389.00	6607.82
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
			Sub Total A		**118203.82**
10	**Carriage of Material**				
	Sand	MT	49.30	9.40	463.42
	Aggregate	MT	100.20	9.40	941.88
	Bricks	MT		9.40	0.00
			Sub Total B		**1405.00**
	Total Cost (A+B)				**119608.82**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- OUTLET COLLECTION CHAMBER (800 DIA)

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		3.00	3.00	1.50	13.50	Cum
b)	From 1.5 m to 3.0 m		3.00	3.00	0.90	8.06	Cum
c)	From 3.0 m to 4.5 m		3.00	3.00	0.00	0.00	Cum
	Total					**21.56**	Cum
2	**Refilling**					**10.86**	Cum
3	Disposal		2.10	2.10	2.30	10.13	
	Deduct the corner	-1	0.00	0.00	2.30	0.00	Cum
	PCC					0.58	Cum
	Total					**10.70**	Cum
4	PCC: M15 footing		2.40	2.40	0.10	0.58	Cum
	Deduct the corner	-1	0.00	0.00	0.10	0.00	Cum
	PCC filling		1.50	1.50	1.60	3.59	Cum
	Deduct the corner	-1	0.57	0.10		-0.06	Cum
	Deduct pipe volume	-1	1.32	0.10		-0.13	Cum
	Deduct the Channel	-1	1.50	0.35	0.70	-0.37	Cum
	Total					**3.61**	Cum
5	RCC Grade M -20						
	Footing (Base slab)		2.10	2.10	0.30	1.32	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Walls		6.60	0.30	2.00	3.95	Cum
	RCC Slab		2.10	2.10	0.30	1.32	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Grand Total					**6.60**	Cum
6	**Shuttering**						
	Footing (Base slab)		8.40		0.30	2.52	Sqm
	Walls	2	6.60		2.00	26.35	Sqm
	RCC Slab		1.50	1.50		2.25	Sqm
	Grand Total					**31.12**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					2.52	Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					26.35	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					2.25	Sqm
7	Reinforcement- Fe 500 TMT					**0.5**	MT
8	MS/CI foot rests	3				**3.00**	Nos.

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- COLLECTION CHAMBER (350 DIA) IPS A4 PM

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in **foundation trenches** including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	13.50	319.60	4315.00
b)	From 1.5 m to 3.0 m	Cum	8.06	360.60	2908.00
c)	From 3.0 m to 4.5 m	Cum	0.00	401.60	0.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	10.86	103.30	1122.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	10.70	270.30	2893.00
	Rate Analysis : Removal of Unserviceable soil with Disposal				
4	**PCC:** Providing and laying in position cement concrete of specified grade exluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	3.61	4151.40	14993.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
5	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	6.60	5270.50	34775.00
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				
6	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	0.53	76000.00	40116.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
7	**Centering & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	2.52	186.30	469.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	26.35	321.30	8466.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	2.25	362.60	816.00
	BSR - BCD-18- Item- 5.9.3, Pg-84				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Providing orange colour **safety foot rest of minimum 6 mm thick plastic encapsulated** as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm	each	3.00	240.90	723.00
	BSR-BCD-18; Item-19.16; Pg-245				
9	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	0.38	17389.00	6607.82
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
			Sub Total A		**118203.82**
10	**Carriage of Material**				
	Sand	t.km	49.30	9.40	463.42
	Aggregate	t.km	100.20	9.40	941.88
	Bricks	t.km		9.40	0.00
			Sub Total B		**1405.00**
	Total Cost (A+B)				**119608.82**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- OUTLET COLLECTION CHAMBER (800 DIA)

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		3.00	3.00	1.50	13.50	Cum
b)	From 1.5 m to 3.0 m		3.00	3.00	0.90	8.06	Cum
c)	From 3.0 m to 4.5 m		3.00	3.00	0.00	0.00	Cum
	Total					**21.56**	Cum
2	**Refilling**					**10.86**	Cum
3	Disposal		2.10	2.10	2.30	10.13	
	Deduct the corner	-1	0.00	0.00	2.30	0.00	Cum
	PCC					0.58	Cum
	Total					**10.70**	Cum
4	PCC: M15 footing		2.40	2.40	0.10	0.58	Cum
	Deduct the corner	-1	0.00	0.00	0.10	0.00	Cum
	PCC filling		1.50	1.50	1.60	3.59	Cum
	Deduct the corner	-1	0.57	0.10		-0.06	Cum
	Deduct pipe volume	-1	1.32	0.10		-0.13	Cum
	Deduct the Channel	-1	1.50	0.35	0.70	-0.37	Cum
	Total					**3.61**	Cum
5	RCC Grade M -20						
	Footing (Base slab)		2.10	2.10	0.30	1.32	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Walls		6.60	0.30	2.00	3.95	Cum
	RCC Slab		2.10	2.10	0.30	1.32	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Grand Total					**6.60**	Cum
6	**Shuttering**						
	Footing (Base slab)		8.40		0.30	2.52	Sqm
	Walls	2	6.60		2.00	26.35	Sqm
	RCC Slab		1.50	1.50		2.25	Sqm
	Grand Total					**31.12**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					2.52	Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					26.35	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					2.25	Sqm
7	Reinforcement- Fe 500 TMT					**0.5**	MT
8	MS/CI foot rests	3				**3.00**	Nos.

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- COLLECTION CHAMBER (350 DIA) IPS A5 PM

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in **foundation trenches** including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	13.50	319.60	4315.00
b)	From 1.5 m to 3.0 m	Cum	8.06	360.60	2908.00
c)	From 3.0 m to 4.5 m	Cum	0.00	401.60	0.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	10.86	103.30	1122.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	10.70	270.30	2893.00
	Rate Analysis : Removal of Unserviceable soil with Disposal				
4	**PCC:** Providing and laying in position cement concrete of specified grade exluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	3.61	4151.40	14993.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
5	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	6.60	5270.50	34775.00
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				
6	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	0.53	76000.00	40116.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
7	**Centering & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	2.52	186.30	469.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	26.35	321.30	8466.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	2.25	362.60	816.00
	BSR - BCD-18- Item- 5.9.3, Pg-84				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	Providing orange colour **safety foot rest of minimum 6 mm thick plastic encapsulated** as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm	each	3.00	240.90	723.00
	BSR-BCD-18; Item-19.16; Pg-245				
9	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	0.38	17389.00	6607.82
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
			Sub Total A		**118203.82**
10	**Carriage of Material**				
	Sand	MT	49.30	9.40	463.42
	Aggregate	MT	100.20	9.40	941.88
	Bricks	MT		9.40	0.00
			Sub Total B		**1405.00**
	Total Cost (A+B)				**119608.82**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- OUTLET COLLECTION CHAMBER (800 DIA)

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		3.00	3.00	1.50	13.50	Cum
b)	From 1.5 m to 3.0 m		3.00	3.00	0.90	8.06	Cum
c)	From 3.0 m to 4.5 m		3.00	3.00	0.00	0.00	Cum
	Total					**21.56**	Cum
2	**Refilling**					**10.86**	Cum
3	Disposal		2.10	2.10	2.30	10.13	
	Deduct the corner	-1	0.00	0.00	2.30	0.00	Cum
	PCC					0.58	Cum
	Total					**10.70**	Cum
4	PCC: M15 footing		2.40	2.40	0.10	0.58	Cum
	Deduct the corner	-1	0.00	0.00	0.10	0.00	Cum
	PCC filling		1.50	1.50	1.60	3.59	Cum
	Deduct the corner	-1	0.57	0.10		-0.06	Cum
	Deduct pipe volume	-1	1.32	0.10		-0.13	Cum
	Deduct the Channel	-1	1.50	0.35	0.70	-0.37	Cum
	Total					**3.61**	Cum
5	RCC Grade M -20						
	Footing (Base slab)		2.10	2.10	0.30	1.32	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Walls		6.60	0.30	2.00	3.95	Cum
	RCC Slab		2.10	2.10	0.30	1.32	Cum
	Deduct the corner	-1	0.00	0.00	0.30	0.00	Cum
	Grand Total					**6.60**	Cum
6	**Shuttering**						
	Footing (Base slab)		8.40		0.30	2.52	Sqm
	Walls	2	6.60		2.00	26.35	Sqm
	RCC Slab		1.50	1.50		2.25	Sqm
	Grand Total					**31.12**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					2.52	Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					26.35	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					2.25	Sqm
7	Reinforcement- Fe 500 TMT					**0.5**	MT
8	MS/CI foot rests	3				**3.00**	Nos.

Sr. No.	Description	Unit
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	t.km

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**

sal

Quantity	Rate	Amount	Reference
1	148	148	BSR-RCD 2016 Item 1.1, PG.No. 8
8	7.82609	62.6087	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1	**210.609**	210.609

SEWERAGE SYSTEM FOR GAYA CITY

Cost Estimate - Pumping Main from IPS 4A to Manhole of MPS Catchment

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	800mm	m	3185.00	**15380.60**	48987211.00
	BSR-BCD-18-Item 18.72.27; Pg-232				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F **Sluice Valves / Butterfly Valves** with jointing to pipe work (including all hardware and packing), water works quality having non-rising spindle with hand wheel and without bypass arrangement, spindle of stainless steel as per requirement, excluding C.C. foundation / structural steel support. (For Scour Arrangement)				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	200 mm dia PN-1.0	No.	1.00	**52901.29**	52901.29
	MJP, Section-I (XIII), Sr. 11, Pg 147				
3	Dismantling joint: Providing, erecting and commissioning **M.S. Dismantling joint** as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	200 mm dia PN-1.0	No.	1.00	**15771.82**	15771.82
	MJP, PW6				
4	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	4636.54	**319.60**	1481839.30
b)	From 1.5 m to 3.0 m	Cum	1995.39	**360.60**	719539.34
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	5357.46	**103.30**	553425.31
6	Providing and constructing **B.B. masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.				
	Note : Wall thickness : 0.23 M for depth of 1.2M and 0.35M for balance depth exceeding 1.2M.				
a)	1.2 x 1.2 M internal size and depth upto 2.0 M with precast **R.C.C. slab cover.** SVC	No	1.00	**13989.64**	13989.64
	(Item No.1, Section 1 xx, MJP DSR 2010-11)+15%				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
7	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grde reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	26.00	**4924.00**	128024.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7D TO H; Pg-86	Kg	979.00	**76.00**	74404.00
9	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	**92.20**	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				
10	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	120.00	**186.30**	22356.00
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
11	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	cum	632.25	**217.00**	137198.25
	BSR - RCD-18- Item- 12.3, P-222				
12	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	2328.23	**270.30**	629320.90
G)	**ROAD RESTORATION AND DISMENTLING WORKS**				
13	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	1054.00	342.00	360468.00
	BSR RCD/SOR-18; Item-2.5-II A; Pg-29				
14	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	632.00	1520.00	960640.00
	BSR RCD/SOR-18; Item-2.6; Pg-29				
	Cement concrete road Restoration				
15	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	253.00	10.00	2530.00
	BSR-BCD-18; Item-2.39, Pg-77				
16	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	211.00	103.30	21796.30
	BSR-BCD-18; Item-2.40, Pg-77				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
17	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	422.00	4801.00	2026022.00
	Reconstruction of Bituminous Asphalt Roads				
18	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	cum	211.00	986.00	208046.00
	Grading III: 100 mm thick	cum	211.00	1030.00	217330.00
	BSR-RCD-15-Item 4.9 A (ii) a, Pg-72, BSR-RCD-14-Item 4.9 A(iii) a, Pg-72				
19	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	2108.00	29.30	61764.40
	BSR-RCD-15-Item 5.1, Pg-84				
20	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	2108.00	10.70	22555.60
	BSR-RCD-15-Item 5.2, Pg-84				
21	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum	84.00	6282.00	527688.00
	BSR-RCD-15-Item 5.3 (I), Pg-84				
22	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	2108.00	326.00	687208.00
	BSR-RCD-15-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	2108.00	142.00	299336.00
	SOR-RCD-GoB-15-Item 5.9 B, Pg- 129				
24	**Making connection of drain or sewer line** with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :	Nos.	1.00	400.20	400.20
	BSR - BCD-15-Item- 19.21, P-212				
				Sub Total	**58442265.35**
25	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost	0.00		4898721.10
				Sub Total A	**63340986.00**
26	**Carriage of Material**				
	Sand	MT	22.58	237	5351.46
	Aggregate	MT	434.68	814	353829.52
	Bricks	MT	0.00	237	0.00
				Sub Total B	**359181.00**
	Total Cost (A+B)				**63700167.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS4A to MPS1

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth	Encasement Width
	3,185	0.800	11.70	0.823	0.8117	1.323	1.973	1.323

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.								
i	800 mm dia	M	3185.00	0.000	0.0000		3185.00		
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F Sluice Valves/ Butterfly Valves with jointing to pipe work (including all hardware and packing), water works quality having non-rising spindle with hand wheel and without bypass arrangement, spindle of stainless steel as per requirement, excluding C.C. foundation/ structural steel support.								
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)								
	200 mm dia PN-1.0	No.					1		
3	Dismantling joint: Providing, erecting and commissioning M.S. Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.								
	200 mm dia PN-1.0	No.					1		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
4	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.								
	All types of Soil								
a)	Upto 1.5 m	Cum	1.00	3185	1.32	1.50	6322.54		
b)	From 1.5 m to 3.0 m	Cum	1.00	3185	1.32	0.47	1995.39		
5	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.								
		Cum		8317.94		2960.48	5357.46		
6	Providing and constructing **B.B. masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.								
	Note : Wall thickness : 0.23 M for depth of 1.2M and 0.35M for balance depth exceeding 1.2M.								
a)	1.2 x 1.2 M internal size and depth upto 1.5M with precast R.C.C. slab cover.	No					1		
7	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:								
	ii) M-20	Cum					26		
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**								
		Kg					979		
9	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500		
10	Centring and shuttering including strutting, propping etc. and removal of formwork.								
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					120		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
11	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	3185.00	1.32	0.15	632.25		
12	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.								
		Cum	1	3,185.00	0.53		2328.23		
13	Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement :2 coarse sand :4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :	Nos.	1				1		
14	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost							
G)	**ROAD RESTORATION AND DISMENTLING WORKS**								
15	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	1592.5	1.323	0.5		1054		
	RCD/SOR-14; Item-2.5-II A; Pg-29								
16	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	1592.5	1.323	0.3		632		
	RCD/SOR-14; Item-2.6; Pg-29								
	Cement concrete road Restoration								
17	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	1592.5	1.323	0.1		253		
	BSR-BCD-14; Item-2.39, Pg-86								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
18	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	1592.5	1.323	0.1		211		
	BSR-BCD-14; Item-2.40, Pg-86								
19	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	1592.5	1.323	0.2		422		
	Reconstruction of Bituminous Asphalt Roads								
20	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)								
	Grading II: 100 mm thick	cum	1592.5	1.323	0.1		211		
	Grading III: 100 mm thick	cum	1592.5	1.323	0.1		211		
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
21	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	1592.5	1.323			2108		
	BSR-RCD-14-Item 5.1, Pg-86								
22	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	1592.5	1.323			2108		
	BSR-RCD-14-Item 5.2, Pg-86								
23	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum	1592.5	1.323	0.04		84		
	BSR-RCD-14-Item 5.3 (I), Pg-87								
24	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	1592.5	1.323			2108		
	BSR-RCD-14-Item 5.4 A, Pg-87								
25	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	1592.5	1.323			2108		
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125								

SEWERAGE SYSTEM FOR GAYA CITY

Cost Estimate - Pumping Main from IPS6 to Manhole of MPS Catchment

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	900mm	m	580.00	**18611.80**	10794844.00
	BSR-BCD-14-Item 18.72.28; Pg-197				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F **Sluice Valves / Butterfly Valves** with jointing to pipe work (including all hardware and packing), water works quality having non-rising spindle with hand wheel and without bypass arrangement, spindle of stainless steel as per requirement, excluding C.C. foundation / structural steel support. (For Scour Arrangement)				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	200 mm dia PN-1.0	No.	1.00	**52901.29**	52901.29
	MJP, Section-I (XIII), Sr. 11, Pg 147				
3	Dismantling joint: Providing, erecting and commissioning **M.S. Dismantling joint** as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
	200 mm dia PN-1.0	No.	1.00	**15771.82**	15771.82
	MJP, PW6				
4	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	908.92	**205.20**	186511.20
b)	From 1.5 m to 3.0 m	Cum	475.47	**231.30**	109976.10
	BSR-BCD-14-Item 2.8.1; Pg-81 & 2.27.1; Pg.-84				
5	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-14-Item 2.26; Pg-84	Cum	1077.48	**66.40**	71544.76
6	Providing and constructing **B.B. masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.				
	Note : Wall thickness : 0.23 M for depth of 1.2M and 0.35M for balance depth exceeding 1.2M.				
a)	1.2 x 1.2 M internal size and depth upto 2.0 M with precast **R.C.C. slab cover.** SVC	No	1.00	**13989.64**	13989.64
	(Item No.1, Section 1 xx, MJP DSR 2010-11)+15%				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
7	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grde reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	12.00	**3910.80**	46929.60
	BSR-BCD-14;Item-5.33A.1, Pg-96				
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-14; Item-5.22.7D TO H; Pg-95	Kg	481.00	**72.20**	34728.20
9	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	**61.70**	154250.00
	BSR-BCD-14-Item 2.25; Pg-84				
10	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	59.00	**166.70**	9835.30
	BSR-BCD-14; Sr. No Item-5.9.1, Pg-92				
11	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	cum	123.99	**271.00**	33601.29
	BSR - RCD-15- Item- 12.3, P-222				
12	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	513.92	**270.30**	138913.18
G)	**ROAD RESTORATION AND DISMENTLING WORKS**				
13	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	207.00	306.00	63342.00
	BSR RCD/SOR-15; Item-2.5-II A; Pg-29				
14	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	124.00	1375.00	170500.00
	BSR RCD/SOR-15; Item-2.6; Pg-29				
	Cement concrete road Restoration				
15	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	50.00	9.80	490.00
	BSR-BCD-14; Item-2.39, Pg-86				
16	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	41.00	66.40	2722.40
	BSR-BCD-14; Item-2.40, Pg-86				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
17	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	83.00	4801.00	398483.00
	Reconstruction of Bituminous Asphalt Roads				
18	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	cum	41.00	986.00	40426.00
	Grading III: 100 mm thick	cum	41.00	1030.00	42230.00
	BSR-RCD-15-Item 4.9 A (ii) a, Pg-72, BSR-RCD-14-Item 4.9 A(iii) a, Pg-72				
19	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	413.00	29.30	12100.90
	BSR-RCD-15-Item 5.1, Pg-84				
20	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	413.00	10.70	4419.10
	BSR-RCD-15-Item 5.2, Pg-84				
21	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum	17.00	6282.00	106794.00
	BSR-RCD-15-Item 5.3 (I), Pg-84				
22	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	413.00	326.00	134638.00
	BSR-RCD-15-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	413.00	142.00	58646.00
	SOR-RCD-GoB-15-Item 5.9 B, Pg- 129				
24	**Making connection of drain or sewer line** with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :	Nos.	1.00	400.20	400.20
	BSR - BCD-15-Item- 19.21, P-212				
				Sub Total	**12698987.98**
25	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost	0.00		1079484.40
				Sub Total A	**13778472.00**
26	**Carriage of Material**				
	Sand	MT	58.32	237	13821.84
	Aggregate	MT	232.00	814	188848.00
	Bricks	MT	9.08	237	2151.96
				Sub Total B	**204822.00**
	Total Cost (A+B)				**13983294.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS6 to MPS1

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth	Encasement Width
	580	0.900	12.60	0.925	0.9126	1.425	2.075	1.425

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.								
i	900 mm dia	M	580.00	0.000	0.0000		580.00		
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F Sluice Valves/ Butterfly Valves with jointing to pipe work (including all hardware and packing), water works quality having non-rising spindle with hand wheel and without bypass arrangement, spindle of stainless steel as per requirement, excluding C.C. foundation/ structural steel support.								
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)								
	200 mm dia PN-1.0	No.					1		
3	Dismantling joint: Providing, erecting and commissioning M.S. Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.								
	200 mm dia PN-1.0	No.					1		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
4	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.								
	All types of Soil								
a)	Upto 1.5 m	Cum	1.00	580	1.43	1.50	1239.92		
b)	From 1.5 m to 3.0 m	Cum	1.00	580	1.43	0.58	475.47		
5	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.								
		Cum		1715.39		637.91	1077.48		
6	Providing and constructing **B.B. masonry valve chamber** with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, B.B. masonry in C.M. 1:5 Proportion precast RCC frame and cover, etc. complete as directed by Engineer-in-charge.								
	Note : Wall thickness : 0.23 M for depth of 1.2M and 0.35M for balance depth exceeding 1.2M.								
a)	1.2 x 1.2 M internal size and depth upto 1.5M with precast R.C.C. slab cover.	No					1		
7	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:								
	ii) M-20	Cum					12		
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**								
		Kg					481		
9	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500		
10	Centring and shuttering including strutting, propping etc. and removal of formwork.								
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					59		

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
11	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	580.00	1.43	0.15	123.99		
12	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.								
		Cum	1	580.00	0.67		513.92		
13	Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement :2 coarse sand :4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement : 3 coarse sand), finished with a floating coat of neat cement and making necessary channels for the drain etc. complete :	Nos.	1				1		
14	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost							
G)	**ROAD RESTORATION AND DISMENTLING WORKS**								
15	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	290	1.425	0.5		207		
	RCD/SOR-14; Item-2.5-II A; Pg-29								
16	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	290	1.425	0.3		124		
	RCD/SOR-14; Item-2.6; Pg-29								
	Cement concrete road Restoration								
17	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	290	1.425	0.1		50		
	BSR-BCD-14; Item-2.39, Pg-86								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
18	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	290	1.425	0.1		41		
	BSR-BCD-14; Item-2.40, Pg-86								
19	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum	290	1.425	0.2		83		
	Reconstruction of Bituminous Asphalt Roads								
20	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)								
	Grading II: 100 mm thick	cum	290	1.425	0.1		41		
	Grading III: 100 mm thick	cum	290	1.425	0.1		41		
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71								

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
21	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	290	1.425			413		
	BSR-RCD-14-Item 5.1, Pg-86								
22	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	290	1.425			413		
	BSR-RCD-14-Item 5.2, Pg-86								
23	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum	290	1.425	0.04		17		
	BSR-RCD-14-Item 5.3 (I), Pg-87								
24	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	290	1.425			413		
	BSR-RCD-14-Item 5.4 A, Pg-87								
25	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	290	1.425			413		
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125								

SEWERAGE SYSTEM FOR GAYA CITY
Cost Estimate - Pumping Main from MPS to STP (Modules 2 & 3)

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-16 Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329- 2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	1000mm	RM	77.00	**20329.40**	1565363.80
	BSR-BCD-16-Item 18.72.29; Pg-189				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	158.04	**230.50**	36429.26
b)	From 1.5 m to 3.0 m	Cum	71.33	**259.70**	18524.60
	BSR-BCD-16-Item 2.8.1; Pg-69 & 2.27.1; Pg.-72				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
		Cum	156.41	**74.50**	11652.73
	BSR-BCD-16-Item 2.26; Pg-72				
4	Providing and laying in position machine batched, machine mixed and machine vibrated **design mix cement concrete** of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	102.00	**4533.30**	462396.60
	BSR-BCD-16;Item-5.33A.1, Pg-82				
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-16; Item-5.22.7D TO H; Pg-81	Kg	1470.00	**53.60**	78792.00
6	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	161.00	**169.00**	27209.00
	BSR-BCD-16; Sr. No Item-5.9.1, Pg-79				
7	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	cum	15.80	**280.00**	4425.25
	BSR - RCD-16- Item- 12.3, P-222				
8	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	72.96	**270.30**	19721.85
				Sub Total	**2224515.08**
9	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost			156536.38
				Sub Total A	**2381051.00**
10	**Carriage of Material**				
	Sand	MT	29.21	237	6922.77
	Aggregate	MT	329.59	814	268286.26
	Bricks	MT	9.08	237	2151.96
				Sub Total B	**277361.00**
	Total Cost (A+B)				**2658412.00**

SEWERAGE SYSTEM FOR GAYA CITY

Measurement Sheet - Pumping Main from MPS1 to STP (Modules 2 & 3)

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth	Encasement Width
MPS1 to Module 1 & 2	77	1.0	13.50	1.027	1.0135	1.527	2.177	1.627

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.		
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.								
i	1000 mm dia	m	77.00				77.00		
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.								
	All types of Soil								
a)	Upto 1.5 m	Cum	1.00	69	1.53	1.50	158.04		
b)	From 1.5 m to 3.0 m	Cum	1.00	69	1.53	0.68	71.33		
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.								
		Cum		229.38		72.96	156.41		
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:								
	ii) M-20	Cum					102.00		
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**								
		Kg					1470.00		
6	Centring and shuttering including strutting,propping etc. and removal of form for.								
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					161.00		
7	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	69.00	1.53	0.15	15.804		
8	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.								
		Cum	1	69.00	0.83		72.96		

SEWERAGE SYSTEM FOR GAYA CITY
Cost Estimate - Pumping Main from MPS to STP (Module 1)

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329- 2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	1000mm	RM	42.00	**20926.30**	878904.60
	BSR-BCD-14-Item 18.72.25; Pg-197				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	70.55	**205.20**	14476.33
b)	From 1.5 m to 3.0 m	Cum	27.05	**231.30**	6257.26
	BSR-BCD-14-Item 2.8.1; Pg-81 & 2.27.1; Pg.-84				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
		Cum	68.36	**66.40**	4539.07
	BSR-BCD-14-Item 2.26; Pg-84				
4	Providing and laying in position machine batched, machine mixed and machine vibrated **design mix cement concrete** of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	100.00	**3910.80**	391080.00
	BSR-BCD-14;Item-5.33A.1, Pg-96				
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-14; Item-5.22.7D TO H; Pg-95	Kg	1400.00	**72.20**	101080.00
6	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	150.00	**166.70**	25005.00
	BSR-BCD-14; Sr. No Item-5.9.1, Pg-92				
7	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	cum	7.05	**271.00**	1911.83
	BSR - RCD-15- Item- 12.3, P-222				
8	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	29.24	**270.30**	7903.72
				Sub Total	**1431157.81**
9	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost			87890.46
				Sub Total A	**1519048.00**
10	**Carriage of Material**				
	Sand	MT	29.21	237	6922.77
	Aggregate	MT	329.59	814	268286.26
	Bricks	MT	9.08	237	2151.96
				Sub Total B	**277361.00**
	Total Cost (A+B)				**1796409.00**

SEWERAGE SYSTEM FOR GAYA CITY

Measurement Sheet - Pumping Main from MPS1 to STP (Module 1)

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width	Excavation Depth
MPS1 to Module	42	0.9	12.60	0.925	0.9126	1.425	2.075

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.	
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.							
i	900 mm dia	m	42.00				42.00	
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.							
	All types of Soil							
a)	Upto 1.5 m	Cum	1.00	33	1.43	1.50	70.55	
b)	From 1.5 m to 3.0 m	Cum	1.00	33	1.43	0.58	27.05	
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.							
		Cum		97.60		29.24	68.36	
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:							
	ii) M-20	Cum					100.00	
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**							
		Kg					1400.00	
6	Centring and shuttering including strutting,propping etc. and removal of form for.							
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					150.00	
7	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	33.00	1.43	0.15	7.055	
8	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.							
		Cum	1	33.00	0.67		29.24	

Encasement Width
1.525

SEWERAGE SYSTEM FOR GAYA CITY

COST ESTIMATE- Outlet Collection Chamber (900 dia) IPS6 PM

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in **foundation trenches** including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	26.99	205.20	5538
b)	From 1.5 m to 3.0 m	Cum	26.99	231.30	6242
c)	From 3.0 m to 4.5 m	Cum	6.85	257.40	1764
	BSR-BCD-14-Item 2.8.1; Pg-81 & 2.27.1; Pg.-84				
2	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock (Blasting Prohibited)				
a)	From 6 m to 7.5 m				
b)	From 7.5 m to 9.0 m				
c)	From 9.0 m to 10.5 m				
	BSR-BCD-14-Item 2.9.1 and 2.9.3 pg 82, 2.27.2 pg 84				
	Hard rock (blasting prohibited)				
a)	From 6 m to 7.5 m				
b)	From 7.5 m to 9.0 m				
c)	From 9.0 m to 10.5 m				
	BSR-BCD-14-Item 2.9.1 and 2.9.3 pg 82, 2.27.2 pg 84				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	26.19	66.40	1739
	BSR-BCD-14-Item 2.26; Pg-84				
4	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	34.64	270.30	9362
	Rate Analysis : Removal of Unserviceable soil with Disposal				
5	**PCC:** Providing and laying in position cement concrete of specified grade exluding the cost of centring and shuttering-all work upto plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	12.43	3323.10	41310
	BSR-BCD-14; Item 4.1.3; Pg-88				
6	**RCC:** Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength andadmixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-incharge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work upto plinth level:				
	RCC Grade M -30	Cum	17.06	4130.20	70469
	BSR-BCD-14; Item-5.33.1 + Item- 5.34.1, Pg-97				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.36	72200.00	98550
	BSR-BCD-14; Item-5.22.7, Pg-95				
8	**Centering & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.02	166.70	670
	BSR - BCD-14- Item- 5.9.1, Pg-92				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	69.14	248.10	17154
	BSR - BCD-14- Item- 5.9.2, Pg-92				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	7.49	275.60	2064
	BSR - BCD-14- Item- 5.9.3, Pg-92				
9	Providing orange colour **safety foot rest of minimum 6 mm thick plastic encapsulated** as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm	each	3.00	201.70	605
	BSR-BCD-14; Item-19.16; Pg-211				
				Sub Total A	**255467**
10	**Carriage of Material**				
	Sand	MT	3.20	237	758.40
	Aggregate	MT	6.49	814	5282.86
	Bricks	MT	0.00	237	0.00
				Sub Total B	**6041.00**
	Total Cost (A+B)				**261508.00**

SEWERAGE SYSTEM FOR GAYA CITY
MEASUREMENT SHEET- OUTLET COLLECTION CHAMBER (900 DIA)

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	Upto 1.5 m		4.50	4.00	1.50	26.99	Cum
b)	From 1.5 m to 3.0 m		4.50	4.00	1.50	26.99	Cum
c)	From 3.0 m to 4.5 m		4.50	4.00	0.38	6.85	Cum
2	Refilling					26.19	Cum
3	Disposal		3.60	3.10	3.28	36.59	
	Deduct the corner	-1	1.00	1.00	3.28	-3.28	Cum
	PCC					1.33	Cum
	Total					**34.64**	Cum
4	PCC: M15 footing		3.90	3.40	0.10	1.33	Cum
	Deduct the corner	-1	1.00	1.00	0.10	-0.10	Cum
	PCC filling		3.00	2.50	2.58	19.34	Cum
	Deduct the corner	-1	1.00	1.00	2.58	-2.58	Cum
	Deduct pipe volume	-1	3.43	0.50		-1.72	Cum
	Deduct the Channel	-1	3.00	0.80	1.60	-3.84	Cum
	Total					**12.43**	Cum
5	RCC Grade M -20						
	Footing (Base slab)		3.60	3.10	0.30	3.35	Cum
	Deduct the corner	-1	1.00	1.00	0.30	-0.30	Cum
	Walls		11.60	0.30	2.98	10.37	Cum
	RCC Slab		3.60	3.10	0.30	3.35	Cum
	Deduct the corner	-1	1.00	1.00	0.30	0.30	Cum
	Grand Total					**17.06**	Cum
6	**Shuttering**						
	Footing (Base slab)		13.40		0.30	4.02	Sqm
	Walls	2	11.60		2.98	69.14	Sqm
	RCC Slab		3.00	2.50		7.49	Sqm
	Grand Total					**80.65**	Sqm
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					4.02	Sqm
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					69.14	Sqm
	Suspended floors, roofs, landings, balconies and access platform.					7.49	Sqm
7	Reinforcement- Fe 500 TMT					**1.4**	MT
8	MS/CI foot rests	3				**3.00**	Nos.

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Summary - Collection System in GMC Area

Cost in Rs. Lakh

Sr. No.	Description	Estimated Cost	Carriage Cost	Total Cost
	Collection System			
1	Sewage Collection System for South	3521.88	59.34	3581.22
2	Sewage Collection System for Central	2564.64	41.75	2606.39
3	Sewage Collection System for North	3306.33	54.98	3361.31
	Total for Collection System	9392.85	156.06	9548.91

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - COLLECTION SYSTEM FOR GAYA CENTRAL

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	**Clearing jungle** including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	Sqm	3000.00	5.80	17400
	SOR-BCD-20; It.-2.32; Pg.-96				
B)	**EXCAVATION AND REFILLING**				
2	Earthwork in excavation in foundation trenches or drains(not exceeding 1.5 m in width or 10 sq.m. on plan)including dressing of sides and ramming of bottoms, lift upto 1.5 m. including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	Up to 1.5 m	Cum	63330.00	360.00	22798800.00
b)	From 1.5 m to 3.0 m	Cum	16951.00	406.30	6887191.00
c)	From 3.0 m to 4.5 m	Cum	3980.00	452.60	1801348.00
d)	From 4.5 m to 6 m	Cum	738.00	498.90	368188.00
e)	From 6 m to 7.5 m	Cum	224.00	545.20	122125.00
f)	From 7.5 m to 9 m	Cum	1.00	591.50	592.00
	SOR-BCD-20; It.-2..8.1; Pg.93- and 2.27.1 Pg-96				
3	Excavation work in foundation trenches or drains not exceeding 1.5 m in width or 10 sq.m on plan including dressing of sides and ramming of bottoms lifts upto 1.5 m, including getting cut the excavated soil and disposal of surplus exacavated soils as directed, within a lead of 50 m.				
I)	**Ordinary Rock**				
a)	From 4.5m to 6 m	Cum	36.90	651.70	24047.73
b)	From 6m to 7.5 m	Cum	11.20	734.80	8229.76
c)	From 7.5 m to 9 m	Cum	0.50	817.90	408.95
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II)	**Hard Rock (Blasting Prohibited)**				
a)	From 4.5m to 6m	Cum	36.90	1168.10	43102.89
b)	From 6m to 7.5 m	Cum	11.20	1251.20	14013.44
c)	From 7.5 m to 9 m	Cum	0.50	1334.30	667.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering for all lifts and leads.	Cum	71496.00	116.50	8329284.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	15000.00	102.60	1539000.00
	BSR-BCD-18-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
6	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete including loading and unloading and transportation charges and as per direction of engineer in charge.	Cum	21101.00	241.00	5085341.00
	Rate analysis				
C)	**PIPE MATERIAL**				
I)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP3 class** (with s/s ends IS: 458 - 1988 (amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.				
a)	200 mm internal diameter	M	39906.00	636.51	25400722.72
b)	600 mm internal diameter	M	233.00	3640.04	848129.70
c)	700 mm internal diameter	M	17.00	4466.30	75927.08
d)	800 mm internal diameter	M	721.00	5109.06	3683629.02
e)	1000 mm internal diameter	M	114.00	7006.57	798748.91

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
	SOR-RUIDP-17; Item-17.19 to 17.19.19., and Item 17.21 to 17.21.2.19 Pg.-66/67/68 and rate analysis				
II)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP4 class** (with s/s ends IS: 458 - 2003(amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.				
a)	200 mm internal diameter	M	123.00	677.51	83334.21
b)	250 mm internal diameter	M	348.00	947.89	329866.54
c)	300 mm internal diameter	M	167.00	1238.77	206874.73
d)	350 mm internal diameter	M	191.00	1865.65	356339.01
e)	400 mm internal diameter	M	741.00	2128.03	1576868.56
f)	450 mm internal diameter	M	333.00	2590.41	862605.27
g)	600 mm internal diameter	M	96.00	3960.04	380164.00
h)	700 mm internal diameter	M	14.00	4906.30	68688.18
i)	800 mm internal diameter	M	355.00	5429.06	1927314.70
j)	1000 mm internal diameter	M	630.00	7416.57	4672438.71
	SOR-RUIDP-17; Item-17.18 to 17.18.19., and Item 17.21 to 17.21.2.19 Pg.-68, 65 and rate analysis				
7	Property connection (House connection)				
	Providing at site, lowering and laying tranches, aligning & jointing of PVC-U pipes (SN 8) as per IS 15328 (amended up to date) and as per specifications with rubber rings with socket and spigot joint, (EPDM/SBR) for all depths for pipe length as per drawing and specification including hydraulic field testing (including the cost and conveyance of water to site for testing) and commissioning etc. complete as directed by Engineer.				
a)	110 mm dia	M	38052.00	244.00	9284688.00
	SOR-RUIDP-17; Item-17.25.1 Page 70				
8	Providing and placing in position precast **RCC in vertical post of** size 40x90x1500 mm depth **at each House service connection** in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centering complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	Cum	14.00	6675.00	93450.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48				
D)	**MANHOLES**				
9	Constructing **brick masonry circular type manhole Type "A" with 0.91 m internal dia** at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer Incharge : .91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out with sewer bricks confirming to IS: 4885 etc. as per drawing and as directed by Engineer.				
	For Sewer Diameter - up to 400 mm dia				
a)	Upto 1.23 m depth to invert	No.	520.00	11403.94	5930051.09
b)	Upto 1.50 m depth to invert	No.	804.00	13120.27	10548699.00
c)	Upto 1.65 m depth to invert	No.	260.00	14484.59	3765993.00

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
10	Constructing **brick masonry circular manhole** Type "B" **1.22 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement :4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, 1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering , refilling,all complete.Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out with sewer bricks confirming to IS:4885 all complete as per standard drawing and as directed by Engineer Incharge.				
	For Sewer Diameter - upto 700 mm dia				
a)	Upto 1.68m depth to invert	No.	51.00	18358.94	936306.00
b)	Upto 2.00 m depth to invert	No.	319.00	21183.22	6757449.00
c)	Upto 2.30 m depth to invert	No.	175.00	23846.04	4173058.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing **brick masonry circular manhole Type "C" 1.52 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, 2.30 m deep with SFRC Cover and frame (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out :with sewer bricks conforming to IS:4885 all complete as per standard drawing and as directed by Engineer Incharge.				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-295 & 296 +rate analysis				
	For Sewer Diameter - upto 800 mm dia				
a)	Upto 2.65 m depth to invert	No.	117.00	46826.65	5478718.00
b)	Upto 3.00 m depth to invert	No.	100.00	53565.50	5356550.00
c)	Upto 3.50 m depth to invert	No.	79.00	63330.09	5003077.00
d)	Upto 4.00 m depth to invert	No.	35.00	73094.68	2558314.00
e)	Upto 4.25 m depth to invert	No.	13.00	77976.98	1013701.00
f)	Upto 4.50 m depth to invert	No.	15.00	82618.37	1239276.00
a)	Upto 5.00 m depth to invert	No.	26.00	92382.96	2401957.00
g)	Upto 5.50 m depth to invert	No.	12.00	102147.55	1225771.00
h)	Upto 6.00 m depth to invert	No.	4.00	111671.24	446685.00
i)	Upto 6.50 m depth to invert	No.	3.00	121435.83	364307.00
j)	Upto 7.00 m depth to invert	No.	8.00	131200.42	1049603.00
k)	Upto 7.50 m depth to invert	No.	4.00	140724.11	562896.00
l)	Upto 8.00 m depth to invert	No.	7.00	150488.70	1053421.00

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
12	Construction of **RCC Circular Manhole** complete cylindrical in shape or corbelling in shape at top, with cement concrete in sulphur resistant cement for M20, in foundation using RCC M20 and vertical wall in RCC M20 of approved quality and benching with 1 :12 slope in the concrete towards the central drain, Internal lining with high alumina cement (25 mm thick) with 1:3 (cement: sand) ratio,finish smooth and fixing of pipes in PCC M15 including supplying and fixing SFRC manhole frame and cover. Supplying and fixing of CI foot steps as per IS 5455 coated with plastic staggered at 30cms apart as directed, with watering, curing, barricading, danger lighting, excavation, refilling, disposal of surplus earth, shoring, strutting as per drawing with all lead and lift for various depths as noted below including supply, transportation, fabricating and placing of reinforcement (TMT Fe 500 steel bar) as per specifications, drawing etc complete and as directed by Engineer.				
	For Sewer Dia 1000 mm to 1100 mm				
a)	Upto 2.5 m depth to invert	No.	1.00	74297.28	74297.28
b)	Upto 3 m depth to invert	No.	3.00	91890.55	275671.66
c)	Upto3.5 m depth to invert	No.	10.00	95277.79	952777.92
d)	Upto4 m depth to invert	No.	10.00	100604.95	1006049.47
e)	Upto 4.5 m depth to invert	No.	2.00	111037.58	222075.15
f)	Upto 5.5m depth to invert	No.	1.00	132487.77	132487.77
a)	Upto 6 m depth to invert	No.	2.00	143056.08	286112.17
g)	Upto 6.5 m depth to invert	No.	1.00	153941.29	153941.29
h)	Upto 7.0 m depth to invert	No.	1.00	164777.64	164777.64
	Rate Analysis				
E)	**Bedding**				
13	**Bedding**	Cum	8486.00	805.00	6831230.00
	Rate Analysis				
F)	**TIMBERING AND BARRACADING**				
14	**Close timberin**g in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):				
a)	Depth not exceeding 1.5 m	Sqm	83958.00	119.40	10024585.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	Sqm	34533.00	124.60	4302812.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	Sqm	8578.00	126.40	1084259.00
d)	Depth more than 4.5 m and upto 6.0 m	Sqm	2259.00	128.20	289604.00
e)	Depth more than 6.0 m and upto 7.5 m	Sqm	806.00	130.00	104780.00
f)	Depth more than 7.5 m and upto 9.0 m	Sqm	39.00	131.80	5140.00
	BSR-BCD-20; Item-2.16, Pg-94				
15	Extra for **planking, strutting and packing** materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	Sqm	1301.73	1593.10	2073786.00
	BSR-BCD-18; Item-2.19, Pg-95				
16	Open timbering in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):				
a)	Depth not exceeding 1.5 m	Sqm	4942.50	61.40	303470.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	Sqm	2595.50	65.30	169486.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	Sqm	631.90	71.40	45118.00
	BSR-BCD-20; Item-2.20, Pg-95				
17	Extra for planking, strutting and packing materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	Sqm	13.02	817.90	10647.00
	BSR-BCD-20; Item-2.23, Pg-95				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
18	Providing and fixing Barricading at site of work for restricting the general public using 80-100 mm dia Wooden Ballies as vertical post with average spacing of 1.80 meter between two vertical posts, having height at least 1.5 m above road/ ground level and at least 30-45 cm below road/ ground level by making suitable size hole in road/ ground, providing and fixing two rows of 80-100 mm Wooden Ballies as horizontal members with jute russies. Both vertical and horizontal members shall be painted in red and white colour strips as per approved pattern as and when it becomes shabby but at least after every alternate shifting at new location. After shifting/ removal of barricading holes shall be filled up properly and site is to be cleared in all respect. (Note: measurement is to be done in linear basis.	M	92542.00	84.00	7773528.00
	RUIDP SOR 17 Item-4.26, Pg-13				
G)	**ROAD RESTORATION AND DISMENTLING WORKS**				
19	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	1308.91	342.00	447646.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
20	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	5966.85	1520.00	9069617.00
	RCD/SOR-18; Item-2.6; Pg-29				
21	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sq m	742.72	84.50	62759.84
	BSR-BCD-20; Item-15.43.1, Pg-225				
	Cement concrete road Restoration				
22	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	1687.20	10.00	16872.00
	BSR-BCD-20; Item-2.39, Pg-97				
23	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	1406.00	116.50	163799.00
	BSR-BCD-20; Item-2.40, Pg-97				
24	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	Cum	5967.00	4461.00	26618787.00

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
	Restoration of WMM Road				
	RCD/SOR-18; Item-6.2; Pg-138				
25	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	263.00	637	167531.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
26	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	158.00	888	140304.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	Reconstruction of Bituminous Asphalt Roads				
27	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	Cum			
	Grading II: 100 mm thick	Cum	216.00	904.00	195264.00
	Grading III: 100 mm thick	Cum	216.00	949.00	204984.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
28	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	2618.00	30.30	79325.40
	BSR-RCD-18-Item 5.1, Pg-84				
29	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	2618.00	11.10	29059.80
	BSR-RCD-18-Item 5.2, Pg-84				
30	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	105.00	5406.00	567630.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
31	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	2618.00	246.00	644028.00
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
32	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	2618.00	128.00	335104.00
	SOR-RCD-GoB-18-Item 5.9 B I, Pg- 132				
33	**Demolishing stone rubble masonry** including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	Cum	625.00	385.70	241063.00
	In Cement Mortar	Cum	625.00	817.10	510688.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				
34	**Dismantling stone slab flooring** laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	Sqm	2082.00	88.70	184673.00
	BSR-BCD-20; Item-15.25, Pg-224				
35	**Demolishing Cement Concrete** including disposal of materials within 50 meter lead:				
	1:3:6 or richer mix	Cum	231.00	807.20	186463.00
	1:4:8 or leaner mix	Cum	231.00	498.80	115223.00
	BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222				
36	**Demolishing R.C.C.work** including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	Cum	463.00	1172.70	542960.00
	BSR-BCD-20; Item-15.3, Pg-224				
37	**Installation of laboratory** for testing various materials and concrete cubes required for the project components as specified in specifications and as directed by Engineer in charge etc complete	L.S.	1.00	500000.00	500000.00
	LS				
38	**Utility Shifting:** Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	Km	5.00	10511.00	52555.00
	Rate Analysis				
39	Providing **PVC-U pipes as per IS 15328 drop connection** externally for depth from 0.60 m and upto 1.0 m drop from branch sewer line to main sewer manhole or vise versa including inspection and cleaning eye, PVC-U drop pipe and bend encased around with cement concrete M15 with all form work, cutting holes in walls and making good with brick/ stone masonry work in cement sand mortar 1:4 plastered with cement sand mortar 1:3 with stiff cement mortar 1:1 around PVC-U pipe in brick masonry wall, making required channels complete as per standard design and specifications and/ or as the directed of the Engineer:				
A)	315 mm nominal dia				
a)	For 0.6 m to 1.0 m drop	No.	164.00	27700.00	4542800.00
b)	Upto 1.5 m drop	No.	83.00	29200.00	2423600.00
c)	upto 2 m drop	No.	63.00	30700.00	1934100.00
d)	upto 2.5 m drop	No.	33.00	32200.00	1062600.00
e)	upto 3.0 m drop	No.	12.00	33700.00	404400.00
f)	upto 3.5 m drop	No.	12.00	35200.00	422400.00
g)	upto 4.0 m drop	No.	5.00	36700.00	183500.00
h)	upto 4.5 m drop	No.	1.00	38200.00	38200.00
i)	upto 5.0 m drop	No.	3.00	39700.00	119100.00
j)	upto 5.5 m drop	No.	2.00	41200.00	82400.00
k)	upto 6.0 m drop	No.	2.00	42700.00	85400.00
l)	upto 6.5 m drop	No.	4.00	44200.00	176800.00
	SOR-RUIDP-17; Item-17.66.1 to 17.66.5, and Item 17.67.1 to 17.67.5 Pg.-89				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by **trenchless method** adopting any suitable technology below ground at required depth including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipment for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit upto 3 metre depth with proper protection at the three sides, providing and casting of MS cutting edges for front shield and constructing thrust bed at designed level as directed by the Engineer, crane for handling of pipes, and any other machinery, tool & tackles required, complete in all respect as per specification and the direction of the Engineer.				
	SOR-RUIDP-17; Item-17.81 to 17.81.5.Pg.-94				
	In all types of soils				
a)	200 mm internal diameter	M	1053.00	7180.00	7560540.00
b)	250 mm internal diameter	M	10.00	7420.00	74200.00
c)	300 mm internal diameter	M	10.00	10600.00	106000.00
d)	350 mm internal diameter	M	10.0	12150.00	121500.00
e)	400 mm internal diameter	M	19.00	13700.00	260300.00
f)	450 mm internal diameter	M	10.00	15400.00	154000.00
41	Providing, laying and jointing RCC NP4 pipe with cement mortar joints by trenchless method adopting any suitable technology below ground at required depth under running traffic condition as per the direction of NHAI including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipment for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit (upto 3 meter depth) with proper protection at the three sides, providing and casting of MS cutting edges for front shield and constructing thrust bed at designed level as directed by the Engineer, necessary de-watering and providing concrete foundations at the base of the Drive pit, crane for handling of pipes, and any other machinery, tools & tackles required, construction of temporary works as per requirement and as approved by NH authorities complete in all respect for the road crossing at necessary depth (all depths) with all lead and lifts, as per specification and the direction of the Engineer.				
	SOR-RUIDP-17; Item-17.79 to 17.79.2.10,Pg.-92				
	In all types of soils				
a)	600 mm internal diameter	M	10.00	18200.00	182000.00
b)	700 mm internal diameter	M	10.00	19100.00	191000.00
c)	800 mm internal diameter	M	28.00	22800.00	638400.00
d)	1000 mm internal diameter	M	20.00	24600.00	492000.00
42	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in **trenchless technology**, with proper protection at three sides with shoring sheets/ wooden planks and ISMB's, maintaining during pushing/ puling of pipe, back filling, necessary de-watering including all machinery, tools, and tackles required as per specification and the direction of the Engineer				
	SOR-RUIDP-17; Item-17.82,Pg.-92	Nos			
	In all types of soils				
a)	In all types of soils	per pit per metre	12	24200	290400
				Sub Total A	**256463972**
43	**Carriage of Material**				
a)	Sand	t.km	67818.00	9.4	637489
b)	Aggregate	t.km	280284.00	9.4	2634670
c)	Bricks	t.km	96010.00	9.4	902494
				Sub Total B	**4174653.00**
	Total Cost (A+B)				**260638625**

Rate Analysis of High Alumina Cement Lining			
A	High Alumina Cement: for MH	For 25 mm thk, per m2	
1	Area (unit)	m^2	1.0
2	Thickness	mm	25.0
3	Volume	m^3	0.025
4	Ratio (volume) (C:S)	1:	3
5	Cement volume (per m2 lining)	m^3	0.00625
6	Sand volume (per m2 lining)	m^3	0.01875
7	Cement Unit weight (kg /m3)	kg/m^3	1440
8	Sand Unit weight (kg /m3)	kg/m^3	1840
9	Cement weight (kg)	kg	9.0
10	Sand weight (kg)	kg	34.5
11	Cement basic rate (per kg)	INR/kg	27.3
12	Sand basic rate (per kg)	INR/kg	0.087
13	Total INR (per m2)	INR/m^2	248.71
14	Carriage (0%)	0.0	0.00
15	Labor (20%)	20.0	49.74
	Sub total		298.46
16	Contractor's profit	10.0	29.85
17	Overhead	5.0	14.92
	Total INR (per m2)	INR/m^2	**343.22**

B	High Alumina Cement: for Pipes	For 12 mm thk, per m2	
1	Area (unit)	m^2	1.0
2	Thickness	mm	12.0
3	Volume	m^3	0.012
4	Ratio (volume) (C:S)	1:	3
5	Cement volume (per m^2 lining)	m^3	0.00300
6	Sand volume (per m2 lining)	m^3	0.00900
7	Cement Unit weight (kg /m^3)	kg/m^3	1440
8	Sand Unit weight (kg /m3)	kg/m^3	1840
9	Cement weight (kg)	kg	4.3
10	Sand weight (kg)	kg	16.6
11	Cement basic rate (per kg)	INR/kg	27.3
12	Sand basic rate (per kg)	INR/kg	0.09
13	Total INR (per m^2)	INR/m^2	119.38
14	Carriage (0%)	0.0	0.00
15	Labor (20%)	20.0	23.88
	Sub total		143.26
16	Contractor's profit	10.0	14.33
17	Overhead	5.0	7.16
	Total INR (per m^2)	INR/m^2	**164.75**

	Dia wise lining cost	For 12 mm thk, per running meter pipe	
	Pipe ID (mm)	Area (m^2) per RM	Lining cost (INR)
1	200	0.63	103.51
2	250	0.79	129.39
3	300	0.94	155.27
4	350	1.10	181.15
5	400	1.26	207.03
6	450	1.41	232.91
7	500	1.57	258.78
8	550	1.73	284.66
9	600	1.88	310.54
10	650	2.04	336.42
11	700	2.20	362.30
12	750	2.36	388.18
13	800	2.51	414.06
14	900	2.83	465.81
15	1000	3.14	517.57
16	1100	3.46	569.33
17	1200	3.77	621.08
18	1300	4.08	672.84
19	1400	4.40	724.60
20	1500	4.71	776.35
21	1600	5.03	828.11
22	1700	5.34	879.87
23	1800	5.65	931.62
24	1900	5.97	983.38
25	2000	6.28	1035.14

Rate Analysis for RCC Manhole: Cost Summary

2	1000/1100	2.0	64264.30
		2.5	74297.28
		3.0	91890.55
		3.5	95277.79
		4.0	100604.95
		4.5	111037.58
		5.0	121787.11
		5.5	132487.77
		6.0	143056.08
		6.5	153941.29
		7.0	164777.64
		7.5	174861.35
		8.0	185261.95
		8.5	202605.29

Rate Analysis for RCC Manhole

DATA

Out going sewer outer dia from manhole in 'mm'	**1280**	**1000**	**1200**	**1400**
Internal dia of manhole in 'mm'	**1750**	**1750**	**2000**	**2200**
Wall Width in 'm'	**0.6**			
RCC M 20 Manholes - Open excavation Type				

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
Sr.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.10	6.07		360.60	2187.76
						14.34	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	1.80	1.61			
		1	0.15	0.50	0.47	0.04			
						3.11	Cum.	4902.30	15223.75
5	**Reinforcement Steel**	1	-	-	-	**342.00**	Kg	76.00	25992.00
6	**Shuttering**								
	For foundation	1.00	7.07		0.35	2.47			
	For RCC - wall	2.00	5.97		1.80	21.49			
	For coverslab	1.00	2.41			2.41			
	Total					**26.37**	Sqm.	186.30	4912.32
7	**CI Steps-5 Kg**	2	-	-	-	**2.00**	No's	240.9	481.80
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	9.40			9.40	Cum	262.5	2467.78
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
11	**Internal Lining by High Alumina Cement (1:3)**	2.60				Sqm		343.22	**893.21**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		4.94				Cum	103.3	**510.21**

	Total Cost								**64264.30**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
Sr no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		0.10	0.55		401.60	221.50
						17.10	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	2.30	2.06			
		1	0.15	0.50	0.97	0.07			
						3.59	Cum.	4902.30	17602.23
5	**Reinforcement Steel**	1	-	-	-	**395.00**	Kg	76.00	30020.00
6	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.30	27.46			
	For coverslab	1.00	2.41			2.41			
	Total					**31.98**	Sqm.	186.30	5958.50
7	**CI Steps-5 Kg**	4	-	-	-	**4.00**	No's	240.9	963.60
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	10.51			10.51	Cum	262.5	2758.48
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
11	**Internal Lining by High Alumina Cement (1:3)**	4.41				Sqm		343.22	**1513.49**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		6.59				Cum	103.3	**680.69**
	Total Cost								**74297.28**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		0.60	3.31		401.60	1329.00
						19.86	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		0.60	3.31		126.4	418.29

						3.31	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	3.30		0.20	0.66			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	2.80	2.51			
		1	0.15	0.50	1.47	0.11			
						4.62	Cum.	4902.30	22647.33
6	**Reinforcement Steel**	1	-	-	-	**508.00**	Kg	76	38608.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.80	33.43			
	For coverslab	1.00	2.41			2.41			
	Total					**37.95**	Sqm.	186.30	7070.53
8	**CI Steps-5 Kg**	5	-	-	-	**5.00**	No's	240.9	1204.50
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	11.62			11.62	Cum	262.5	3049.17
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	6.22				Sqm		343.22	**2133.77**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		8.24				Cum	103.3	**851.17**
	Total Cost								**91890.55**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.10	6.07		401.60	2436.51
						22.61	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.10	6.07		126.4	766.87
						6.07	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			

						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	3.30	2.95			
		1	0.15	0.50	1.97	0.15			
						4.56	Cum.	4902.30	22359.20
6	**Reinforcement Steel**	1	-	-	-	**502.00**	Kg	76	38152.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.30	39.40			
	For coverslab	1.00	2.41			2.41			
	Total					**43.92**	Sqm.	186.30	8182.56
8	**CI Steps-5 Kg**	7	-	-	-	**7.00**	No's	240.9	1686.30
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	12.72			12.72	Cum	262.5	3339.87
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	8.02				Sqm		343.22	**2754.06**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.89				Cum	103.3	**1021.64**
	Total Cost								**95277.79**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=4 m							4	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		0.10	0.55		442.60	244.11
						25.37	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		0.10	0.55		134.6	74.24
						8.82	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59

5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	2.25	2.01			
		1	0.15	0.50	2.72	0.20			
						4.72	Cum.	4902.30	23124.71
6	**Reinforcement Steel**	1	-	-	-	**519.00**	Kg	76.00	39444.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.25	26.86			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**43.74**	Sqm.	186.30	8148.84
8	**CI Steps-5 Kg**	9	-	-	-	**9.00**	No's	240.9	2168.10
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	15.44			15.44	Cum	262.5	4054.16
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	9.83				Sqm		343.22	**3374.34**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.93				Cum	103.3	**1025.43**
	Total Cost								**100604.95**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=4.5 m							4.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		0.60	3.31		442.60	1464.69
						28.13	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		0.60	3.31		134.6	445.43
						11.58	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	2.75	2.46			
		1	0.15	0.50	3.22	0.24			
						5.20	Cum.	4902.30	25503.19
6	**Reinforcement Steel**	1	-	-	-	**572.00**	Kg	76.00	43472.00

7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.75	32.83			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**49.71**	Sqm.	186.30	9260.87
8	**CI Steps-5 Kg**	10	-	-	-	**10.00**	No's	240.9	2409.00
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	16.55			16.55	Cum	262.5	4344.86
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	11.64				Sqm		343.22	**3994.62**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		11.58				Cum	103.3	**1195.90**
	Total Cost								**111037.58**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=5.0 m							5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.10	6.07		442.60	2685.26
						30.89	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.10	6.07		134.6	816.62
						14.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	3.25	2.91			
		1	0.15	0.50	3.72	0.28			
						5.69	Cum.	4902.30	27881.67
6	**Reinforcement Steel**	1	-	-	-	**626.00**	Kg	76.00	47576.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.25	38.80			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**55.68**	Sqm.	186.30	10372.89
8	**CI Steps-5 Kg**	12	-	-	-	**12.00**	No's	240.9	2890.80
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	17.66			17.66	Cum	262.5	4635.55

10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	13.45				Sqm		343.22	**4614.90**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		13.23				Cum	103.3	**1366.38**
	Total Cost								**121787.11**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=5.5 m							5.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	3661.71
	6.0m to 7.5m	1	5.52		0.10	0.55		483.60	266.73
						33.64	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	1113.57
	6m to 7.5m	1	5.52		0.10	0.55		142.8	78.76
						17.10	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	3.75	3.36			
		1	0.15	0.50	4.22	0.32			
						6.17	Cum.	4902.30	30260.16
6	**Reinforcement Steel**	1	-	-	-	**679.00**	Kg	76.00	51604.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.75	44.77			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**61.65**	Sqm.	186.30	11484.92
8	**CI Steps-5 Kg**	14	-	-	-	**14.00**	No's	240.9	3372.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	18.77			18.77	Cum	262.5	4926.25
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**

12	**Internal Lining by High Alumina Cement (1:3)**	15.25				Sqm		343.22	**5235.19**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.88				Cum	103.3	**1536.86**
	Total Cost								**132487.77**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=6.0 m							6	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	3661.71
	6.0m to 7.5m	1	5.52		0.60	3.31		483.60	1600.37
						36.40	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	1113.57
	6m to 7.5m	1	5.52		0.60	3.31		142.8	472.56
						19.86	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	4.25	3.81			
		1	0.15	0.50	4.72	0.35			
						6.66	Cum.	4902.30	32638.64
6	**Reinforcement Steel**	1	-	-	-	**732.00**	Kg	76.00	55632.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		4.25	50.74			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**67.62**	Sqm.	186.30	12596.95
8	**CI Steps-5 Kg**	15	-	-	-	**15.00**	No's	240.9	3613.50
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.87			19.87	Cum	262.5	5216.94
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	17.06				Sqm		343.22	**5855.47**

13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.53				Cum	103.3	**1707.34**
	Total Cost								**143056.08**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=6.5 m							6.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	3661.71
	6.0m to 7.5m	1	5.52		1.10	6.07		483.60	2934.00
						39.16	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	1113.57
	6m to 7.5m	1	5.52		1.10	6.07		142.8	866.37
						22.61	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	4.75	4.25			
		1	0.15	0.50	5.22	0.39			
						7.14	Cum.	4902.30	35017.12
6	**Reinforcement Steel**	1	-	-	-	**786.00**	Kg	76.00	59736.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		4.75	56.71			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**73.59**	Sqm.	186.30	13708.98
8	**CI Steps-5 Kg**	17	-	-	-	**17.00**	No's	240.9	4095.30
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.98			20.98	Cum	262.5	5507.64
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	18.87				Sqm		343.22	**6475.75**

13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		18.18				Cum	103.3	**1877.82**
	Total Cost								**153941.29**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=7.0 m							7	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	3661.71
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	4000.91
	7.5m to 9.0m	1	5.52		0.10	0.55		524.60	289.34
						41.92	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	1113.57
	6m to 7.5m	1	5.52		1.50	8.27		142.8	1181.41
	7.5m to 9.0m	1	5.52		0.10	0.55		151.00	83.28
						25.37	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	5.25	4.70			
		1	0.15	0.50	5.72	0.43			
						7.63	Cum.	4902.30	37395.60
6	**Reinforcement Steel**	1	-	-	-	**839.00**	Kg	76.00	63764.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		5.25	62.67			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**79.55**	Sqm.	186.30	14821.01
8	**CI Steps-5 Kg**	19	-	-	-	**19.00**	No's	240.9	4577.10
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.09			22.09	Cum	262.5	5798.33
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7096.03**

13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.83				Cum	103.3	**2048.29**
	Total Cost								**164777.64**
Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=7.5 m							7.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	3661.71
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	4000.91
	7.5m to 9.0m	1	5.52		0.60	3.31		524.60	1736.05
						44.68	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	1113.57
	6m to 7.5m	1	5.52		1.50	8.27		142.8	1181.41
	7.5m to 9.0m	1	5.52		0.60	3.31		151.00	499.70
						28.13	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	5.75	5.15			
		1	0.15	0.50	6.22	0.47			
						8.11	Cum.	4902.30	39774.09
6	**Reinforcement Steel**	1	-	-	-	**892.00**	Kg	76.00	67792.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		5.75	68.64			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**85.52**	Sqm.	186.30	15933.04
8	**CI Steps-5 Kg**	20	-	-	-	**20.00**	No's	240.9	4818.00
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	23.20			23.20	Cum	262.5	6089.03
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7096.03**

13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		21.48				Cum	103.3	**2218.77**
	Total Cost								**174861.35**
	DEPTH - D=8.0 m							8	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	3661.71
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	4000.91
	7.5m to 9.0m	1	5.52		1.10	6.07		524.60	3182.75
						47.43	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	1113.57
	6m to 7.5m	1	5.52		1.50	8.27		142.8	1181.41
	7.5m to 9.0m	1	5.52		1.10	6.07		151.00	916.12
						30.89	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	6.25	5.60			
		1	0.15	0.50	6.72	0.50			
						8.60	Cum.	4902.30	42152.57
6	**Reinforcement Steel**	1	-	-	-	**946.00**	Kg	76.00	71896.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		6.25	74.61			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**91.49**	Sqm.	186.30	17045.07
8	**CI Steps-5 Kg**	22	-	-	-	**22.00**	No's	240.9	5299.80
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	24.30			24.30	Cum	262.5	6379.72
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7096.03**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		23.13				Cum	103.3	**2389.25**

	Total Cost								**185261.95**
	DEPTH - D=8.5 m							8.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	2644.11
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	2983.31
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	3322.51
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	3661.71
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	4000.91
	7.5m to 9.0m	1	5.52		1.50	8.27		524.60	4340.11
	9m to 10.5m	1	5.52		1.65	9.10		565.60	5147.25
						58.74	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	1113.57
	6m to 7.5m	1	5.52		1.50	8.27		142.8	1181.41
	7.5m to 9.0m	1	5.52		1.50	8.27		151.00	1249.25
	9m to 10.5m	1	5.52		1.65	9.10		159.20	1448.80
						42.19	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	6274.12
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	6.75	6.04			
		1	0.15	0.50	7.22	0.54			
						9.08	Cum.	4902.30	44531.05
6	**Reinforcement Steel**	1	-	-	-	**999.00**	Kg	76.00	75924.00
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		6.75	80.58			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**97.46**	Sqm.	186.30	18157.10
8	**CI Steps-5 Kg**	24	-	-	-	**24.00**	No's	240.9	5781.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	24.86			24.86	Cum	262.5	6525.64
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7096.03**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		33.88				Cum	103.3	**3499.81**
	Total Cost								**202605.29**

RATE ANALYSIS FOR GRANULAR BEDDING

Sr. No.	Description	Unit	Rate in Rs.
1)	Cost of 20 mm aggregates	Cum	604.9
	Add Contractors Profit 10%		60.49
	Add Overhead Charges 10%		66.539
	BSR-BCD-18; Sr. No.-0295; Pg.-6/45 & BSR-BCD-18; Sr. No.-1.1; Pg.-77 & 79/ 118 & 120 ('@151.10/cum-loading & unloading & '@ 7.40-Haulage t.km (Unit wt. 2900 tonne.cum	Total	731.93
2)	Labour for laying Jointing	10%	805.12
		Say Rs.	**805.00**

Rate Analysis for Repairing water Supply Lines, Cabels etc.
(UTILITY SHIFTING)

Sr. No.	Description	No.	Qty.	Unit	Total Qty.	Rate in Rs.	Amount in Rs.
1	**REPAIRING THE DOF WATER SUPPLY PIPE LINES, ELECTRICAL CABLE UTILITY LINES DURING THE EXCAVATION & LAYING OF DRAINAGE PIPE ETC.**						
	Total No. of properties in 1.00 Km length in city Area Consider property connection at 30 mtr distance	1000/30		No.	33.00		
	i) Consider 10% comercial properties in 1.00 km	33 x 10%		No.	4.00		
	ii) Consider 90% Recidencial properties in 1.00 km	33 x 90%		No.	29.00		
1.1	**COST OF MATERIAL**						
	i) 20 mm dia. G.I. pipe (For Commercial)	4	2.5	Rmt	10.00	92.14	921.40
	ii) 15 mm dia. G.I. pipe (For Residential)	29	2.5	Rmt	72.50	71.67	5,196.08
	iii) 20 mm dia. G. I. Coupler	4	1	No.	4.00	81.90	327.60
	iv) 15 mm dia. G. I. Coupler	29	1	No.	29.00	62.36	1,808.44
	v) 20 mm dia. G. I. Union	4	1	No.	4.00	46.54	186.16
	vi) 15 mm dia. G. I. Union	29	1	No.	29.00	27.92	809.68
	Total cost of Material						**9,249.36**
	vii) Add 2 % Misc. Material charges						184.99
1.2	**COST OF LABOUR**						
	i) Plumber			No.	1.00	323.00	323.00
	ii) Helper			No.	1.00	254.00	254.00
	Total cost of Labour						**577.00**
1.3	**COST OF CABLE**						
	Consider 100 mtr cable replacement for 1.00 Km			LS			500.00
	Total cost of Cable						**500.00**
	TOTAL						**10,511.34**
						Say Rs.	**10,511.00**

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	t.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate	Amount	Reference
173	173	BSR-RCD 2018 Item 1.1, PG.No. 12
8.5	68	BSR-RCD 2018 Item 1.4, PG.No. 12

241	241

assumed soil density =

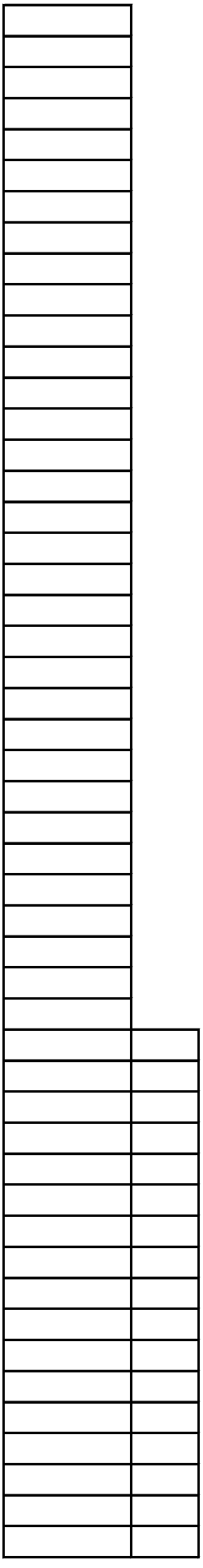
				DROP CALCULATION GAYA MID				
				Dia/Depth	**1**	**1.5**	**2**	**2.5**
				200	164	83	63	33
				250	-	-	-	-
				400				
	0.6	200		**600**				
	0.61	200		**800**				
	0.62	200		**1000**				
	0.62	200						
	0.62	200						
	0.63	200		200				
	0.63	200		Nos	164	83	63	33
	0.64	200						
	0.64	200						
	0.66	200						
	0.66	200						
	0.68	200						
	0.7	200						
	0.7	200						
	0.71	200						
	0.72	200						
	0.72	200						
	0.74	200						
	0.74	200						
	0.74	200						
	0.74	200						
	0.75	200						
	0.76	200						
	0.76	200						
	0.78	200						
	0.79	200						
	0.8	200						
	0.83	200						
	0.83	200						
	0.84	200						
	0.85	200						
	0.86	200						
	0.87	200						
	0.88	200						
	0.93	200						
	0.93	200						
	0.94	200						
	0.95	200						
	0.95	200						
	29.42							
	1.02	200						
	1.02	200						
	1.02	200						
	1.02	200						
	1.04	200						

	1.05	200						
	1.07	200						
	1.09	200						
	1.12	200						
	1.13	200						
	1.18	200						
	1.21	200						
	1.22	200						
	1.23	200						
	1.23	200						
	1.23	200						
	1.25	200						
	1.38	200						
	1.39	200						
	1.4	200						
	1.4	200						
	1.4	200						
	1.42	200						
	1.45	200						
	1.45	200						
	1.48	200						
	31.9							
	1.54	200						
	1.59	200						
	1.63	200						
	1.66	200						
	1.68	200						
	1.68	200						
	1.7	200						
	1.76	200						
	1.82	200						
	1.83	200						
	1.83	200						
	1.85	200						
	1.86	200						
	1.92	200						
	1.92	200						
	1.97	200						
	1.99	200						
	2	200						
	32.23							
	2.03	200						
	2.06	200						
	2.08	200						
	2.1	200						
	2.12	200						
	2.13	200						
	2.17	200						
	2.17	200						
	2.26	200						

	2.29	200						
	2.38	200						
	2.39	200						
	2.4	200						
	2.42	200						
	2.44	200						
	2.44	200						
	2.45	200						
	2.5	200						
	40.83							
	2.51	200						
	2.55	200						
	2.58	200						
	2.58	200						
	2.6	200						
	2.63	200						
	2.66	200						
	2.71	200						
	2.73	200						
	2.82	200						
	2.83	200						
	2.83	200						
	2.88	200						
	2.94	200						
	2.97	200						
	2.98	200						
	43.8							
	3.07	200						
	3.09	200						
	3.11	200						
	3.11	200						
	3.13	200						
	3.2	200						
	3.21	200						
	3.24	200						
	3.27	200						
	3.28	200						
	3.3	200						
	35.01							

3	3.5	4	4.5	5	5.5	6	6.5	7
12	12	5	0	3	2	2	4	0
-	-	-	-	-	-	-	-	-
			-	-	-	-	-	-
			-	-	-	-	-	-
			-	-	-	-	-	-
			-	-	-	-	-	-

12	12	5	0	3	2	2	4	0



	Drop	0.6 m to 1 m		1 to 1.5 m	
		200	0.16	200	0.16
		200	0.80	200	1.30
		200	0.72	200	1.46
		200	0.80	200	1.36
		200	0.62	200	1.03
		200	0.72	200	1.22
		200	0.82	200	1.08
383		200	0.74	200	1.04
		200	0.62	200	1.09
		200	0.80	200	1.08
		200	0.64	200	1.01
		200	0.75	200	1.44
		200	0.72	200	1.35
		200	0.90	200	1.03
		200	0.76	200	1.31
		200	0.79	200	1.16
		200	0.85	200	1.23
		200	0.67	200	1.47
		200	0.76	200	1.08
		200	0.62	200	1.43
		200	0.62	200	1.49
		200	0.72	200	1.21
		200	0.86	200	1.13
		200	0.97	200	1.11
		200	0.94	200	1.43
		200	0.82	200	1.24
		200	0.82	200	1.21
		200	0.60	200	1.42
		200	0.80	200	1.47
		200	0.90	200	1.34
		200	0.90	200	1.27
		200	0.82	200	1.16
		200	0.86	200	1.08
		200	0.71	200	1.04
		200	0.93	200	1.36
		200	0.60	200	1.47
		200	0.65	200	1.11
		200	0.64	200	1.42
		200	0.77	200	1.31
		200	0.90	200	1.07
		200	0.90	200	1.27
		200	0.90	200	1.35
		200	0.89	200	1.23
		200	0.63	200	1.17
		200	0.74	200	1.40
		200	0.73	200	1.14

200	0.94	200	1.45
200	0.68	200	1.21
200	0.97	200	1.26
200	0.77	200	1.39
200	0.66	200	1.18
200	0.87	200	1.17
200	0.60	200	1.32
200	0.65	200	1.43
200	0.63	200	1.38
200	0.81	200	1.28
200	0.78	200	1.10
200	0.75	200	1.06
200	0.75	200	1.10
200	0.62	200	1.40
200	0.71	200	1.40
200	0.98	200	1.20
200	0.82	200	1.45
200	0.90	200	1.15
200	0.84	200	1.42
200	0.78	200	1.46
200	0.74	200	1.05
200	0.62	200	1.07
200	0.80	200	1.45
200	0.62	200	1.05
200	0.80	200	1.37
200	0.98	200	1.15
200	0.63	200	1.11
200	0.80	200	1.34
200	0.61	200	1.27
200	0.70	200	1.01
200	0.76	200	1.30
200	0.61	200	1.45
200	0.93	200	1.02
200	0.82	200	1.20
200	0.64	200	1.08
200	0.85	200	1.08
200	0.81	200	1.18
200	0.62		
200	0.72		
200	0.93		
200	0.79		
200	0.66		
200	0.92		
200	0.98		
200	0.94		
200	0.71		
200	0.83		
200	0.89		
200	0.81		
200	0.96		

200	0.69
200	0.85
200	0.68
200	0.71
200	0.97
200	0.68
200	0.92
200	0.69
200	0.63
200	0.87
200	0.70
200	0.96
200	0.79
200	0.87
200	0.67
200	0.80
200	0.66
200	0.60
200	0.76
200	0.91
200	0.63
200	0.80
200	0.89
200	0.93
200	0.61
200	0.69
200	0.81
200	0.63
200	0.90
200	0.75
200	0.77
200	0.69
200	0.63
200	0.90
200	0.92
200	0.90
200	0.68
200	0.72
200	0.71
200	0.90
200	0.98
200	0.79
200	0.94
200	0.87
200	0.67
200	0.78
200	0.63
200	0.77
200	0.94
200	0.81

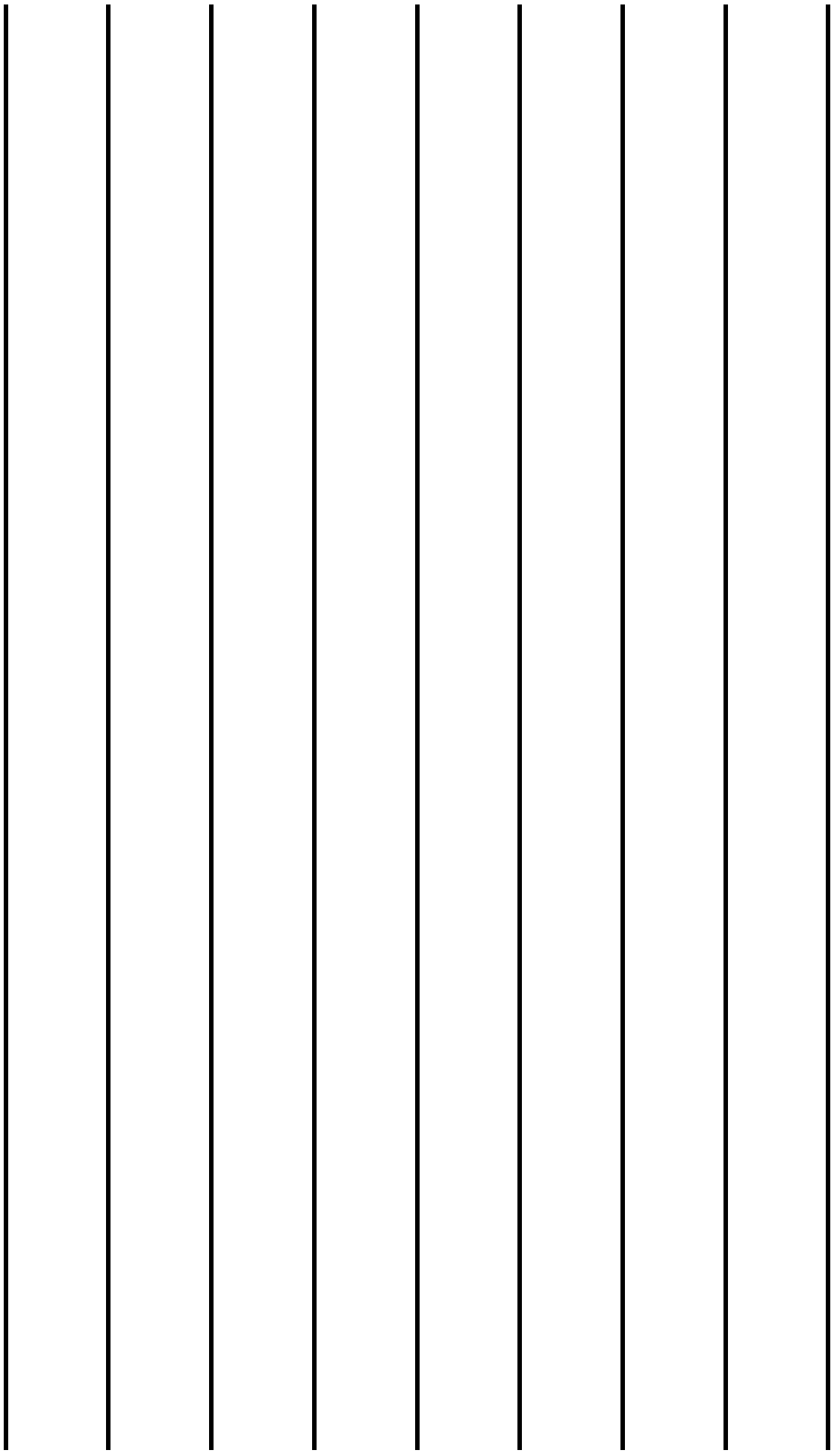
200	0.80
200	0.87
200	0.93
200	0.63
200	0.67
200	0.66
200	0.61
200	0.71
200	0.67
200	0.82
200	0.69
200	0.77
200	0.82
200	0.88
200	0.73
200	0.83
200	0.69
200	0.82

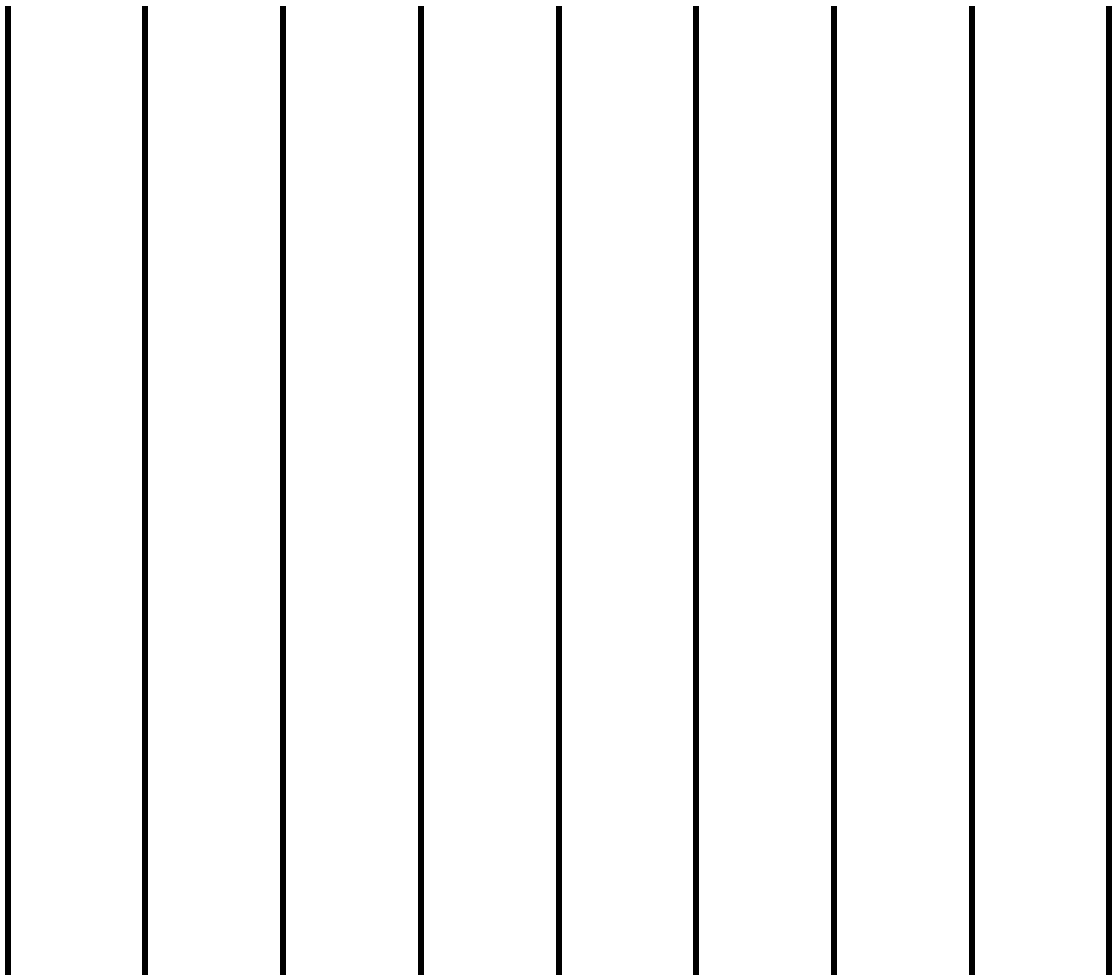
1.5 to 2 m	
200	0.156
200	1.774
200	1.505
200	1.594
200	1.708
200	1.849
200	1.836
200	1.688
200	1.707
200	1.987
200	1.732
200	1.983
200	1.78
200	1.645
200	1.574
200	1.678
200	1.622
200	1.711
200	1.621
200	1.756
200	1.551
200	1.657
200	1.875
200	1.975
200	1.582
200	1.823
200	1.948
200	1.619
200	1.762
200	1.524
200	1.731
200	1.612
200	1.885
200	1.603
200	1.914
200	1.792
200	1.698
200	1.731
200	1.714
200	1.763
200	1.902
200	1.544
200	1.928
200	1.677
200	1.647
200	1.958

2 to 2.5 m	
200	0.156
200	2.192
200	2.129
200	2.401
200	2.178
200	2.476
200	2.087
200	2.254
200	2.016
200	2.131
200	2.251
200	2.192
200	2.337
200	2.05
200	2.496
200	2.077
200	2.193
200	2.44
200	2.04
200	2.194
200	2.194
200	2.152
200	2.132
200	2.264
200	2.399
200	2.501
200	2.421
200	2.198
200	2.206
200	2.189
200	2.105
200	2.042
200	2.347

2.5 to 3 m	
200	0.156
200	2.731
200	2.92
200	2.972
200	2.978
200	2.59
200	2.745
200	2.689
200	2.864
200	2.774
200	2.661
200	2.85

200	1.619
200	1.579
200	1.767
200	1.873
200	1.891
200	1.65
200	1.675
200	1.746
200	1.735
200	1.553
200	1.62
200	1.771
200	1.765
200	1.771
200	1.532
200	1.639
200	1.653

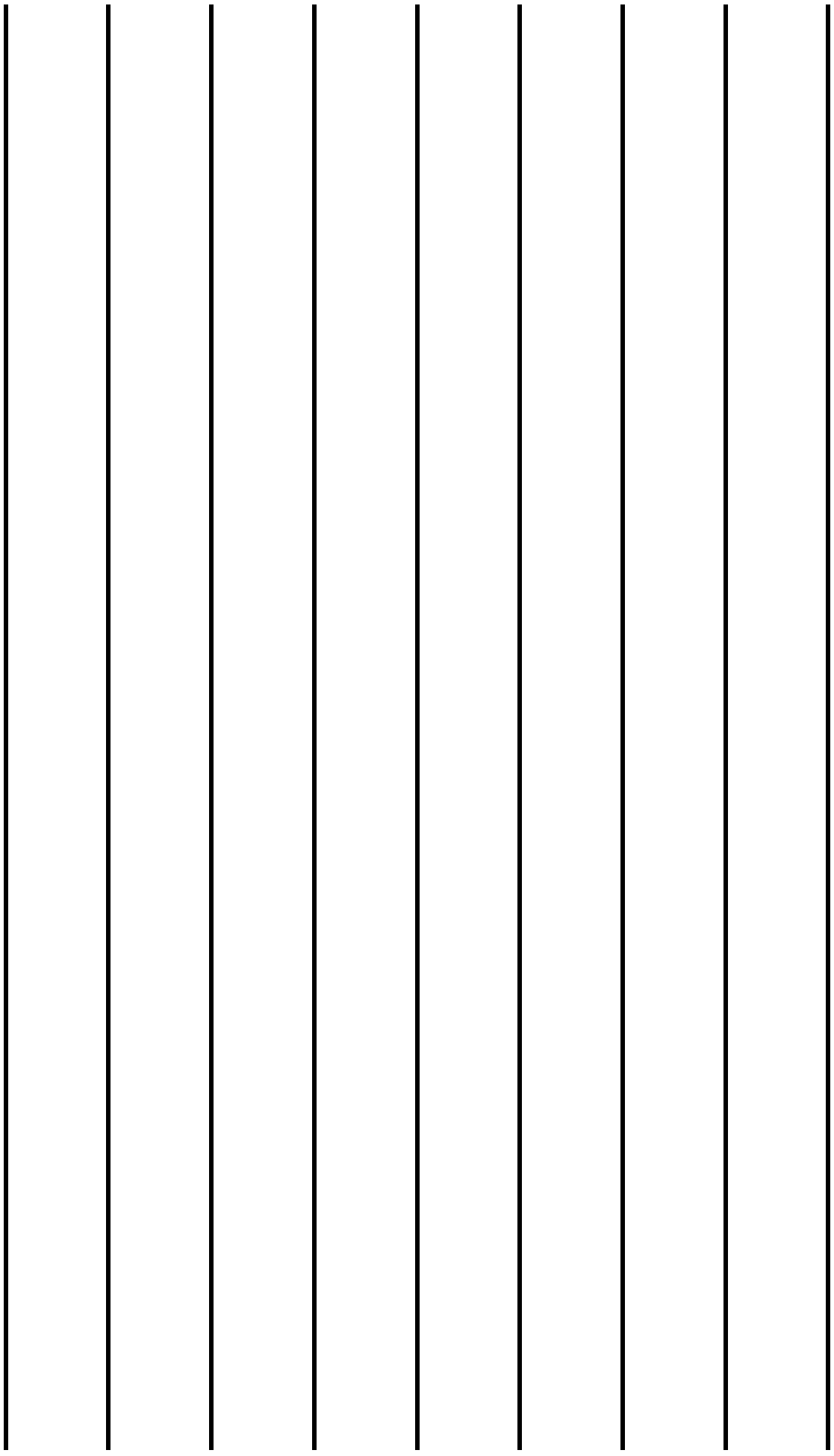


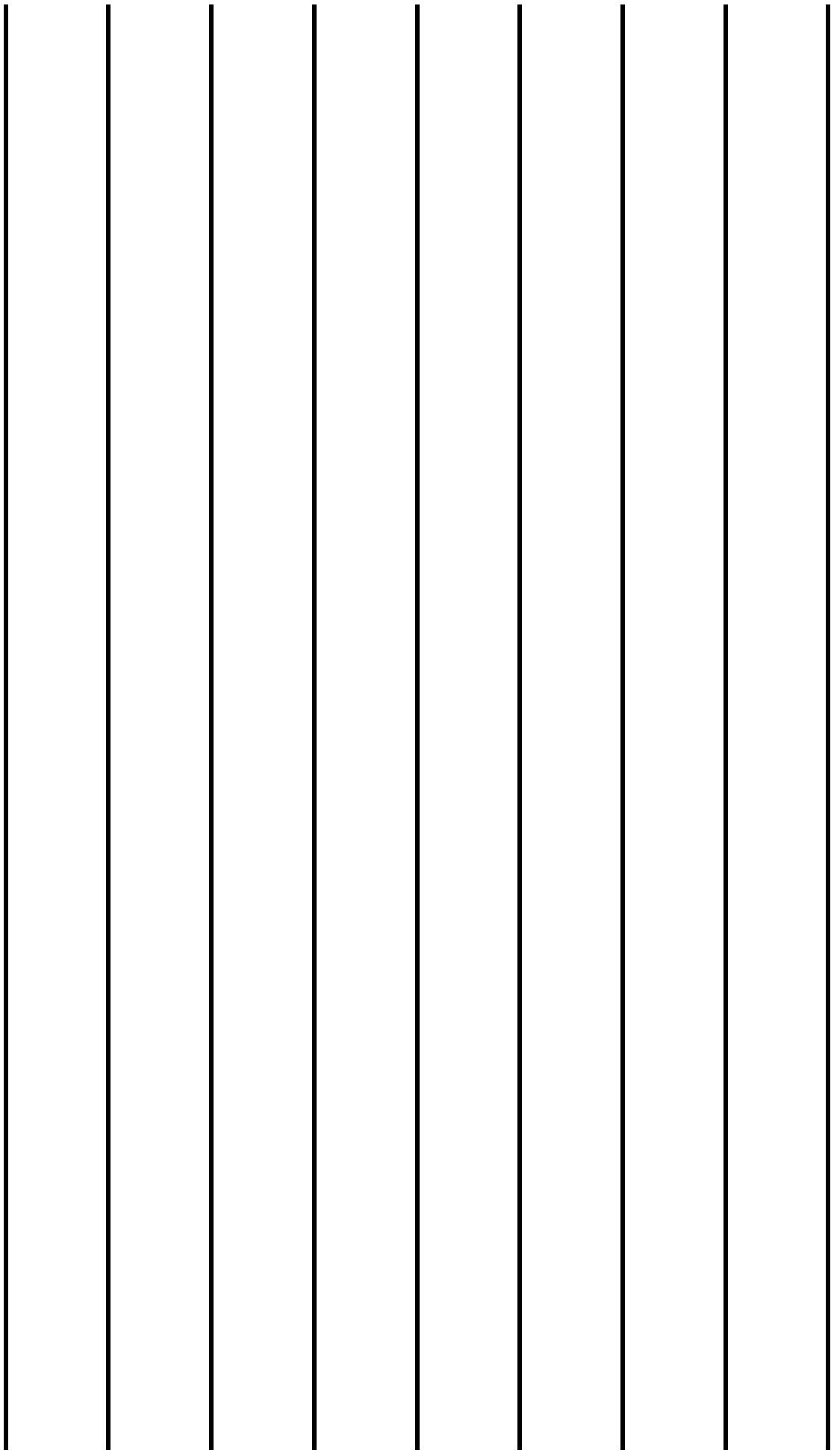


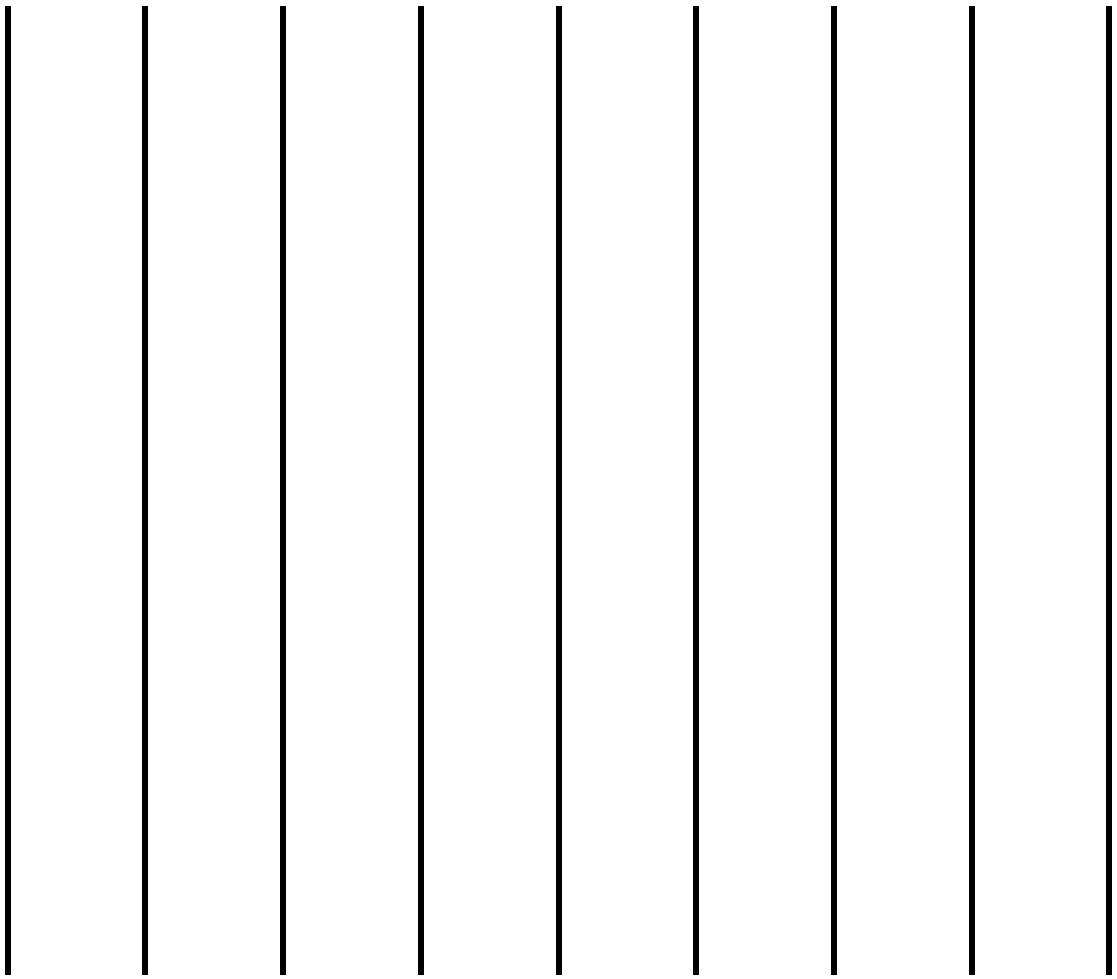
3 to 3.5 m	
200	0.156
200	3.02
200	3.162
200	3.05
200	3.211
200	3.358
200	3.359
200	3.188
200	3.197
200	3.431
200	3.309
200	3.27

3.5 to 4 m	
200	0.156
200	3.847
200	3.524
200	3.538
200	3.709

4 to 4.5 m	
0	0



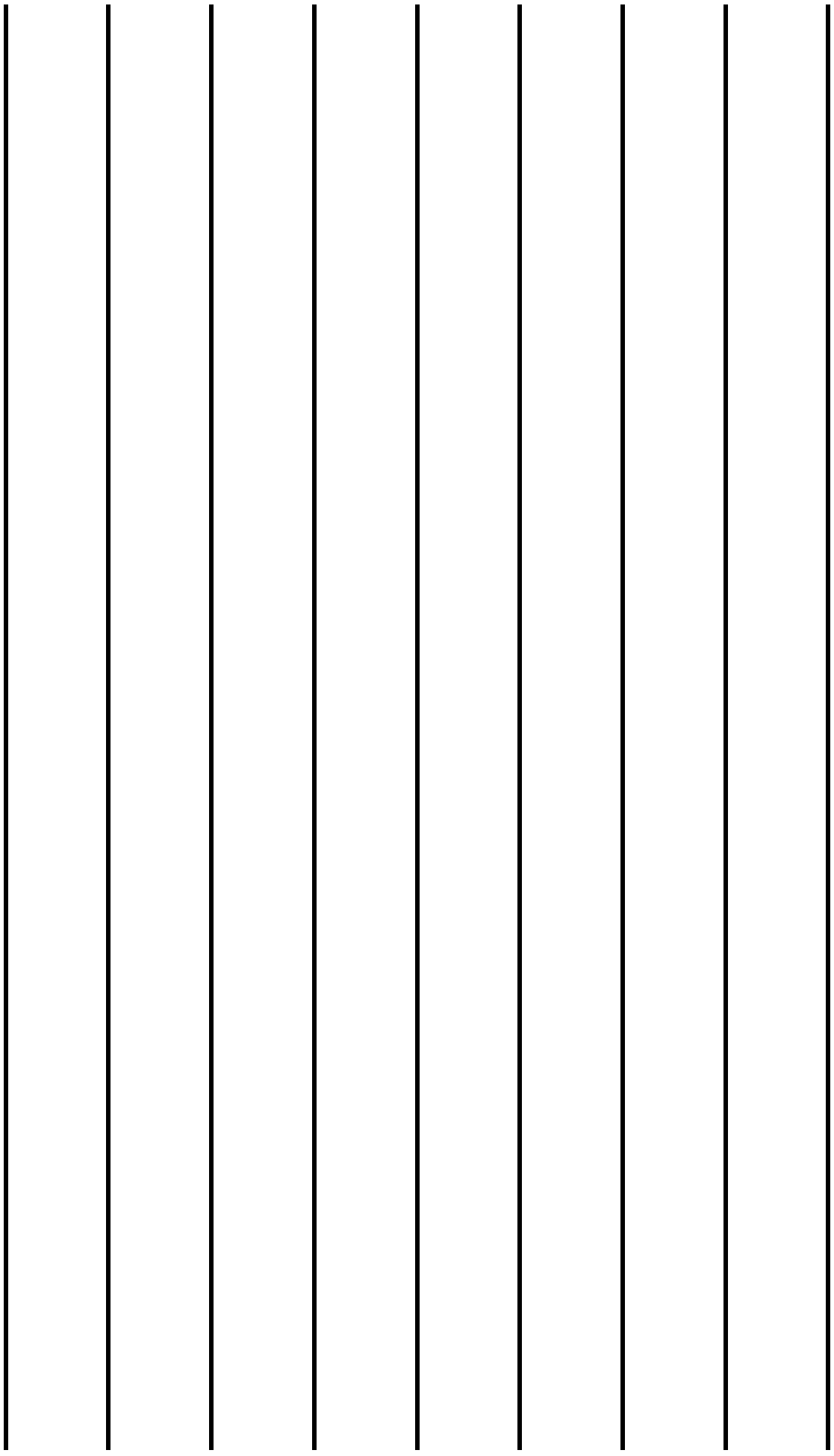


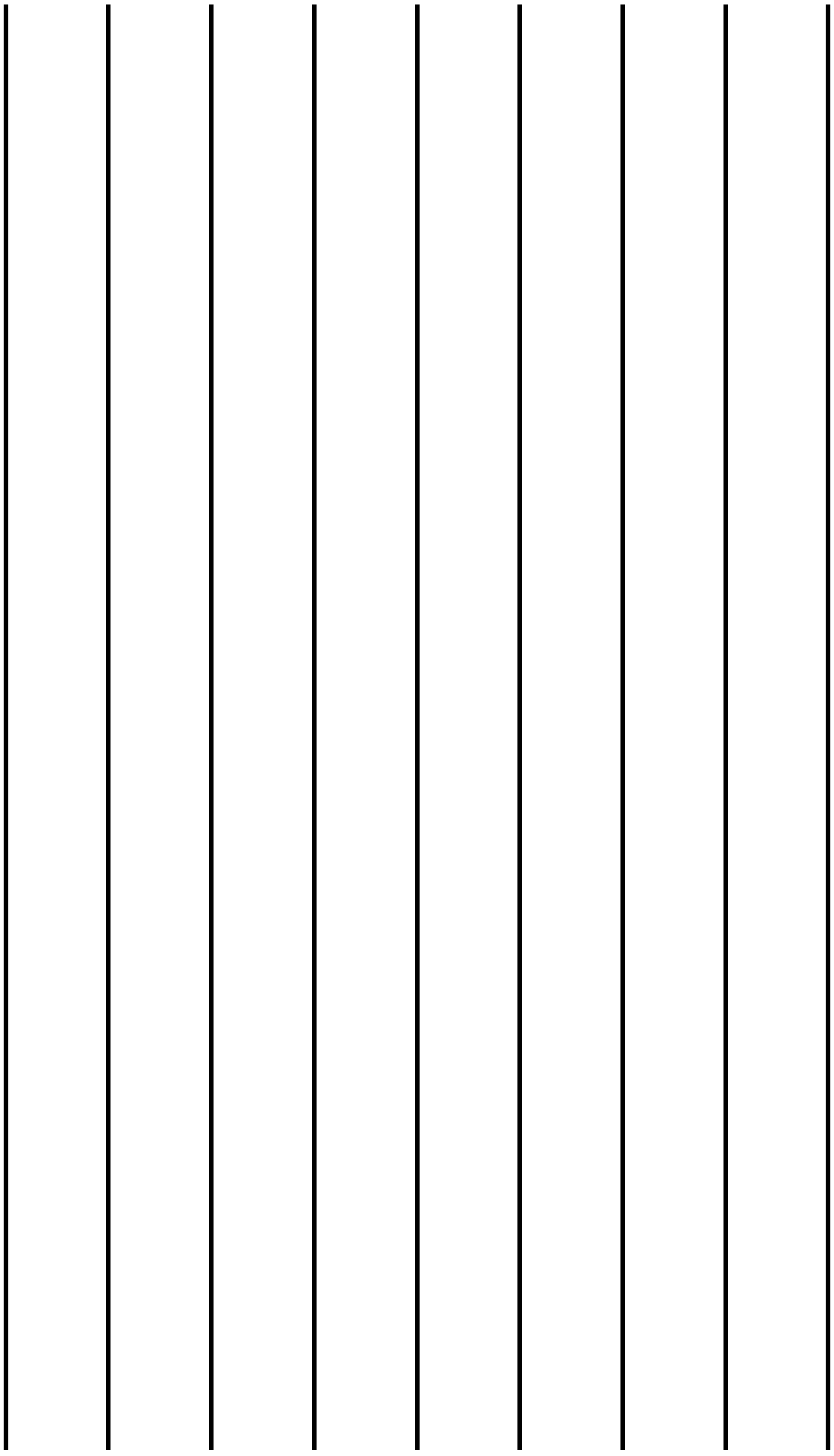


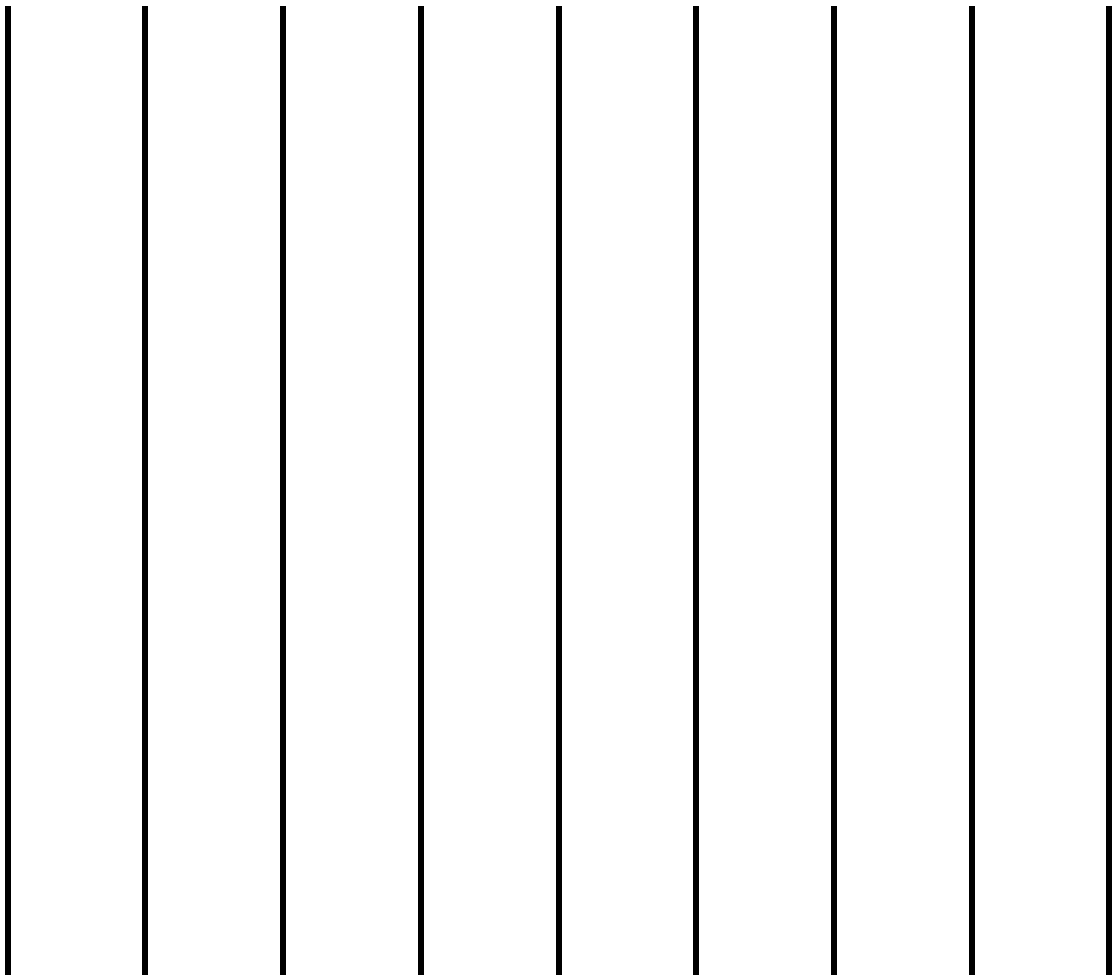
4.50 to 5 m	
200	0.156
200	5.002
200	4.986

5 to 5.5 m	
200	0.156
200	5.343

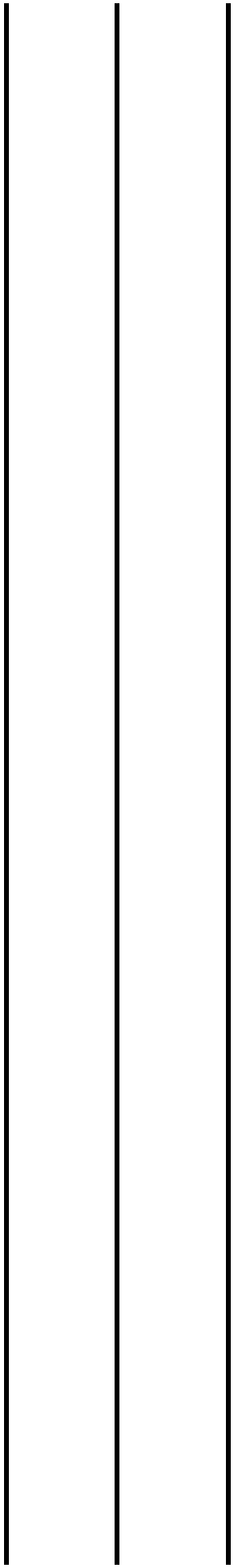
5.5 to 6 m	
200	0.156
200	5.51

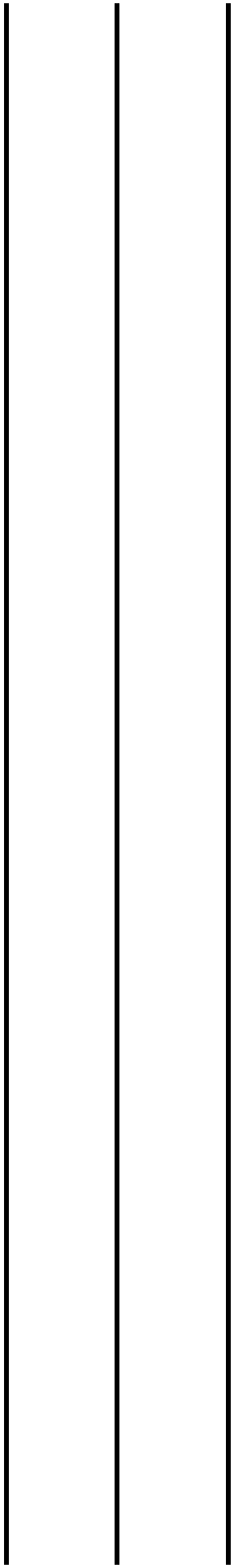


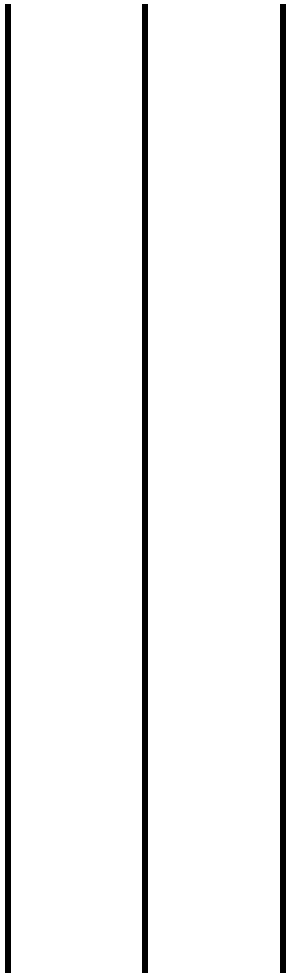




6 to 6.5 m	
200	0.156
200	6.342
200	6.385
200	6.261







SEWERAGE SYSTEM FOR GAYA EASTERN PART

Cost Summary - Collection System in Eastern Part of GMC Area

Cost in Rs. Lakh

Sr. No.	Description	Estimated cost	Carriage Cost	Total Cost
	Collection System			
1	Sewage Collection System for South	3521.88	59.34	3581.22
2	Sewage Collection System for Central	2564.64	41.75	2606.39
3	Sewage Collection System for North	3306.33	54.98	3361.31
	Total for Collection System	9392.85	156.06	9548.91
Note: Enhancements in rate for BSR 2012-13 and 2013-14 are considered 7.31% and 6.16% respectively.				

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

Gayasewerage Project

Hydraulic statement for Gaya sewerage collection system- MID

| MH Number | MH Manhole | Distance | GL (+m) | Rise (+ve) Fall (-ve) (m) | MH Invert Level (RL) | MH Cover Level (RL) | MH Depth (m) | Diff in GL (m) | Slope (1 in x) | Weight of Pipe (Incl. Fittings) Kg/m | Pipe Type (RCC/ NP3/ NP4/ HDPE) | Pipe Class (NP3/ NP4/ HDPE) | Pipe Dia (mm) | Additional Excavation Quantity for widening arrangement (Cum) | | | | Additional Excavation Quantity for Shoring arrangement (Cum) | | | | Total Quantity of Earth Work (Cum) | | | | Backfilling in Trench | Bedding (Sand) | Pipe Laid (Rmt) | Segmental Area (m²) (Tg/ Wm)(d) | | | Welding | | Welding (Cu.m) | Testering (Sq.M) | | | Pipe Dia 200 mm- 400 mm | | | | Pipe Dia 450 mm- 800 mm | | | | Excavation Pipe Length | | | | Depthwise and Distance Lower length in Metre | | | | | | | | | | | | | | | | | |
|---|---|---

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| SVR Marker n | SVR Mainhead | Division | Zo ning | Prop erty Area (SQ. MTS) | Prop erty Area (SQ. MTS) | SVR Num ber of Floor s | SVR Num ber of Floor s | SVR Lin k (M) | Depth of Excav ation in m | Depth of Excav ation in m | Width of Trench (Bottom Width) | Width of Trench (Bottom Width) | Additional Excavation Quantity for Underdrog arrangement (Cum) | Additional Excavation Quantity for Underdrog arrangement (Cum) | Additional Excavation Quantity for Underdrog arrangement (Cum) | Additional Excavation Quantity for Underdrog arrangement (Cum) | Total Quantity of Earth Work (Cu.M) | Total Quantity of Earth Work (Cu.M) | Total Quantity of Earth Work (Cu.M) | Total Quantity of Earth Work (Cu.M) | Refilling in Trench (Cu.M) | Refilling in Trench (Cu.M) | Surplus Soil (Cu.M) | Segmental Area (SQ.M) *Up-AREA* | Segmental Area (SQ.M) *Up-AREA* | Segmental Area (SQ.M) *Up-AREA* | Bedding | Bedding | Backfilling (Cu.M) | Backfilling (Cu.M) | Thickening (Cu.M) | Thickening (Cu.M) | Thickening (Cu.M) | Thickening (Cu.M) | Thickening (Cu.M) | Pipe Dia 200 mm | Pipe Dia 200 mm | Pipe Dia 200 mm | Pipe Dia 250 mm | Pipe Dia 250 mm | Pipe Dia 250

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

Final GPR

525 of 572

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| MH Marker n | MH Markland | Distance | Dia mnty | Pipe Invert Level (mtr) | GH Mkt Level (mtr) | MH Cover Level (mtr) | Depth of Excav. Pit (mtr) | Depth of MH (mtr) | Width of Trench (mtr) | Bed Concrete (mtr) | Length of Bed Concrete (mtr) | Additional Excavation Quantity for Sidering arrangement (Cum) | | | | Additional Excavation Quantity for Sidering arrangement (Cum) | | | | Total Quantity of Earth Work (Cu.mt) | | | | | Backfilling in trench (Cu.mt) | Refilling Surplus Material (Cu.mt) | Segmental Area (SC) (Sq.M) | | | Bedding | Backfilling (Cu.M) | | Thickening (Cu.M) | | | | Pipe Dia 200 mm upto 250 mm | | | | Pipe Dia 300 mm upto 750 mm | | | | Pipe Dia 200 mm upto 3825 mm | | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| MH Marker n | MH Marked | Distance | Dia mmtr | Pipe Area (Sq. Mtr) | Pipe Area (Sq. Mtr) | MH Cum Area at Level | MH Cum Area at Level | MH Cum Area at Level | MH Cum Area at Level | Depth of Excav. Pit at U/S m | Depth of Excav. Pit at D/S m | Bed Slope | Bed Length (Sq. Mtr) | Side Slope | Additional Excavation Quantity for Sidering Arrangement (Cum) | | | | Additional Excavation Quantity for Sidering arrangement (Cum) | | | | Total Quantity of Earth Work (Cu.M) | | | | | Backfilling in Trench | Refilling Surplus Soil(Cum) | Disposal Soil (Cum) | Segmental Area (SC/ Pip.Area)m | | | Bedding | Bedding (Cu.M) | Thickening (Cu.M) | | | Pipe Dia 200 mm upto 300 mm | | | | Pipe Dia 350 mm to 700 mm | | | | Pipe Dia 350 mm -900 mm | | | | Dia wise Pipe Length | | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| MH Marker n | MH Marked | Distance | Dia (mm) | Pipe Invert Level (mbgl) | MH Cover Level | MH Invert Level | MH Depth (m) | Depth of Excav. Pit (m) | Width of Trench (m) | Slope (1 in n) | Side Slope (1:n) | Additional Excavation Quantity for Underlying Arrangement (Cum) | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | Total Quantity of Earth Work (Cu.m) | | | | Backfilling m. | Refilling Quantity (Cu.m) | Segmental Area (SC-Fly.ash)(Cu.M) | | | Bedding | | Backfilling (Cu.M) | | Thickening (Cu.M) | | | Pipe Dia 200 mm(200 mm | | | | Pipe Dia 250 mm(250 mm - 250 mm | | | | Pipe Dia 200 mm- 850 mm | | | |

Manhole Number	
MH-1	1
MH-2	2
MH-3	3
MH-4	4
MH-5	5
MH-6	6
MH-7	7
MH-8	8

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| GIS Marker no | GIS Manhole | Distance | Ref. Long | Ref. Lat | Pipe Invert Level (RL) | GIS Ground Level (RL) | GIS Invert Level (RL) | GIS Ground Level (RL) | Drop Invert Level (RL) | MH Lid No. | Depth of Manhole (m) | Pick Depth of Manhole (m) | Road Type (Bitumen / Kacha / Paver) | Road Width (m) | Type of Soil (Soft / Hard) | Additional Excavation Quantity for Unblocking Arrangement (Cum) | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | Side Slope (1:0.5) | Total Quantity of Earth Work (Cu.m) | | | | | Refilling (Cu.m) | Dis. Of Spoil (Cu.m) | Segmental Area (SQ.M) | | | Bedding | Backfilling (Cu.m) | Thickness (Cu.m) | | | Pipe Dia 200 mm upto 250 mm | Pipe Dia 300 mm upto 700 mm | Pipe Dia 200 mm upto 1800 mm | | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| GIS Marker | GIS Manhole | Distance | Ch. (+m) | Pipe Invert Level (RL) | GL (RL) | GIS Ground Level | GIS Invert Level | RMS Lt. (m) | Road Width (m) | Depth of Excav. (m) | Pkg. Prot. (m) | Road Type | Road Length (m) | Road Area (Sq.m) | Additional Excavation Quantity for Sidewise Arrangement (Cum) | | | | Additional Excavation Quantity for Sidewise arrangement (Cum) | | | | Side Slope (1:n) | Total Quantity of Earth Work (Cu.m) | | | | | Refill by m | Refill by Manual | Dis. Pipe (m) | Segmental Area (SQ. m) | | | Bedding | Backfilling (Cu.M) | Thickening (Cu.M) | | | Pipe Dia 200 mm upto 250 mm | Pipe Dia 300 mm upto 700 mm | Pipe Dia 200 mm upto 3600 mm | | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| GIS Marker no | GIS Manhole | Distance | Ref. Long | Ref. Lat | Pipe Dia (mm) | MH Depth (m) | GIS Manhole Depth (m) | GIS Manhole Level | GIS Invert Level | MH Lt. (m) | MH Wd. (m) | Depth of Excav. (m) | Pkg. Pipe Length (m) | Base Type (Bed, Haunch & Surround) | Pipe Type (Bed, Haunch & Surround) | Pkg. Pipe Length (m) | Additional Excavation Quantity for Sidecutting arrangement (Cum) | | | | Additional Excavation Quantity for Sidecutting arrangement (Cum) | | | | Total Quantity of Excavation (Cum) | Total Quantity of Earth Work (Cu.m) | | | | Refilling (Cu.m) | Pkg. Refilling (Cu.m) | Dismantling of Road (Sq.m) | Segmental Area (SQ.M) (=Tp-WD)/2 | | | Bedding | Bedding (Cu.M) | Timbering (Sq.M) | | | Pipe Dia 200 mm upto 250 mm | Pipe Dia 300 mm upto 700 mm | Pipe Dia 200 mm upto 3600 mm | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| GIS Marker no | GIS Manhole | Distance | Ref. Long | Ref. Lat | Pipe Invert Level (RL) | GIS Ground Level (RL) | GIS Cover Level (RL) | GIS Invert Level (RL) | Depth (m) | Width of Trench (m) | Avg. Depth of Trench (m) | Side Slope (1:n) | Bed Type (Sand / Soil / Rock) | Bed Width (m) | Trench Length (m) | Additional Excavation Quantity for Unblocking Arrangement (Cum) | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | Total Trench Width (m) | Total Quantity of Earth Work (Cu.m) | | | | | Refill by Earth (Cu.m) | Refill by Sand (Cu.m) | Surplus Soil (Cu.m) | Segmental Area (SQ.m) | | | Bedding | Backfilling (Cu.M) | Thickening (Cu.M) | | | Pipe Dia 200 mm upto 250 mm | Pipe Dia 300 mm upto 700 mm | Pipe Dia 200 mm upto 1800 mm | | | | |

| GIS Marker no | GIS Manhole | Distance | Ho rizntl | Pipe Invert Level (RL) | GL (RL) | GIS Ground Level at Lower MH | GIS Ground Level at Upper MH | RMS Lin ks | Road Type | Width of Carria geway (CC) | Pkg/ Prot ection | Road Type (Bitumi nous / Kacha) | Road Width (m) | Side Drain Type (Kacha / Pucca) | Additional Excavation Quantity for Underslung Arrangement (Cum) | | | Additional Excavation Quantity for Underslung arrangement (Cum) | | | | Side Drain Width (m) | Total Quantity of Earth Work (Cu.m) | | | | | Refill ing in Trench | Refill ing Manual | Surplus Soil (Cu.m) | Segmental Area (sq.m) (=Sp.dm)x2x | | | Bedding | Backfilling (Cu.M) | Thickening (Cu.M) | | | Pipe Dia 200 mm/ 250 mm | Pipe Dia 300 mm / 350 mm | Pipe Dia 200 mm- 850 mm | | | | |

Length of BT Road	2289.8721	m	4.91619448
Length of Concrete Road	17405.4396	m	37.3682557
Length of WBM Road	917.7314	m	1.97030482
Soil Road	25965.1	m	55.745245
Total	46578.1431	m	100
	Road cutting and road restoration details		
DIA OF PIPE	200	250	300
Length of pipe	42135	358	177
	0.91	0.01	0.00
Length of BT Road	2085	18	9
Length of Cement road	15850	135	67
Length of Kattcha Road	836.00	7	4
ash quantity	1204.6	10.935	5.896
CC QUANTITY	3613.8	32.805	17.688
BT QUANTITY			
Grading II: 100 mm thick (Cum)	158.46	1.458	0.792
Grading III: 100 mm thick (Cum)	158.46	1.458	0.792
Prime coat (Sqm)	1584.6	14.58	7.92
Tack Coat (Sqm)	1584.6	14.58	7.92
Bituminous Macadam (Cum)	63.384	0.5832	0.3168
Bituminous Penetration Macadam (Sqm)	1584.6	14.58	7.92
20mm thick Open-Graded Premix Carpet (Sqm)	1584.6	14.58	7.92
WMM			
Construction of granular sub-base Cum	158.84	1.4175	0.88
Mix Macadam (WMM) 150 mm thick (Cum)	95.304	0.8505	0.528
	CC	BT	WMM
Depth	0.3	0.5	0.4
Width of trench	0.76	0.81	0.88
EXCAVATION	200	250	300
0 TO 1.5			
BT ROAD	792.3	7.29	3.96
CC ROAD	3613.8	32.805	17.688
wbm road	635.36	5.67	3.52
Total	4406.1	40.095	21.648
FOR MANHOLE ONLY			
Dia of pipe	200 -400	200-700	200-800
depth of manhole	1.225-1.65	1.68-2.3	2.3-7.0
Manhole outside diameter	1.41	1.72	2.79
Number of manholes	1584	370	628
Manhole excavation (BT)	1236.041532	429.63364	1918.70281
Manhole excavation (C C)	741.6249192	257.78018	1151.22169
FOR PIPE LINE	0 T0 1.5	1.5 TO 3	3 TO 4.5

1926.34	1820.99	#REF!	

	Pipe Dia 200 mm -400 mm			Pipe Dia 200 r
	upto 1.225 m	upto 1.5 m	upto 1.65 m	upto 1.68 m
	520	804	260	51
Manhole Dia (avg)	1.41	1.41	1.72	2.79
Pipe Dia	0.76	0.76	0.81	0.88
Pipe Depth (total)	1.225	1.5	1.65	1.68
Upto 1.5m	1.225	1.5	1.5	1.5
1.5 to 3 m	0	0	0.15	0.18
3 to 4.5m				
4.5 to 6m				
6 to 7.5				
7.5 to 9				
Pipe Excavation qnty. (m3)				
Upto 1.5m	1.31271	1.6074	2.0898	3.6828
1.5 to 3 m	0	0	0.20898	0.441936
3 to 4.5m	0	0	0	0
4.5 to 6m	0	0	0	0
6 to 7.5	0	0	0	0
7.5 to 9	0	0	0	0
Manhole nos.	520	804	260	51
Total pipe Ex. Qnty. to deduct				
Upto 1.5m	682.6092	1292.3496	543.348	187.8228
1.5 to 3 m	0	0	54.3348	22.538736
3 to 4.5m	0	0	0	0
4.5 to 6m	0	0	0	0
6 to 7.5	0	0	0	0
7.5 to 9	0	0	0	0
	Property Connections	0.816949699		
	Length in CC road	14219.36865		
	Length in BT road	1870.710324		
	Length in WMM road	749.7403913		
	Length in soil road	21212.18064		
	Road side chamber			
	One side property			
	Two side property			
	No of proposed road side chamber	0		
	Total property	6342		
	Length of pvc pipe	38052		
	Excavation in CC Road	1748.982344		
	Excavation in Bt ROAD	383.4956163		
	Excavation in WMM ROAD	122.9574242		

	Excavation in all types of soil	16466.14862		
ROAD RESTORATION FOR PROPERTY CONNECTION	ash quantity	582.9941146		
	CC	1748.982344		
	Granular Sub Base	76.84839011		
	Wet Mix Mecadam	46.10903406		
	WBM Grading II	30.73935604		
	WBM Grading III	30.73935604		
	Prime coat (Sqm)	766.9912327		
	Tack Coat (Sqm)	766.9912327		
	Bituminous Macadam (Cum)	30.67964931		
	Bituminous Penetration Macadam (Sqm)	766.9912327		
	20mm thick Open-Graded Premix Carpet (Sqm)	766.9912327		
	REFILLING			
	Pipe diameter	200	250	300
		0.2	0.25	0.3
	Thickness	0.06	0.06	0.08
	Total outer diameter	0.26	0.31	0.38
		42135	358	177
	Area of pipe	0.0530998	0.0754866	0.1134262
	Pipe quantity	2237.360073	27.024185	20.0764374
	Property connection	0.11		
		0.4		
		0.51		
		38052		
		361.6671366		
			200	30
			250	30
			300	40

								0.25
								0.25
								0.5
350	400	450	500	600	700	800	900	1000
201	760	343	0	349	51	1113	0	784
0.00	0.02	0.01	0.00	0.01	0.00	0.02	0.00	0.02
10	38	17	0	17	3	55	0	39
76	286	129	0	131	19	419	0	295
4	15	7	0	7	1	22	0	16
7.6	30.03	14.19	0	16.637	2.603	62.431	0	51.035
22.8	90.09	42.57	0	49.911	7.809	187.293	0	153.105
1	3.99	1.87	0	2.159	0.411	8.195	0	6.747
1	3.99	1.87	0	2.159	0.411	8.195	0	6.747
10	39.9	18.7	0	21.59	4.11	81.95	0	67.47
10	39.9	18.7	0	21.59	4.11	81.95	0	67.47
0.4	1.596	0.748	0	0.8636	0.1644	3.278	0	2.6988
10	39.9	18.7	0	21.59	4.11	81.95	0	67.47
10	39.9	18.7	0	21.59	4.11	81.95	0	67.47
1	3.9375	1.925	0	2.2225	0.3425	8.195	0	6.92
0.6	2.3625	1.155	0	1.3335	0.2055	4.917	0	4.152
1	1.05	1.1	1.15	1.27	1.37	1.49	1.6	1.73
350	400	450	500	600	700	800	900	1000
5	19.95	9.35	0	10.795	2.055	40.975	0	33.735
22.8	90.09	42.57	0	49.911	7.809	187.293	0	153.105
4	15.75	7.7	0	8.89	1.37	32.78	0	27.68
27.8	110.04	51.92	0	60.706	9.864	228.268	0	186.84
350	400	450	500	600	700	800	900	1000
4.5 TO 6	6 TO 7.5	7.5 TO 9	9 TO 10.5					

#REF!	#REF!	#REF!	

mm -700 mm	Pipe Dia 200 mm -800 mm							
upto 2.3 m	upto 2.65 m	upto 3 m	upto 3.5 m	upto 4 m	upto 4.25 m	upto 4.5 m	upto 5 m	upto 5.5 m
319	176	118	102	89	45	14	16	26
2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79
1	1.05	1.1	1.15	1.27	1.37	1.49	1.6	1.73
2.3	2.65	3	3.5	4	4.25	4.5	5	5.5
1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
0.8	1.15	1.5	1.5	1.5	1.5	1.5	1.5	1.5
			0.5	1	1.25	1.5	1.5	1.5
							0.5	1
4.185	4.39425	4.6035	4.81275	5.31495	5.73345	6.23565	6.696	7.24005
2.232	3.368925	4.6035	4.81275	5.31495	5.73345	6.23565	6.696	7.24005
0	0	0	1.60425	3.5433	4.777875	6.23565	6.696	7.24005
0	0	0	0	0	0	0	2.232	4.8267
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
319	176	118	102	89	45	14	16	26
1335.015	773.388	543.213	490.9005	473.03055	258.00525	87.2991	107.136	188.2413
712.008	592.9308	543.213	490.9005	473.03055	258.00525	87.2991	107.136	188.2413
0	0	0	163.6335	315.3537	215.00438	87.2991	107.136	188.2413
0	0	0	0	0	0	0	35.712	125.4942
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

350	400	450	500	600	700	800	900	1000
0.35	0.4	0.45	0.5	0.6	0.7	0.8	0.9	1
0.15	0.15	0.15	0.15	0.17	0.17	0.19	0.2	0.23
0.5	0.55	0.6	0.65	0.77	0.87	0.99	1.1	1.23
201	760	343	0	349	51	1113	0	784
0.196375	0.2376138	0.28278	0.3318738	0.465723	0.594545	0.7698686	0.950455	1.188383
39.471375	180.58645	96.99354	0	162.53731	30.321792	856.8637	0	931.69223

					Total			
1100	1200	1400	1600	1800				
0	0	0	0	0	46271			
0.00	0.00	0.00	0.00	0.00	1			
0	0	0	0	0	2291			
0	0	0	0	0	17407			
0	0	0	0	0	919			
0	0	0	0	0	1406			
0	0	0	0	0	4218			
0	0	0	0	0	185			
0	0	0	0	0	185			
0	0	0	0	0	1851			
0	0	0	0	0	1851			
0	0	0	0	0	74			
0	0	0	0	0	1851			
0	0	0	0	0	1851			
					0			
0	0	0	0	0	186			
0	0	0	0	0	111			
1.83								
1100	1200	1400	1600	1800				
0	0	0	0	0	925	CUM		
0	0	0	0	0	4218	CUM		
0	0	0	0	0	743	SQ M	297.088	CUM
0	0	0	0	0	5143			
					11029			
1100	1200	1400	1600	1800				

							1.73	
upto 6 m	upto 6.5 m	upto 7 m	upto 7.5 m	upto 8 m	upto 8.5 m	upto 9 m	1.83	
13	6	4	8	4	7	0		
2.79	2.79	2.79	2.79	2.79	2.79	2.79		
1.83	1.83	1.83	1.83	1.83	1.83	1.83		
6	6.5	7	7.5	8	8.5	9		
1.5	1.5	1.5	1.5	1.5	1.5	1.5		
1.5	1.5	1.5	1.5	1.5	1.5	1.5		
1.5	1.5	1.5	1.5	1.5	1.5	1.5		
1.5	1.5	1.5	1.55	1.5	1.5	1.5		
	0.5	1	1.45	1.5	1.5	1.5		
				0.5	0.5	1.5		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.913835	7.65855	7.65855	7.65855		
0	2.55285	5.1057	7.403265	7.65855	7.65855	7.65855		
0	0	0	0	2.55285	2.55285	7.65855		
13	6	4	8	4	7	0		
99.56115	45.9513	30.6342	61.2684	30.6342	53.60985	0	7284.0174	m3
99.56115	45.9513	30.6342	61.2684	30.6342	53.60985	0	3851.2971	m3
99.56115	45.9513	30.6342	61.2684	30.6342	53.60985	0	1398.3271	m3
99.56115	45.9513	30.6342	63.31068	30.6342	53.60985	0	484.90758	m3
0	15.3171	20.4228	59.22612	30.6342	53.60985	0	179.21007	m3
0	0	0	0	10.2114	17.86995	0	28.08135	m3

1100	1200	1400	1600	1800				
1.1	1.2	1.4	1.6	1.8				
0.23	0.24	0.27	0.28	0.3				
1.33	1.44	1.67	1.88	2.1				
0	0	0	0	0	46271			
1.389471	1.6288128	2.190681	2.7762712	3.464055	17			
0	0	0	0	0	4583			

Summary for Carriage of Material for Collection System

	MID							
Item	Brick MH	Road Side Chamber	Drop MH	Cement Concrete Pavement	Bedding & Road Restoration	High Alumina Cement	RCC MH	Total MT
Sand	3042.04	0	134	2994.34		501	110	67818.1
Aggregate	3465.01	0	272	6086.35	18003		202.09	280283.6
Bricks	9601.04	0.00					0	96010.40

BRICK MANHOLE

Rate analysis for Excavation, External plaster and Foot rest

MANHOLE DATA					EXCAVATION				PCC (M10)	Benching (M15)	COLLAR (M15)	BRICKS (1:3)					Cement Plaster Internal 1:3	Cement Plaster External Surface	Foot rest	Rate for excavation - BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75	Rate for plaster - 12 mm thick (1:3) - BSR-BCD-18-Item 13.11.1; Pg-167	Providing orange colour safety foot rest - BSR-BCD-18-Item 19.16; Pg-245	Total Amount (Rs.)
Manhole Type	No. of Manhole	Diameter of Manhole mm	Inner Diameter of Manhole m	Depth of Manhole	Excavation Depth	Excavation Diameter of Manhole m	Excavation Qty, in Cum	Total Excavation Qty Cum	Each MH	Each MH	Each MH	Upper Portion	Bottom/Middle Portion	Lower Portion	Bottom Portion	Total							
A	520.00	910.00	0.91	1.225	1.48	1.76	3.59	1866.00	0.382	0.128	0.365	0.509	0.381			0.89	2.83	4.56	4.00	319.6	153.6	240.9	2811.04
	804.00	910.00	0.91	1.50	1.75	1.76	4.26	3423.02	0.382	0.128	0.365	0.509	0.601			1.11	3.46	5.58	4.00	319.6	153.6	240.9	3182.13
	260.00	910.00	0.91	1.68	1.93	1.76	4.70	1220.80	0.382	0.128	0.365	0.509	0.746			1.25	3.88	6.26	5.00	319.6	153.6	240.9	3665.93
B	51.00	1220.00	1.22	1.68	2.01	2.07	6.76	344.98	0.686	0.269	0.365	1.457	0.102			1.56	4.70	7.07	5.00	319.6	153.6	240.9	4452.84
	319.00	1220.00	1.22	2.00	2.33	2.07	7.84	2501.37	0.686	0.269	0.365	1.457	0.153			1.61	5.59	8.42	6.00	319.6	153.6	240.9	5244.87
	175.00	1220.00	1.22	2.30	2.63	2.07	8.85	1548.90	0.686	0.269	0.365	1.457	0.459			1.92	6.43	9.68	7.00	319.6	153.6	240.9	6002.45
C	117.00	1520.00	1.52	2.65	3.05	2.84	19.29	2256.83	1.617	0.507	0.365	1.787			2.391	4.18	9.79	15.13	8.00	319.6	153.6	240.9	10415.68
	100.00	1520.00	1.52	3.00	3.40	2.84	21.51	2150.63	1.617	0.507	0.365	1.787	0.295		3.126	5.21	11.46	18.04	9.00	319.6	153.6	240.9	11811.95
	79.00	1520.00	1.52	3.50	3.90	2.84	24.67	1949.22	1.617	0.507	0.365	1.787	0.984	0.418	3.126	6.32	13.85	22.19	11.00	319.6	153.6	240.9	13944.29
	35.00	1520.00	1.52	4.00	4.40	2.84	27.84	974.44	1.617	0.507	0.365	1.787	0.984	1.809	3.126	7.71	16.24	26.35	13.00	319.6	153.6	240.9	16076.63
	13.00	1520.00	1.52	4.25	4.65	2.84	29.42	382.52	1.617	0.507	0.365	1.787	0.984	2.505	3.126	8.40	17.43	28.42	14.00	319.6	153.6	240.9	17142.80
	15.00	1520.00	1.52	4.50	4.90	2.84	31.01	465.13	1.617	0.507	0.365	1.787	0.984	3.201	3.126	9.10	18.63	30.50	14.00	319.6	153.6	240.9	17968.07
	26.00	1520.00	1.52	5.00	5.40	2.84	34.18	888.57	1.617	0.507	0.365	1.787	0.984	4.593	3.126	10.49	21.01	34.66	16.00	319.6	153.6	240.9	20100.41
	12.00	1520.00	1.52	5.50	5.90	2.84	37.34	448.12	1.907	0.507	0.365	1.787	0.984	5.985	3.126	11.88	23.40	38.81	18.00	319.6	153.6	240.9	22232.75
	4.00	1520.00	1.52	6.00	6.40	2.84	40.51	162.04	1.907	0.507	0.365	1.787	0.984	7.377	3.126	13.27	25.79	42.97	19.00	319.6	153.6	240.9	24124.19
	3.00	1520.00	1.52	6.5	6.895	2.84	43.68	131.03	1.907	0.507	0.365	1.787	0.984	8.76837	3.126	14.67	28.1775	47.12	21.00	319.6	153.6	240.9	26256.53
	8.00	1520.00	1.52	7.00	7.40	2.84	46.85	374.76	1.907	0.507	0.365	1.787	0.984	10.16	3.126	16.06	30.57	51.28	23.00	319.6	153.6	240.9	28388.87
	4.00	1520.00	1.52	7.5	7.90	2.84	50.01	200.05	1.907	0.507	0.365	1.787	0.984	11.55	3.126	17.45	32.95	55.43	24.00	319.6	153.6	240.9	30280.31
	7.00	1520.00	1.52	8	8.40	2.84	53.18	372.26	1.907	0.507	0.365	1.787	0.984	12.94	3.126	18.84	35.34	59.59	26.00	319.6	153.6	240.9	32412.65

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate for RCC Manhole

Sr. no	Manholes		Type	Concrete (C:S:A)				Cement		Sand		Aggregate		High Alumina Cement Plastering			Central		
	Dia (mm)	Depth (m)		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M25 (1:1:2)	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Volume (m3)	Wt (MT) 1870kg/m3	25 thk m2 (1:3)	Volume (m3)	Sand Wt (MT) 1840kg/m3	No. of MH	Sand (MT)	Aggregate (MT)
1	900	2.0	D		1.19	2.82		0.68	0.98	1.11	2.04	2.22	4.15	2.69	0.07	0.10		0.00	0.00
2	900	2.5	D		1.19	3.26		0.76	1.09	1.23	2.26	2.46	4.60	4.18	0.10	0.14		0.00	0.00
3	900	3.0	D		1.19	4.12		0.92	1.32	1.46	2.69	2.92	5.46	5.67	0.14	0.19		0.00	0.00
4	900	3.5	D		1.19	4.14		0.92	1.32	1.47	2.70	2.93	5.48	7.17	0.18	0.25		0.00	0.00
5	900	4.0	D		1.19	4.31		0.95	1.37	1.51	2.78	3.03	5.67	8.66	0.22	0.30		0.00	0.00
6	900	4.5	D		1.19	4.74		1.03	1.48	1.63	3.00	3.27	6.11	10.15	0.25	0.35		0.00	0.00
7	900	5.0	D		1.19	5.18		1.11	1.60	1.75	3.22	3.50	6.55	11.64	0.29	0.40		0.00	0.00
8	900	5.5	D		1.19	5.62		1.19	1.71	1.87	3.44	3.74	6.99	13.14	0.33	0.46		0.0	0.00
9	900	6.0	D		1.19	6.06		1.27	1.83	1.99	3.66	3.98	7.44	14.63	0.37	0.51		0.00	0.00
10	900	6.5	D		1.19	6.50		1.35	1.94	2.11	3.88	4.22	7.89	16.12	0.40	0.55		0.00	0.00
11	900	7.0	D		1.19	6.93		1.43	2.06	2.23	4.10	4.46	8.34	17.62	0.44	0.61		0.00	0.00
12	900	7.5	D		1.19	7.37		1.51	2.17	2.35	4.32	4.70	8.79	17.62	0.44	0.61		0.00	0.00
13	900	8.0	D		1.19	7.81		1.59	2.29	2.47	4.54	4.94	9.24	17.62	0.44	0.61		0.00	0.00
14	900	8.5	D		1.19	8.25		1.67	2.40	2.59	4.77	5.18	9.69	17.62	0.44	0.61		0.00	0.00
15	900	9.0	D		1.19	8.69		1.75	2.52	2.71	4.99	5.42	10.14	17.62	0.44	0.61		0.00	0.00
16	900	9.5	D		1.19	9.12		1.83	2.64	2.83	5.21	5.65	10.57	17.62	0.44	0.61		0.00	0.00
17	1000/1100	2.0	E		1.51	3.21		0.80	1.15	1.31	2.41	2.62	4.90	2.60	0.07	0.10		0.00	0.00
18	1000/1100	2.5	E		1.51	2.24		0.62	0.89	1.04	1.91	2.08	3.89	4.41	0.11	0.15	1	2.06	3.89
19	1000/1100	3.0	E		1.51	38.06		7.14	10.28	10.81	19.89	21.63	40.45	6.22	0.16	0.22	3	60.33	121.35
20	1000/1100	3.5	E		1.51	0.00		0.22	0.32	0.43	0.79	0.86	1.61	8.02	0.20	0.28	10	10.70	16.10
21	1000/1100	4.0	E		1.51	52.74		9.81	14.13	14.82	27.27	29.63	55.41	9.83	0.25	0.35	10	276.20	554.10
22	1000/1100	4.5	E		1.51	0.00		0.22	0.32	0.43	0.79	0.86	1.61	11.64	0.29	0.40	2	2.38	3.22
23	1000/1100	5.0	E		1.51	#VALUE!		#VALUE!	########	########	########	#VALUE!	#VALUE!	13.45	0.34	0.47		#VALUE!	#VALUE!
24	1000/1100	5.5	E		1.51	8.27		1.72	2.48	2.69	4.95	5.38	10.06	15.25	0.38	0.52	1	5.47	10.06
25	1000/1100	6.0	E		1.51	8.27		1.72	2.48	2.69	4.95	5.38	10.06	17.06	0.43	0.59	2	11.08	20.12
26	1000/1100	6.5	E		1.51	50.19		9.34	13.45	14.12	25.98	28.24	52.81	18.87	0.47	0.65	1	26.63	52.81
27	1000/1100	7.0	E		1.51	16.55		3.22	4.64	4.94	9.09	9.89	18.49	20.67	0.52	0.72		0.00	0.00
28	1000/1100	8.0	E		1.51	42.19		7.89	11.36	11.94	21.97	23.88	44.66	20.67	0.52	0.72		0.00	0.00
29	1000/1100	8.5	E		1.51	0.00		0.22	0.32	0.43	0.79	0.86	1.61	20.67	0.52	0.72		0.00	0.00
	Total																**60**	**#VALUE!**	**#VALUE!**

Rate Analysis for RCC Manhole: Cost Summary

Sr	Dia of Manhole (mm)	Depth (m)	Cost (Rs.)	As per 18 sor
1	900	2.0	45036.73	55042.97
		2.5	51785.92	63324.59
		3.0	62160.75	75892.44
		3.5	67616.60	82804.50
		4.0	71749.47	87785.16
		4.5	79525.54	97335.16
		5.0	87301.61	106885.16
		5.5	91945.62	112037.46
		6.0	99595.45	121399.44
		6.5	110675.68	135625.41
		7.0	118355.84	145073.68
		7.5	125815.57	154343.23
		8.0	133275.29	163612.77
		8.5	140611.19	172784.75
		9.0	147767.88	181871.00
		9.5	154042.55	190018.15
2	1000/1100	2.0	Amount inRs.	
		2.5	2148.55	
		3.0	0.00	
		3.5	70.71	
		4.0	0.00	
		4.5	0.00	
		5.0	0.00	
		5.5	0.00	
		6.0	0.00	
		6.5	407.26	
		7.0	0.00	
		7.5	0.00	
		8.0	0.00	
		8.5	0.00	

Rate Analysis for RCC Manhole

DATA

Out going sewer outer dia from manhole in 'mm'	**1100**	**1000**	**1200**	**1400**
Internal dia of manhole in 'mm'	**1550**	**1750**	**2000**	**2200**
Wall Width in 'm'	**0.6**			

RCC M 20 Manholes - Open excavation Type

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
S.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.10	5.19		360.60	1870.00
						12.26	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.34	0.15	1.80	1.44			
		1	0.15	0.50	0.65	0.05			
						2.71	Cum.	4902.30	13299.35
5	**Reinforcement Steel**	1	-	-	-	**298.00**	Kg	76.00	22648.00
6	**Shuttering**								
	For foundation	1.00	6.44		0.35	2.25			
	For RCC - wall	2.00	5.34		1.80	19.23			
	For coverslab	1.00	1.89			1.89			
	Total					**23.37**	Sqm.	186.30	4353.38
7	**CI Steps-5 Kg**	3	-	-	-	**3.00**	No's	240.9	722.70
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	8.26			8.26	Cum	262.5	2166.98
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Internal Lining by High Alumina Cement (1:3)**		2.69				Sqm	343.22	**922.33**
11	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		4.00				Cum	103.3	**413.42**
	Total Cost								**55042.97**

Detailed Estimate : RCC M 20 Manholes for Sewers= 900 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
S.No.	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		0.10	**0.47**		401.60	189.33
						14.61	Cum		
2	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	**0.22**			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
3	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	**-0.05**			
						0.11	Cum	4681.30	509.59
4	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.34	0.15	2.30	1.84			
		1	0.15	0.50	1.15	**0.09**			
						3.15	Cum.	4902.30	15446.82
5	**Reinforcement Steel**	1.00	-	-	-	**347.00**	Kg	76.00	26372.00
6	Shuttering								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.30	24.57			
	For coverslab	1.00	1.89			**1.89**			
	Total					**28.39**	Sqm.	186.30	5288.36
7	**CI Steps-5 Kg**	4	-	-	-	4.00	No's	240.9	963.60
8	Disposal of Surplus earth upto 8km lead be	1.00	9.27			9.27	Cum	262.5	**2432.94**
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Internal Lining by High Alumina Cement (1:3)**		4.18				Sqm	343.22	**1434.74**
11	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		5.35				Cum	103.3	**552.26**
	Total Cost								**63324.59**

Detailed Estimate : RCC M 20 Manholes for Sewers=900 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		0.60	**2.83**		401.60	1135.97
						16.97	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		0.60	2.83		126.4	357.54
						2.83	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	**0.74**			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	2.69		0.20	**0.54**			
	For circular opening	-1	0.25	-	0.20	**-0.05**			
	For walls	1.00	5.34	0.15	2.80	**2.24**			
		1.00	0.15	0.50	1.65	0.12			
						4.01	Cum.	4902.30	19660.26
6	Reinforcement Steel	1.00	-	-	-	401.00	Kg	76.00	30476.00
7	Shuttering								
	For foundation	1	6.44		0.30	**1.93**			
	For RCC - wall	2	5.34		2.80	29.91			
	For coverslab	1.00	1.89			1.89			
	Total					33.73	Sqm.	186.30	**6283.33**
8	**CI Steps-5 Kg**	6.00	-	-	-	6.00	No's	240.90	**1445.40**
9	**Disposal of Surplus earth upto 8km lead**	1.00	10.28			10.28	Cum	262.50	**2698.90**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		**5.67**				Sqm	343.22	1947.15
12	**Filling available excavated earth (excluding roc**		**6.69**				**Cum**	**103.3**	**691.09**
	Total Cost								75892.44

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.10	**5.19**		401.60	2082.61
						19.33	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.10	5.19		126.4	655.48
						5.19	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	**0.74**			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	**0.12**			
	For circular opening	-1	0.25	-	0.20	**-0.05**			
	For walls	1.00	5.34	0.15	3.30	**2.64**			
		1.00	0.15	0.50	2.15	0.16			
						4.03	Cum.	4902.30	19741.75
6	Reinforcement Steel	1.00	-	-	-	443.00	Kg	76.00	33668.00
7	Shuttering								
	For foundation	1	6.44		0.30	**1.93**			
	For RCC - wall	2	5.34		3.30	35.25			
	For coverslab	1.00	1.89			1.89			
	Total					39.07	Sqm.	186.30	**7278.31**
8	**CI Steps-5 Kg**	8.00	-	-	-	8.00	No's	240.90	**1927.20**
9	**Disposal of Surplus earth upto 8km lead**	1.00	11.29			11.29	Cum	262.50	**2964.85**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		**7.17**				Sqm	343.22	2459.56
12	**Filling available excavated earth (excluding roc**		8.03				Cum	103.3	829.93
	Total Cost								**82804.50**

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -F)									
	DEPTH - D=4 m							4	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	**7.07**		401.60	2839.93
	4.5m to 6.0m	1	4.71		0.10	0.47		442.60	208.66
						21.69	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.50	**7.07**		126.4	893.84
	4.5m to6.0m	1	4.71		0.10	0.47		134.6	63.46
						7.54	Sqm.		
3	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	**0.22**			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	**0.94**			
						1.67			
						1.19	Cum	4151.40	4924.06
4	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	**1.16**			
	walls for conical portion	1.00	3.79	0.15	1.80	**1.02**			
	For walls	1.00	5.34	0.15	2.25	1.80			
		1.00	0.15	0.50	2.90	0.22			
						4.20	Cum.	4902.30	20576.56
6	Reinforcement Steel	1.00	-	-	-	**462.00**	Kg	76.00	35112.00
7	**Shuttering**								
	For foundation	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.25	24.03			
	walls for conical portion	2.00	3.79		1.80	13.63			
	Total					39.59	Sqm.	186.30	**7376.27**
8	**CI Steps-5 Kg**	9.00	-	-	-	9.00	No's	240.90	**2168.10**
9	**Disposal of Surplus earth upto 8km lead**	1.00	13.43			13.43	Cum	262.50	**3524.31**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		8.66				Sqm	343.22	2971.96
12	**Filling available excavated earth (excluding roc**		**8.26**				**Cum**	103.30	**853.27**
	Total Cost								**87785.16**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=4.5 m							4.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		0.60	2.83		442.60	1251.94
						24.04	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		0.60	2.83		134.6	380.73
						9.90	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	2.75	2.20			
		1	0.15	0.50	3.40	0.26			
						4.64	Cum.	4902.30	22724.03
6	**Reinforcement Steel**	1	-	-	-	**510.00**	Kg	76.00	38760.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.75	29.37			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**44.93**	Sqm.	186.30	8371.24
8	**CI Steps-5 Kg**	11	-	-	-	**11.00**	No's	240.90	2649.90
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	14.44			14.44	Cum	262.50	3790.27
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		10.15				Sqm	343.22	**3484.37**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.60				Cum	103.30	**992.10**
	Total Cost								**97335.16**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=5.0 m							5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.10	5.19		442.60	2295.23
						26.40	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.10	5.19		134.6	698.01
						12.26	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	3.25	2.60			
		1	0.15	0.50	3.90	0.29			
						5.07	Cum.	4902.30	24871.50
6	**Reinforcement Steel**	1	-	-	-	**558.00**	Kg	76.00	42408.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		3.25	34.71			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**50.27**	Sqm.	186.30	9366.22
8	**CI Steps-5 Kg**	13	-	-	-	**13.00**	No's	240.90	3131.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	15.45			15.45	Cum	262.50	4056.22
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		11.64				Sqm	343.22	**3996.78**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		10.95				Cum	103.30	**1130.94**
	Total Cost								**106885.16**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=5.5 m							5.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		0.10	**0.47**		483.60	227.99
						28.76	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	**7.07**		134.6	951.83
	6m to 7.5m	1	4.71		0.10	0.47		142.8	67.32
						14.61	Sqm.		
3	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	**2.64**			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	**1.55**	0.55	**0.94**			
						1.67			
						1.19	Cum	4151.40	4924.06
4	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	**0.16**			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	3.75	**3.00**			
		1	0.15	0.50	4.40	**0.33**			
						5.51	Cum.	4902.30	27018.97
6	Reinforcement Steel	1.00	-	-	-	551.00	Kg	76.00	41876.00
7	Shuttering								
	For foundation	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		3.75	**40.06**			
	walls for conical portion	2	3.79		1.80	**13.63**			
	Total					55.62	Sqm.	186.30	10361.19
8	CI Steps-5 Kg	14.00	-	-	-	14.00	No's	240.90	**3372.60**
9	**Disposal of Surplus earth upto 8 km lea**	1.00	16.47			16.47	Cum	262.50	**4322.18**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	13.14				Sqm		343.22	**4509.19**
12	**Filling available excavated earth (excluding roc**		12.29				Cum	103.30	**1269.77**
	Total Cost								**112037.46**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=6.0 m							6	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		0.60	2.83		483.60	1367.92
						31.11	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		0.60	2.83		142.8	403.93
						16.97	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	4.25	3.40			
		1	0.15	0.50	4.90	0.37			
						5.95	Cum.	4902.30	29166.43
6	**Reinforcement Steel**	1	-	-	-	**595.00**	Kg	76.00	45220.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		4.25	45.40			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**60.96**	Sqm.	186.30	11356.16
8	**CI Steps-5 Kg**	16	-	-	-	**16.00**	No's	240.90	3854.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	17.48			17.48	Cum	262.50	4588.13
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement**	14.63				Sqm		343.22	**5021.59**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		13.64				Cum	103.30	**1408.61**
	Total Cost								**121399.44**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=6.5 m							6.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.10	5.19		483.60	2507.85
						33.47	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		1.10	5.19		142.8	740.53
						19.33	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	4.75	3.81			
		1	0.15	0.50	5.40	0.41			
						6.39	Cum.	4902.30	31313.90
6	**Reinforcement Steel**	1	-	-	-	**703.00**	Kg	76.00	53428.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		4.75	50.74			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**66.30**	Sqm.	186.30	12351.14
8	**CI Steps-5 Kg**	18	-	-	-	**18.00**	No's	240.90	4336.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	18.49			18.49	Cum	262.50	4854.09
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement**	16.12				Sqm		343.22	**5534.00**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.98				Cum	103.30	**1547.45**
	Total Cost								**135625.41**
Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=7.0 m							7	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		0.10	0.47		524.60	247.31
						35.83	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.8	1009.81
	7.5m to 9.0m	1	4.71		0.10	0.47		151.00	71.19
						21.69	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	5.25	4.21			
		1	0.15	0.50	5.90	0.44			
						6.83	Cum.	4902.30	33461.37
6	**Reinforcement Steel**	1	-	-	-	**751.00**	Kg	76.00	57076.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		5.25	56.08			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**71.64**	Sqm.	186.30	13346.11
8	**CI Steps-5 Kg**	19	-	-	-	**19.00**	No's	240.90	4577.10
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.50			19.50	Cum	262.50	5120.04
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.41**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.32				Cum	103.30	**1686.28**
	Total Cost								**145073.68**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=7.5 m							7.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		0.60	2.83		524.60	1483.89
						38.19	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.8	1009.81
	7.5m to 9.0m	1	4.71		0.60	2.83		151	427.12
						24.04	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	5.75	4.61			
		1	0.15	0.50	6.40	0.48			
						7.26	Cum.	4902.30	35608.84
6	**Reinforcement Steel**	1	-	-	-	**799.00**	Kg	76.00	60724.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		5.75	61.42			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**76.98**	Sqm.	186.30	14341.08
8	**CI Steps-5 Kg**	21	-	-	-	**21.00**	No's	240.90	5058.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.52			20.52	Cum	262.50	5386.00
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.41**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		17.67				Cum	103.30	**1825.12**
	Total Cost								**154343.23**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=8.0 m							8	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		1.10	5.19		524.60	2720.46
						40.54	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.8	1009.81
	7.5m to 9.0m	1	4.71		1.10	5.19		151	783.05
						26.40	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	6.25	5.01			
		1	0.15	0.50	6.90	0.52			
						7.70	Cum.	4902.30	37756.30
6	**Reinforcement Steel**	1	-	-	-	**847.00**	Kg	76.00	64372.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		6.25	66.76			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**82.32**	Sqm.	186.30	15336.06
8	**CI Steps-5 Kg**	23	-	-	-	**23.00**	No's	240.90	5540.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	21.53			21.53	Cum	262.50	5651.96
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.41**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.01				Cum	103.30	**1963.96**
	Total Cost								**163612.77**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=8.5 m							8.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		1.50	7.07		524.60	3709.72
	9.0m to 10.0m	1	4.71		0.15	0.71		565.60	399.97
						43.14	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.8	1009.81
	7.5m to 9.0m	1	4.71		1.50	7.07		151	1067.80
	9.0m to 10.5m	1	4.71		0.15	0.71		159.20	112.58
						28.99	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	6.75	5.41			
		1	0.15	0.50	7.40	0.56			
						8.14	Cum.	4902.30	39903.77
6	**Reinforcement Steel**	1	-	-	-	**895.00**	Kg	76.00	68020.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		6.75	72.10			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**87.66**	Sqm.	186.30	16331.03
8	**CI Steps-5 Kg**	24	-	-	-	**24.00**	No's	240.90	5781.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.07			22.07	Cum	262.50	5794.16
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.41**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		21.06				Cum	103.30	**2175.84**
	Total Cost								**172784.75**

	DEPTH - D=9.0 m							9	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		1.50	7.07		524.60	3709.72
	9.0m to 10.5m	1	4.71		0.65	3.06		565.60	1733.18
						45.49	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.8	1009.81
	7.5m to 9.0m	1	4.71		1.50	7.07		151	1067.80
	9.0m to 10.5m	1	4.71		0.65	3.06		159.2	487.84
						31.35	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	7.25	5.81			
		1	0.15	0.50	7.90	0.59			
						8.58	Cum.	4902.30	42051.24
6	**Reinforcement Steel**	1	-	-	-	**944.00**	Kg	76.00	71744.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		7.25	77.44			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**93.00**	Sqm.	186.30	17326.01
8	**CI Steps-5 Kg**	26	-	-	-	**26.00**	No's	240.90	6263.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.73			20.73	Cum	262.50	5441.36
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.41**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		24.76				Cum	103.30	**2558.18**
	Total Cost								**181871.00**

	DEPTH - D=9.5m							9.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		1.50	7.07		524.60	3709.72
	9m to 10.5m	1	4.71		1.15	5.42		565.60	3066.40
						47.85	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.6	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.8	1009.81
	7.5m to 9.0m	1	4.71		1.50	7.07		151	1067.80
						28.29	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	7.75	6.21			
		1	0.15	0.50	8.40	0.63			
						9.02	Cum.	4902.30	44198.71
6	**Reinforcement Steel**	1	-	-	-	**992.00**	Kg	76.00	75392.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		7.75	82.78			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**98.34**	Sqm.	186.30	18320.98
8	**CI Steps-5 Kg**	28	-	-	-	**28.00**	No's	240.90	6745.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.38			19.38	Cum	262.50	5088.55
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.41**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		28.47				Cum	103.30	**2940.51**
	Total Cost								**190018.15**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - COLLECTION SYSTEM FOR GAYA NORTH

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	**Clearing jungle** including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth upto 30 cm measured at a height of 1 m above ground level and removal of rubbish upto a distance of 50 m outside the periphery of the area cleared.	Sqm	5000.00	5.80	29000.00
	SOR-BCD-20; It.-2.32; Pg.-96				
B)	**EXCAVATION AND REFILLING**				
2	Earthwork in excavation in foundation trenches or drains(not exceeding 1.5 m in width or 10 sq.m. on plan)including dressing of sides and ramming of bottoms, lift upto 1.5 m. including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	Upto 1.5 m	Cum	84880.00	360.70	30616216.00
b)	From 1.5 m to 3.0 m	Cum	26528.00	407.00	10796896.00
c)	From 3.0 m to 4.5 m	Cum	8303.00	453.38	3764414.00
d)	From 4.5 m to 6 m	Cum	2169.00	499.76	1083979.00
e)	From 6.0 m to 7.5 m	Cum	503.00	546.14	274708.00
	SOR-BCD-20; It.-2..8.1; Pg.-93 and 2.27.1 Pg-96				
3	Excavation work in foundation trenches including dressing of sides and ramming of bottoms for all lifts, including getting cut the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
I)	**Ordinary Rock**				
a)	From 4.5m to 6.0 m	Cum	108.00	900.90	97297.20
b)	From 6.0 m to 7.5 m	Cum	28.00	984.00	27552.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II)	**Hard Rock (Blasting Prohibited)**				
a)	From 4.5m to 6.0 m	Cum	108.00	1500.50	162054.00
b)	From 6.0 m to 7.5 m	Cum	28.00	1583.60	44341.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering for all lifts and leads.	Cum	107584.00	116.50	12533536.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	15000.00	102.60	1539000.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
6	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	24717.00	262.50	6488213.00
	Rate analysis				
C)	**PIPE MATERIAL**				
I)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP3 class** (with s/s ends IS: 458 - 1988 (amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.				
a)	200 mm internal diameter	M	55927.00	636.51	35598311.52
b)	250 mm internal diameter	M	114.00	875.89	99851.73
	SOR-RUIDP-17; Item-17.19 to 17.19.19., and Item 17.21 to 17.21.2.19 Pg.-66 and rate analysis				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
II)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP4 class** (with s/s ends IS: 458 - 1988 (amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.				
a)	200 mm internal diameter	M	3226.00	677.51	2185659.76
b)	250 mm internal diameter	M	163.00	947.89	154506.45
c)	300 mm internal diameter	M	811.00	1238.77	1004643.13
d)	350 mm internal diameter	M	193.00	1865.65	360070.31
e)	400 mm internal diameter	M	520.00	2128.03	1106574.43
f)	450 mm internal diameter	M	652.00	2590.41	1688944.86
g)	500 mm internal diameter	M	618.00	2962.28	1830691.94
h)	600 mm internal diameter	M	18.00	3960.04	71280.75
	SOR-RUIDP-17; Item-17.18 to 17.18.19., and Item 17.21 to 17.21.2.19 Pg.-68, 65 and rate analysis				
7	Property connection (House connection)				
	Providing at site, lowering and laying tranches, aligning & jointing of PVC-U pipes (SN 8) as per IS 15328 (amended up to date) and as per specifications with rubber rings with socket and spigot joint, (EPDM/SBR) for all depths for pipe length as per drawing and specification including hydraulic field testing (including the cost and conveyance of water to site for testing) and commissioning etc. complete as directed by Engineer.				
a)	110 mm dia	M	47052.00	244.00	11480688.00
	SOR-RUIDP-17; Item-17.25.1 Page 70				
8	Providing and placing in position precast **RCC in vertical post of** size 40x90x1500 mm depth **at each House service connection** in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centering complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	Cum	17.00	6675.00	113475.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48				
D)	**MANHOLES**				
9	Constructing **brick masonry circular type manhole Type "A" with 0.91 m internal dia** at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer Incharge : .91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out with sewer bricks confirming to IS: 4885 etc as per drawing and as directed by Engineer.				
	For Sewer Diameter - upto 400 mm dia				
a)	Upto 1.23 m depth to invert	No.	747.00	11403.94	8518746.46
b)	Upto 1.50 m depth to invert	No.	978.00	13120.27	12831626.00
c)	Upto 1.65 m depth to invert	No.	289.00	14484.59	4186046.00
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
10	Constructing **brick masonry circular manhole** Type "B" **1.22 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement :4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, 1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering , refilling,all complete.Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out with sewer bricks confirming to IS:4885 all complete as per standard drawing and as directed by Engineer Incharge.				
	For Sewer Diameter - upto 700 mm dia				
a)	Upto 1.68m depth to invert	No.	47.00	18358.94	862870.00
b)	Upto 2.00 m depth to invert	No.	0.00	21183.22	0.00
c)	Upto 2.30 m depth to invert	No.	598.00	23846.04	14259934.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing **brick masonry circular manhole Type "C" 1.52 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, 2.30 m deep with SFRC Cover and frame (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out with sewer bricks conforming to IS:4885 all complete as per standard drawing and as directed by Engineer Incharge.				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis				
	For Sewer Diameter - upto 800 mm dia				
a)	Upto 2.65 m depth to invert	No.	208.00	46826.65	9739943.00
b)	Upto 3.00 m depth to invert	No.	148.00	53565.50	7927694.00
c)	Upto 3.50 m depth to invert	No.	152.00	63330.09	9626174.00
d)	Upto 4.00 m depth to invert	No.	79.00	73094.68	5774480.00
e)	Upto 4.25 m depth to invert	No.	51.00	77976.98	3976826.00
f)	Upto 4.50 m depth to invert	No.	39.00	82618.37	3222117.00
g)	Upto 5.00 m depth to invert	No.	45.00	92382.96	4157233.00
h)	Upto 5.50 m depth to invert	No.	25.00	102147.55	2553689.00
i)	Upto 6.00 m depth to invert	No.	17.00	111671.24	1898411.00
j)	Upto 6.50 m depth to invert	No.	19.00	121435.83	2307281.00
k)	Upto 7.00 m depth to invert	No.	21.00	131200.42	2755209.00
l)	Upto 7.50 m depth to invert	No.	2.00	140724.11	281448.00

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
E)	**Bedding**				
12	Providing and laying Compacted **Granular Bedding** in thick layers and well compacted etc. complete **(Type A bedding)**	Cum	10163.00	FALSE	0.00
	Rate Analysis				
F)	**TIMBERING AND BARRICADING**				
13	**Close timbering** in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):				
a)	Depth not exceeding 1.5 m	Sqm	122247.00	110.40	13496069.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	Sqm	61264.00	115.00	7045360.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	Sqm	19360.00	126.40	2447104.00
d)	Depth more than 4.5 m and upto 6.0 m	Sqm	5628.00	137.80	775538.00
e)	Depth more than 6.0 m and upto 7.5 m	Sqm	1221.00	149.20	182173.00
f)	Depth more than 7.5 m and upto 9.0 m	Sqm	1.00	160.60	161.00
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for **planking, strutting and packing** materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	Sqm	2097.21	1480.10	3104081.00
	BSR-BCD-20; Item-2.19, Pg-95	Sqm			
15	Open timbering in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):				
a)	Depth not exceeding 1.5 m	Sqm	6098.30	56.70	345774.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	Sqm	4190.40	60.10	251843.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	Sqm	1373.20	65.50	89945.00
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for planking, strutting and packing materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	Sqm	20.97	758.20	15899.00
	BSR-BCD-20; Item-2.23, Pg-95				
17	Providing and fixing Barricading at site of work for restricting the general public using 80-100 mm dia Wooden Ballies as vertical post with average spacing of 1.80 meter between two vertical posts, having height at least 1.5 m above road/ ground level and at least 30-45 cm below road/ ground level by making suitable size hole in road/ ground, providing and fixing two rows of 80-100 mm Wooden Ballies as horizontal members with jute russies. Both vertical and horizontal members shall be painted in red and white colour strips as per approved pattern as and when it becomes shabby but at least after every alternate shifting at new location. After shifting/ removal of barricading holes shall be filled up properly and site is to be cleared in all respect. (Note: measurement is to be done in linear basis.	M	131156.00	84.00	11017104.00
	RUIDP SOR 17, Item-4.26, Pg-13				
G)	**ROAD RESTORATION AND DISMENTLING WORKS**				
18	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	Cum	4046.00	342.00	1383732.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
19	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	Cum	5600.00	1520.00	8512000.00
	RCD/SOR-18; Item-2.6; Pg-29				
20	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sq m	434.00	74.90	32506.60
	BSR-BCD-20; Item-15.43.1, Pg-225				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
	Cement concrete road Restoration				
21	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	2240.00	10.00	22400.00
	BSR-BCD-20; Item-2.39, Pg-97				
22	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	1867.00	116.50	217505.50
	BSR-BCD-20; Item-2.40, Pg-97				
23	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	Cum	5600.00	4461.00	24981600.00
	Restoration of WMM Road				
	RCD/SOR-18; Item-6.2; Pg-138				
24	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	150.00	637.00	95550.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
25	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	90.00	896.00	80640.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	Reconstruction of Bituminous Asphalt Roads				
26	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	603.00	904.00	545112.00
	Grading III: 100 mm thick	Cum	603.00	949.00	572247.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
27	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	8092.00	30.30	245187.60
	BSR-RCD-18-Item 5.1, Pg-84				
28	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	8092.00	11.10	89821.20
	BSR-RCD-18-Item 5.2, Pg-84				
29	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	324.00	5406.00	1751544.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	8092.00	246.00	1990632.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	8092.00	110.00	890120.00
	SOR-RCD-GoB-18-Item 5.9 B I, Pg- 132				
32	**Demolishing stone rubble masonry** including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	Cum	885.00	385.70	341345.00
	In Cement Mortar	Cum	885.00	817.10	723134.00
	BSR-BCD-18; Item-15.9.1, Pg-185, BSR-BCD-18; Item-15.9.2, Pg-185				
33	**Dismantling stone slab flooring** laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	Sqm	2951.00	88.70	261754.00
	BSR-BCD-20; Item-15.25, Pg-224				
34	**Demolishing Cement Concrete** including disposal of materials within 50 meter lead:				
	1:3:6 or richer mix	Cum	328.00	807.20	264762.00
	1:4:8 or leaner mix	cum	328.00	498.80	163606.00
	BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-18; Item-15.2.2, Pg-222				
35	**Demolishing R.C.C.work** including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	Cum	656.00	1172.70	769291.00
	BSR-BCD-20; Item-15.3, Pg-224				
36	**Installation of laboratory** for testing various materials and concrete cubes required for the project components as specified in specifications and as directed by Engineer in charge etc complete	L.S.	1.00	500000.00	500000.00
	LS				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
37	**Utility Shifting:** Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	Km	7.00	10511.00	73577.00
	Rate Analysis				
38	Providing **PVC-U pipes as per IS 15328 drop connection** externally for depth from 0.60 m and upto 1.0 m drop from branch sewer line to main sewer manhole or vice versa including inspection and cleaning eye, PVC-U drop pipe and bend encased around with cement concrete M15 with all form work, cutting holes in walls and making good with brick/ stone masonry work in cement sand mortar 1:4 plastered with cement sand mortar 1:3 with stiff cement mortar 1:1 around PVC-U pipe in brick masonry wall, making required channels complete as per standard design and specifications and/ or as the directed of the Engineer:				
A)	315 mm nominal dia				
a)	For 0.6 m to 1.0 m drop	No.	153.00	27700.00	4238100.00
b)	Upto 1.5 m drop	No.	145.00	29200.00	4234000.00
c)	upto 2 m drop	No.	72.00	30700.00	2210400.00
d)	upto 2.5 m drop	No.	50.00	32200.00	1610000.00
e)	upto 3.0 m drop	No.	41.00	33700.00	1381700.00
f)	upto 3.5 m drop	No.	21.00	35200.00	739200.00
g)	upto 4.0 m drop	No.	12.00	36700.00	440400.00
h)	upto 4.5 m drop	No.	8.00	38200.00	305600.00
i)	upto 5.0 m drop	No.	9.00	39700.00	357300.00
j)	upto 5.5 m drop	No.	6.00	41200.00	247200.00
B)	315 mm dia				
a)	upto 2.5 m drop	No.	2.00	31950.00	63900.00
	SOR-RUIDP-17; Item-17.58.4 to 17.58.5., and Item 17.57.4 to 17.57.5 Pg.- 90, 91				
39	Providing and laying RCC NP4 pipe jointing with cement mortar joints by **trenchless method** adopting any suitable technology below ground at required depth including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipment for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit upto 3 metre depth with proper protection at the three sides, providing and casting of MS cutting edges for front shield and constructing thrust bed at designed level as directed by the Engineer, crane for handling of pipes, and any other machinery, tool & tackles required, complete in all respect as per specification and the direction of the Engineer.				
	SOR-RUIDP-17; Item-17.81 to 17.81.5.Pg.-94				
	In all types of soils				
a)	200 mm internal diameter	M	1557.00	7180.00	11179260.00
b)	250 mm internal diameter	M	10.00	7420.00	74200.00
c)	300 mm internal diameter	M	24.00	10600.00	254400.00
d)	350 mm internal diameter	M	10.00	12150.00	121500.00
e)	400 mm internal diameter	M	13.00	13700.00	178100.00
f)	450 mm internal diameter	M	17.00	15400.00	261800.00
g)	500 mm internal diameter	M	16.00	17200.00	275200.00

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
40	Providing, laying and jointing RCC NP4 pipe with cement mortar joints by trenchless method adopting any suitable technology below ground at required depth under running traffic condition as per the direction of NHAI including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipment for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit (upto 3 metre depth) with proper protection at the three sides, providing and casting of MS cutting edges for front shield and constructing thrust bed at designed level as directed by the Engineer, necessary de-watering and providing concrete foundations at the base of the Drive pit, crane for handling of pipes, and any other machinery, tools & tackles required, construction of temporary works as per requirement and as approved by NH authorities complete in all respect for the road crossing at necessary depth (all depths) with all lead and lifts, as per specification and the direction of the Engineer.				
	SOR-RUIDP-17; Item-17.79.1.1 Pg.-92				
	In all types of soils				
a)	600 mm internal diameter	M	10.00	18200.00	182000.00
41	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in **trenchless technology**, with proper protection at three sides with shoring sheets/ wooden planks and ISMB's, maintaining during pushing/ puling of pipe, back filling, necessary de-watering including all machinery, tools, and tackles required as per specification and the direction of the Engineer				
	SOR-RUIDP-17; Item-17.70 to 17.70.1.Pg.-95	Nos			
a)	In all types of soils	per pit per metre	17.00	24200.00	411400.00
				Sub Total A	**330076409.00**
42	**Carriage of Material**				
a)	Sand	MT	82713.00	9.40	777502.00
b)	Aggregate	MT	344828.00	9.40	3241383.00
c)	Bricks	MT	157303.00	9.40	1478648.00
				Sub Total B	**5497533.00**
	Total Cost (A+B)				**335573942.00**

DROP CALCULATION GAYA NORTH

	Dia/Depth	1	1.5	2	2.5
	200	153	145	72	50
	250			**2**	
	300				
	350				
	400				
	450				
Nos.	200	153	145	72	50
	250			2	

3	3.5	4	4.5	5	5.5
41	21	12	8	9	6
41	21	12	8	9	6

517

0.6 to
200
200
200

200
200
200

200
200
200

200
200
200
200
200
200
200
200
200
200
200
200
200
200

) 1.000	1.001 to 1.500		1.501 to 2.000		2.001 t
0.999	200	1.488			
0.999	200	1.484			
0.995	200	1.483	200	1.992	200
0.989	200	1.48	200	1.984	200
0.988	200	1.48	200	1.976	200
0.98	200	1.479	200	1.966	200
0.98	200	1.476	200	1.964	200
0.98	200	1.472	200	1.96	200
0.98	200	1.471	200	1.957	200
0.976	200	1.469	200	1.943	200
0.976	200	1.468	200	1.939	200
0.964	200	1.467	200	1.938	200
0.96	200	1.465	200	1.928	200
0.959	200	1.462	200	1.924	200
0.956	200	1.461	200	1.902	200
0.955	200	1.46	200	1.884	200
0.954	200	1.457	200	1.882	200
0.954	200	1.45	200	1.877	200
0.953	200	1.445	200	1.868	200
0.953	200	1.444	200	1.866	200
0.951	200	1.429	200	1.847	200
0.951	200	1.422	200	1.834	200
0.95	200	1.42	200	1.832	200
0.945	200	1.414	200	1.828	200
0.945	200	1.414	200	1.826	200
0.941	200	1.408	200	1.813	200
0.921	200	1.405	200	1.81	200
0.913	200	1.403	200	1.809	200
0.912	200	1.396	200	1.808	200
0.911	200	1.394	200	1.8	200
0.911	200	1.392	200	1.789	200
0.909	200	1.386	200	1.785	200
0.907	200	1.383	200	1.783	200
0.906	200	1.382	200	1.783	200
0.905	200	1.373	200	1.772	200
0.905	200	1.363	200	1.767	200
0.9	200	1.356	200	1.747	200
0.893	200	1.351	200	1.739	200
0.893	200	1.351	200	1.73	200
0.892	200	1.344	200	1.725	200
0.89	200	1.344	200	1.717	200
0.888	200	1.326	200	1.711	200
0.885	200	1.323	200	1.701	200
0.883	200	1.316	200	1.7	200

0.881	200	1.316	200	1.7	200
0.876	200	1.314	200	1.684	200
0.874	200	1.311	200	1.673	200
0.873	200	1.307	200	1.667	200
0.871	200	1.305	200	1.661	200
0.866	200	1.304	200	1.659	200
0.861	200	1.302	200	1.637	200
0.858	200	1.297	200	1.633	200
0.857	200	1.297	200	1.631	
0.853	200	1.285	200	1.617	
0.847	200	1.282	200	1.617	
0.846	200	1.278	200	1.617	
0.842	200	1.273	200	1.611	
0.841	200	1.27	200	1.599	
0.841	200	1.267	200	1.593	
0.84	200	1.259	200	1.591	
0.84	200	1.257	200	1.586	
0.838	200	1.248	200	1.583	
0.837	200	1.245	200	1.578	
0.836	200	1.244	200	1.574	
0.825	200	1.242	200	1.571	
0.825	200	1.24	200	1.561	
0.809	200	1.235	200	1.56	
0.808	200	1.233	200	1.54	
0.804	200	1.23	200	1.531	
0.804	200	1.224	200	1.522	
0.802	200	1.224	200	1.519	
0.794	200	1.224	200	1.518	
0.792	200	1.222	200	1.514	
0.787	200	1.222	200	1.513	
0.781	200	1.219			
0.78	200	1.21			
0.78	200	1.205			
0.777	200	1.203			
0.763	200	1.201			
0.763	200	1.201			
0.757	200	1.201			
0.756	200	1.199			
0.75	200	1.198			
0.749	200	1.194			
0.748	200	1.188			
0.747	200	1.188			
0.747	200	1.185			
0.743	200	1.178			
0.741	200	1.176			
0.741	200	1.172			
0.741	200	1.171			

0.739	200	1.168
0.736	200	1.166
0.735	200	1.165
0.732	200	1.164
0.732	200	1.163
0.732	200	1.16
0.727	200	1.16
0.727	200	1.147
0.712	200	1.145
0.712	200	1.143
0.711	200	1.137
0.711	200	1.133
0.71	200	1.13
0.707	200	1.13
0.701	200	1.125
0.701	200	1.121
0.701	200	1.119
0.7	200	1.117
0.697	200	1.114
0.697	200	1.112
0.696	200	1.11
0.695	200	1.098
0.695	200	1.097
0.695	200	1.089
0.694	200	1.083
0.693	200	1.081
0.688	200	1.08
0.687	200	1.08
0.686	200	1.076
0.685	200	1.073
0.685	200	1.073
0.684	200	1.07
0.681	200	1.069
0.678	200	1.067
0.677	200	1.066
0.674	200	1.061
0.671	200	1.06
0.671	200	1.06
0.67	200	1.057
0.67	200	1.055
0.659	200	1.05
0.657	200	1.039
0.648	200	1.031
0.648	200	1.03
0.646	200	1.029
0.641	200	1.027
0.64	200	1.022

0.638	200	1.02
0.638	200	1.013
0.636	200	1.01
0.629	200	1.004
0.629	200	1.003
0.628	200	1.003
0.628	200	1.001
0.628		
0.623		
0.616		
0.615		
0.61		
0.608		
0.607		
0.607		

ɔ 2.500	2.501 to 3.000		3.001 to 3.500		3.501 t
2.493	200	2.993	200	3.434	200
2.485	200	2.98	200	3.349	200
2.484	200	2.975	200	3.348	200
2.484	200	2.961	200	3.324	200
2.473	200	2.961	200	3.307	200
2.449	200	2.932	200	3.298	200
2.425	200	2.904	200	3.288	200
2.419	200	2.9	200	3.271	200
2.412	200	2.891	200	3.25	200
2.39	200	2.874	200	3.241	200
2.385	200	2.871	200	3.218	200
2.365	200	2.851	200	3.216	200
2.351	200	2.844	200	3.209	
2.349	200	2.843	200	3.192	
2.348	200	2.829	200	3.172	
2.341	200	2.812	200	3.121	
2.324	200	2.805	200	3.114	
2.322	200	2.798	200	3.077	
2.312	200	2.786	200	3.071	
2.302	200	2.77	200	3.04	
2.286	200	2.765	200	3.033	
2.272	200	2.756			
2.268	200	2.742			
2.267	200	2.721			
2.243	200	2.719			
2.239	200	2.708			
2.227	200	2.689			
2.189	200	2.68			
2.169	200	2.668			
2.165	200	2.662			
2.163	200	2.622			
2.163	200	2.61			
2.154	200	2.605			
2.135	200	2.603			
2.135	200	2.602			
2.126	200	2.6			
2.111	200	2.582			
2.109	200	2.566			
2.1	200	2.564			
2.063	200	2.558			
2.06	200	2.511			
2.057					

2.056
2.047
2.04
2.039
2.022
2.017
2.014
2.012

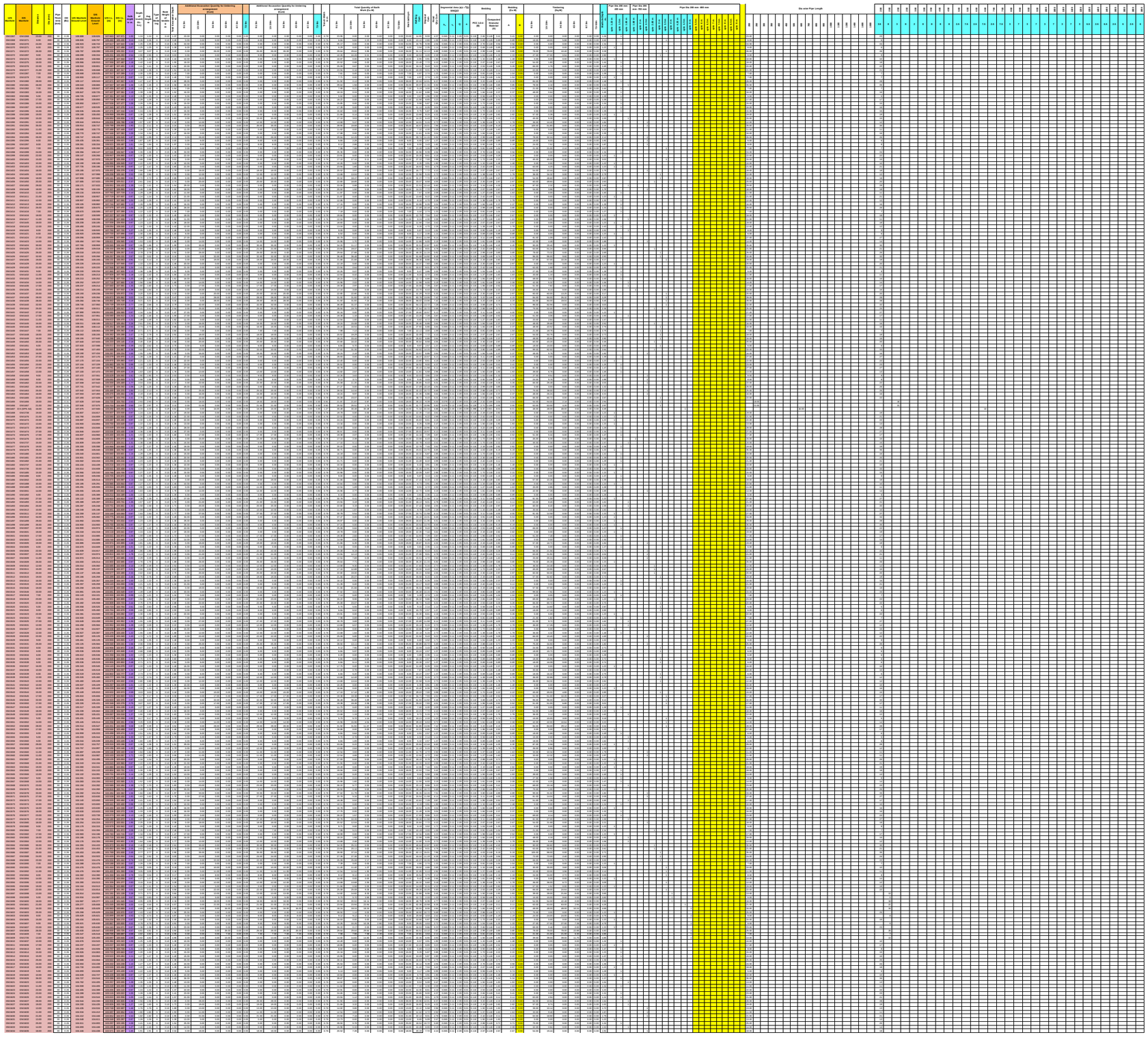
) 4.000	4.001 to 4.500		4.501 to 5.000		5.001 t
3.963	200	4.483	200	4.979	200
3.911	200	4.479	200	4.974	200
3.879	200	4.349	200	4.879	200
3.872	200	4.348	200	4.846	200
3.767	200	4.314	200	4.756	200
3.764	200	4.172	200	4.754	200
3.764	200	4.166	200	4.654	
3.737	200	4.086	200	4.638	
3.645			200	4.518	
3.633					
3.632					
3.59					

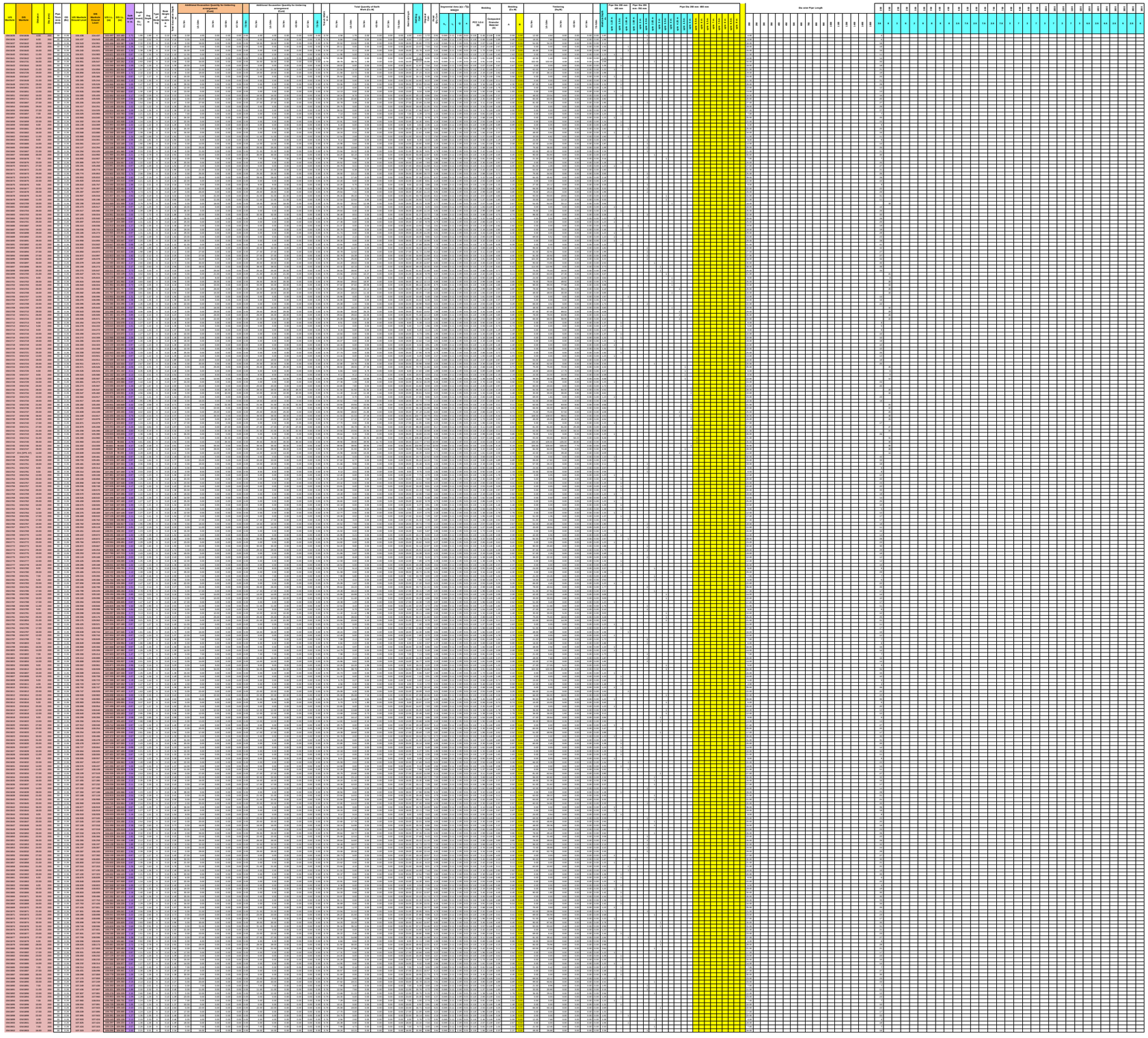
o 5.500	beyond 5.5	
5.4	0	0
5.384		
5.333		
5.323		
5.273		
5.128		

250	1.419
250	2.482

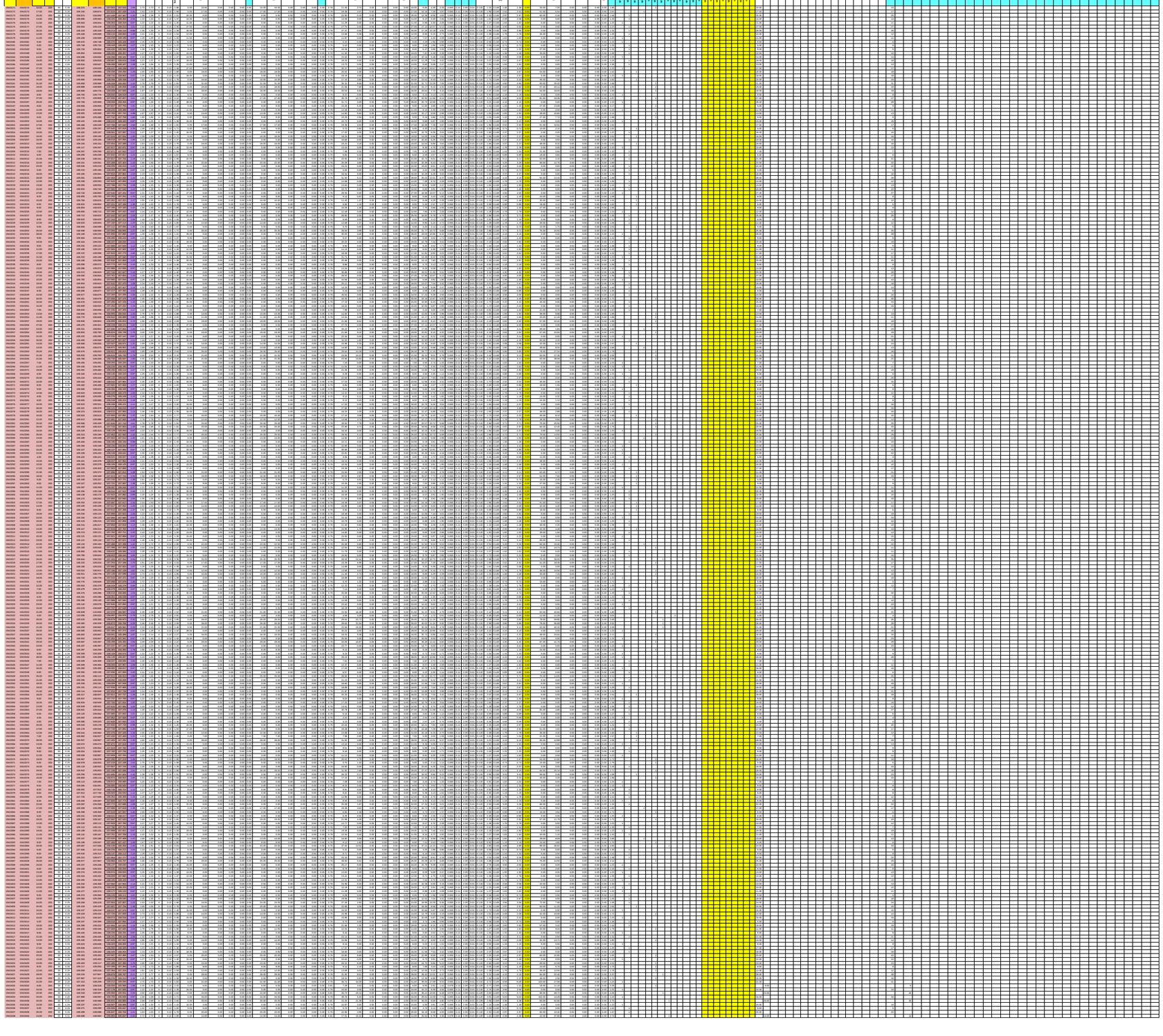
Dewas Sewerage Project
Hydraulic Calculations for House sewage collection system - North

| GIS Number | GIS Manhole | Distance | Slope | Pipe Dia (m) | GIS Manhole Ground Level | GIS Manhole Invert Level | GIS I.L. (m) | Earth Cut in m | Pipe Type | Pipe Length GIS (m) | Pipe Length Manual | Add Weight for Joints | Additional Excavation Quantity for trenching arrangement (Cum) | | | | | Additional Excavation Quantity for trenching arrangement (Cum) | | | | | Total Quantity of Earth Work (Cu.m) | | | | | Dewatering Pump (Nos) | Dewatering Pump (HP) | Engineering Area (Sq.m) | | | Shoring & Strutting | Shoring (Sq.m) | Bedding | Bedding (Cu.m) | Trenching (Cu.m) | | | | Manhole Chamber | Manhole Chamber | Pipe Dia (DN mm - OD mm) | | | | |





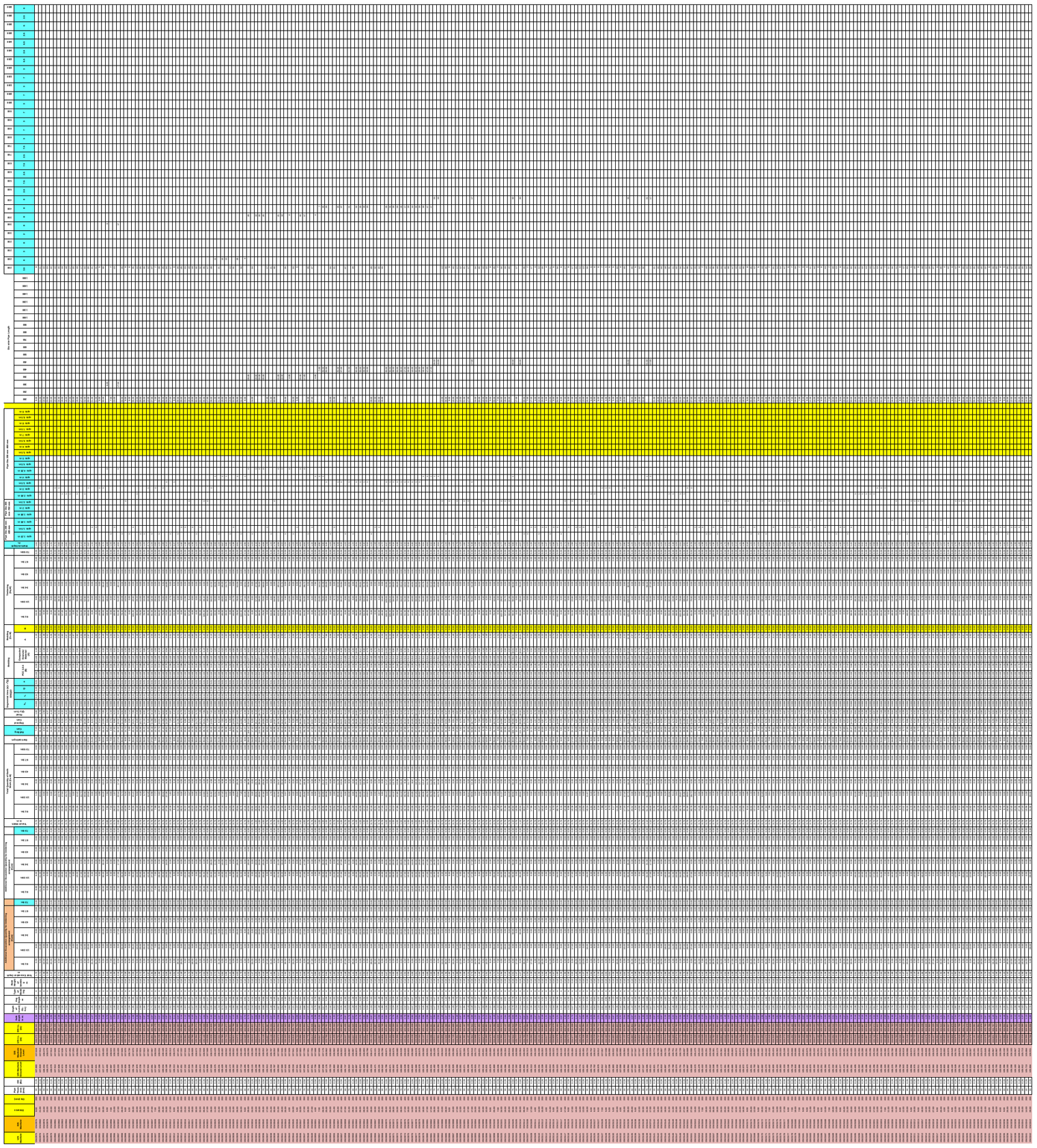
| SW Manhole | SW Manhole | Distance | Pipe Type (RCC/ HDPE) | Pipe Dia (mm) | Pipe Class | GW Manhole (Ground Level) | GW Manhole (Invert Level) | DTR (+) DIG | DTR (-) FILL | Earth work in Cu. m. | Length of Pipe in m | Pipe Laid in Rock (Yes/ No) | Rock Weight in Kg | Rock Volume in Cu. m. | Additional Excavation Quantity for Widening arrangement (Cum) | | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | | Total Quantity of Earth Work (Cu.M) | | | | | Sand Cushion (Cu.m) | Pipe Laid in Sand (Yes/ No) | Sand Weight in Kg | Sand Volume in Cu. m. | Pipe Dia 300 mm (Nos) | | | | | Pipe Dia 350 mm (Nos) | | | | | Pipe Dia 300 mm - 350 mm | | | | | Dia wise Pipe Length | | | | |



| GW Number | GW Reduced Level (m) | Distance | Pipe Type (RCC/ HDPE) | Pipe Dia (mm) | Pipe Class | GW Number | GW Reduced Level (m) | DTR (1 in 3H:) | Earth work in Cu. m. | Length of Pipe (m) | Type of Soil | Rate of Soil (Rs./ Cum) | Rate of Rock (Rs./ Cum) | Additional Excavation Quantity for Indexing arrangement (Cum) | | | | | Additional Excavation Quantity for Indexing arrangement (Cum) | | | | | Total Quantity of Earth Work (Cu.M) | | | | | Vertical Lift | Lifting Height (m) | Segment Area (Sq.m) | Segmental Arch (b)= 75/ Height | | | Webbing | | Webbing (Cu.M) | Thickness of Haunching (Cu.M) | Haunching (Cu.M) | | | Thickness of Benching (Cu.M) | Benching (Cu.M) | | | Pipe Dia 200 mm (Nos) | | | Pipe Dia 250 mm (Nos) | | | Pipe Dia 300 mm (Nos) | | | Pipe Dia 350 mm (Nos) | | | Pipe Dia 400 mm (Nos) | | | Pipe Dia 450 mm (Nos) | | | Pipe Dia 500 mm (Nos) | | | Pipe Dia 600 mm (Nos) | | | Pipe Dia 700 mm (Nos) | | | Pipe Dia 800 mm (Nos) | | | Pipe Dia 900 mm (Nos) | | | Pipe Dia 1000 mm (Nos) | | | Pipe Dia 1100 mm (Nos) | | | Pipe Dia 1200 mm (Nos) | | | Dia wise Pipe Length | | | | |

| MH Number | MH Number | Distance | Pipe Type (RCC/ HDPE) | Pipe Dia (mm) | Pipe Class | GIS MH Ground Level (mGL) | GIS Invert Level (IL) (mIL) | GIS I/L (mIL) | Earth Work in Cu. m | Length (m) | Type of Soil | Avg Depth (m) | Base Width (m) | Side Slope (1:n) | Additional Excavation Quantity for Widening arrangement (Cum) | | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | | Total Quantity of Earth Work (Cu.M) | | | | | Sand Bedding (Cu.m) | Sand Bedding Width (m) | Sand Bedding Thickness (m) | Sand Bedding Length (m) | Sand Bedding (Cu.m) | Jacketing (Cu.m) | Jacketing Width (m) | Jacketing Thickness (m) | Jacketing Length (m) | Jacketing (Cu.m) | Total Sand Bedding (Cu.m) | Total Jacketing (Cu.m) | Pipe Dia 160 mm (60 mm Thk) | | | Pipe Dia 200 mm (60 mm Thk) | | | Pipe Dia 250 mm - 800 mm | | | | |

Sewerage System in Oklahoma Town/Assessment Sheet Zone 1



Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| Sr. No. | Manhole No. | Date | Pipe Type (RCC/ DI/ GI/ CI/ PVC) | Pipe Dia (mm) | Pipe Class (NP2/ NP3/ NP4) | Pipe Material (RCC/ DI/ GI/ CI/ PVC) | Invert Level (m) | Ground Level (m) | Depth of Excavation (m) | Length of Pipe (m) | Type of Soil (Soft/ Hard/ Rock) | Bed Width (m) | Bed Thickness (m) | Additional Excavation Quantity for Widening (Cum) | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Total Quantity of Earth Work (Cu.M) | | | | Total Quantity of Earth Work (Cu.M) | Total Quantity of Earth Work (Cu.M) | Total Quantity of Earth Work (Cu.M)

	Length of BT Road	7586.98125	m	11.57
	Length of Concrete Road	17499.204	m	26.68
0.380196146	Length of WMM Road	561.69345	m	0.86
	soil road	39930.2504	m	60.89
	Total	65578.1291	m	
		Road cutting and road restoration details		
	DIA OF PIPE	200	250	300
	Length of pipe	62267	297	947
		0.95	0.00	0.01
	Length of BT Road	7204	34	110
	Length of Cement road	16616	79	253
	Length of Kattcha Road	533.00	3	8
	ash quantity	1262.816	6.399	22.264
	CC QUANTITY	3788.448	19.197	66.792
	BT QUANTITY			
	Grading II: 100 mm thick (Cum)	547.504	2.754	9.68
	Grading III: 100 mm thick (Cum)	547.504	2.754	9.68
	Prime coat (Sqm)	5475.04	27.54	96.8
	Tack Coat (Sqm)	5475.04	27.54	96.8
	Bituminous Macadam (Cum)	219.0016	1.1016	3.872
	Bituminous Penetration Macadam (Sqm)	5475.04	27.54	96.8
	20mm thick Open-Graded Premix Carpet (Sqm)	5475.04	27.54	96.8
	WMM			
	Construction of granular sub-base Cum	101.27	0.6075	1.76
	Mix Macadam (WMM) 150 mm thick (Cum)	60.762	0.3645	1.056
		CC	BT	WMM
	Depth	0.3	0.5	0.4
	Width of trench	0.76	0.81	0.88
	EXCAVATION	200	250	300
	0 TO 1.5			
	BT ROAD	2737.52	13.77	48.4
	CC ROAD	3788.448	19.197	66.792
	WMM road	405.08	2.43	7.04
	Total	6525.968	32.967	115.192

	Pipe Dia 200 mm -400 mm			Pipe Dia 200 mm
	upto 1.225 m	upto 1.5 m	upto 1.65 m	upto 1.68 m
	747	978	289	47
Manhole Dia (avg)	1.41	1.41	1.72	2.79
Pipe Dia	0.76	0.76	0.81	0.88
Pipe Depth (total)	1.225	1.5	1.65	1.68
Upto 1.5m	1.225	1.5	1.5	1.5

1.5 to 3 m	0	0	0.15	0.18
3 to 4.5m				
4.5 to 6m				
6 to 7.5				
7.5 to 9				
Pipe Excavation qnty. (m3)				
Upto 1.5m	1.31271	1.6074	2.0898	3.6828
1.5 to 3 m	0	0	0.20898	0.441936
3 to 4.5m	0	0	0	0
4.5 to 6m	0	0	0	0
6 to 7.5	0	0	0	0
7.5 to 9	0	0	0	0
Manhole nos.	747	978	289	47
Total pipe Ex. Qnty. to deduct				
Upto 1.5m	980.59437	1572.0372	603.9522	173.0916
1.5 to 3 m	0	0	60.39522	20.770992
3 to 4.5m	0	0	0	0
4.5 to 6m	0	0	0	0
6 to 7.5	0	0	0	0
7.5 to 9	0	0	0	0
	Property Connections	0.717495309		
	Length in CC road	12555.59678		
	Length in BT road	5443.623456		
	Length in WMM road	403.0124155		
	Length in soil road	28649.76735		
	Road side chamber			
	One side property			
	Two side property			
	No of proposed road side chamber			
	Total property	7842		
	Length of pvc pipe	47052		
	Excavation in CC Road	1544.338404		
	Excavation in Bt ROAD	1115.942808		
	Exacavation in WMM road	66.09403613		
	Excavation in all types of soil	20423.20875		
ROAD RESTORATION FOR PROPERTY CONNECTION	ash quantity	514.779468		
	CC	1544.338404		
	Granular Sub Base	41.30877258		
	Wet Mix Mecadam	24.78526355		
	WMM Grading II	16.52350903		
	WMM Grading III	16.52350903		
	Prime coat (Sqm)	2231.885617		
	Tack Coat (Sqm)	2231.885617		

	Bituminous Macadam (Cum)	89.27542468		
	Bituminous Penetration Macadam (Sqm)	2231.885617		
	20mm thick Open-Graded Premix Carpet (Sqm)	2231.885617		
	REFILLING			
	Pipe diameter	200	250	300
		0.2	0.25	0.3
	Thickness	0.06	0.06	0.08
	Total outer diameter	0.26	0.31	0.38
		62267	297	947
	Area of pipe	0.0530998	0.0754866	0.1134262
	Pipe quantity	3306.365247	22.419505	107.4146114
	Property connection	0.11		
		0.4		
		0.51		
		47052		
		447.2080866		
			200	30
			250	30
			300	40

								0.25
								0.25
								0.5
350	400	450	500	600	700	800	900	1000
203	533	669	634	28	0	0	0	0
0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
23	62	77	73	3	0	0	0	0
54	142	179	169	7	0	0	0	0
2	5	6	5	0	0	0	0	0
5.4	14.91	19.69	19.435	0.889	0	0	0	0
16.2	44.73	59.07	58.305	2.667	0	0	0	0
2.3	6.51	8.47	8.395	0.381	0	0	0	0
2.3	6.51	8.47	8.395	0.381	0	0	0	0
23	65.1	84.7	83.95	3.81	0	0	0	0
23	65.1	84.7	83.95	3.81	0	0	0	0
0.92	2.604	3.388	3.358	0.1524	0	0	0	0
23	65.1	84.7	83.95	3.81	0	0	0	0
23	65.1	84.7	83.95	3.81	0	0	0	0
0.5	1.3125	1.65	1.4375	0	0	0	0	0
0.3	0.7875	0.99	0.8625	0	0	0	0	0
1	1.05	1.1	1.15	1.27	1.37	1.49	1.6	1.73
350	400	450	500	600	700	800	900	1000
11.5	32.55	42.35	41.975	1.905	0	0	0	0
16.2	44.73	59.07	58.305	2.667	0	0	0	0
2	5.25	6.6	5.75	0	0	0	0	0
27.7	77.28	101.42	100.28	4.572	0	0	0	0
n -700 mm	Pipe Dia 200 mm -800 mm							
upto 2.3 m	upto 2.65 m	upto 3 m	upto 3.5 m	upto 4 m	upto 4.25 m	upto 4.5 m	upto 5 m	upto 5.5 m
598	208	148	152	79	51	39	45	25
2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79
1	1.05	1.1	1.15	1.27	1.37	1.49	1.6	1.73
2.3	2.65	3	3.5	4	4.25	4.5	5	5.5
1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

0.8	1.15	1.5	1.5	1.5	1.5	1.5	1.5	1.5
			0.5	1	1.25	1.5	1.5	1.5
							0.5	1
4.185	4.39425	4.6035	4.81275	5.31495	5.73345	6.23565	6.696	7.24005
2.232	3.368925	4.6035	4.81275	5.31495	5.73345	6.23565	6.696	7.24005
0	0	0	1.60425	3.5433	4.777875	6.23565	6.696	7.24005
0	0	0	0	0	0	0	2.232	4.8267
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
598	208	148	152	79	51	39	45	25
2502.63	914.004	681.318	731.538	419.88105	292.40595	243.19035	301.32	181.00125
1334.736	700.7364	681.318	731.538	419.88105	292.40595	243.19035	301.32	181.00125
0	0	0	243.846	279.9207	243.67163	243.19035	301.32	181.00125
0	0	0	0	0	0	0	100.44	120.6675
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

350	400	450	500	600	700	800	900	1000
0.35	0.4	0.45	0.5	0.6	0.7	0.8	0.9	1
0.15	0.15	0.15	0.15	0.17	0.17	0.19	0.2	0.23
0.5	0.55	0.6	0.65	0.77	0.87	0.99	1.1	1.23
203	533	669	634	28	0	0	0	0
0.196375	0.2376138	0.28278	0.3318738	0.465723	0.594545	0.7698686	0.950455	1.188383
39.864125	126.64813	189.17982	210.40796	13.040243	0	0	0	0

					Total			
1100	1200	1400	1600	1800				
0	0	0	0	0	65578			
0.00	0.00	0.00	0.00	0.00	1			
0	0	0	0	0	7586			
0	0	0	0	0	17499			
0	0	0	0	0	562			
0	0	0	0	0	1352			
0	0	0	0	0	4055			
0	0	0	0	0	586			
0	0	0	0	0	586			
0	0	0	0	0	5860			
0	0	0	0	0	5860			
0	0	0	0	0	234			
0	0	0	0	0	5860			
0	0	0	0	0	5860			
					0			
0	0	0	0	0	109			
0	0	0	0	0	65			
1.83								
1100	1200	1400	1600	1800				
0	0	0	0	0	2930	CUM		
0	0	0	0	0	4055	CUM		
0	0	0	0	0	434	SQ M	173.66	CUM
0	0	0	0	0	6985			
					14405			

							1.73	
upto 6 m	upto 6.5 m	upto 7 m	upto 7.5 m	upto 8 m	upto 8.5 m	upto 9 m	1.83	
17	19	21	2	0	0	0		
2.79	2.79	2.79	2.79	2.79	2.79	2.79		
1.83	1.83	1.83	1.83	1.83	1.83	1.83		
6	6.5	7	7.5	8	8.5	9		
1.5	1.5	1.5	1.5	1.5	1.5	1.5		

1.5	1.5	1.5	1.5	1.5	1.5	1.5		
1.5	1.5	1.5	1.5	1.5	1.5	1.5		
1.5	1.5	1.5	1.55	1.5	1.5	1.5		
	0.5	1	1.45	1.5	1.5	1.5		
				0.5	1	1.5		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.913835	7.65855	7.65855	7.65855		
0	2.55285	5.1057	7.403265	7.65855	7.65855	7.65855		
0	0	0	0	2.55285	5.1057	7.65855		
17	19	21	2	0	0	0		
130.19535	145.51245	160.82955	15.3171	0	0	0	10048.818	m3
130.19535	145.51245	160.82955	15.3171	0	0	0	5419.1477	m3
130.19535	145.51245	160.82955	15.3171	0	0	0	1944.8044	m3
130.19535	145.51245	160.82955	15.82767	0	0	0	673.47252	m3
0	48.50415	107.2197	14.80653	0	0	0	170.53038	m3
0	0	0	0	0	0	0	0	m3

1100	1200	1400	1600	1800				
1.1	1.2	1.4	1.6	1.8				
0.23	0.24	0.27	0.28	0.3				
1.33	1.44	1.67	1.88	2.1				
0	0	0	0	0	65578			
1.389471	1.6288128	2.190681	2.7762712	3.464055	17			
0	0	0	0	0	4015			

Rate Analysis of High Alumina Cement Lining

A	High Alumina Cement: for MH	For 25 mm thk, per m2	
1	Area (unit)	m2	1.0
2	Thickness	mm	25.0
3	Volume	m3	0.025
4	Ratio (volume) (C:S)	1:	3
5	Cement volume (per m2 lining)	m3	0.00625
6	Sand volume (per m2 lining)	m3	0.01875
7	Cement Unit weight (kg /m3)	kg/m3	1440
8	Sand Unit weight (kg /m3)	kg/m3	1840
9	Cement weight (kg)	kg	9.0
10	Sand weight (kg)	kg	34.5
11	Cement basic rate (per kg)	INR/kg	27.3
12	Sand basic rate (per kg)	INR/kg	0.087
13	Total INR (per m2)	INR/m2	248.71
14	Carriage (0%)	0.0	0.00
15	Labor (20%)	20.0	49.74
	Sub total		298.46
16	Contractor's profit	10.0	29.85
17	Overhead	5.0	14.92
	Total INR (per m2)	INR/m2	**343.22**

B	High Alumina Cement: for Pipes	For 12 mm thk, per m2	
1	Area (unit)	m2	1.0
2	Thickness	mm	12.0
3	Volume	m3	0.012
4	Ratio (volume) (C:S)	1:	3
5	Cement volume (per m2 lining)	m3	0.00300
6	Sand volume (per m2 lining)	m3	0.00900
7	Cement Unit weight (kg /m3)	kg/m3	1440
8	Sand Unit weight (kg /m3)	kg/m3	1840
9	Cement weight (kg)	kg	4.3
10	Sand weight (kg)	kg	16.6
11	Cement basic rate (per kg)	INR/kg	27.3
12	Sand basic rate (per kg)	INR/kg	0.1
13	Total INR (per m2)	INR/m2	119.38
14	Carriage (0%)	0.0	0.00
15	Labor (20%)	20.0	23.88
	Sub total		143.26
16	Contractor's profit	10.0	14.33
17	Overhead	5.0	7.16
	Total INR (per m2)	INR/m2	**164.75**

	Dia wise lining cost	For 12 mm thk, per running meter pipe	
	Pipe ID (mm)	**Area (m2) per RM**	**Lining cost (INR)**
1	200	0.63	103.51
2	250	0.79	129.39
3	300	0.94	155.27
4	350	1.10	181.15
5	400	1.26	207.03
6	450	1.41	232.91
7	500	1.57	258.78
8	550	1.73	284.66
9	600	1.88	310.54
10	650	2.04	336.42
11	700	2.20	362.30
12	750	2.36	388.18
13	800	2.51	414.06
14	900	2.83	465.81
15	1000	3.14	517.57
16	1100	3.46	569.33
17	1200	3.77	621.08
18	1300	4.08	672.84
19	1400	4.40	724.60
20	1500	4.71	776.35
21	1600	5.03	828.11
22	1700	5.34	879.87
23	1800	5.65	931.62
24	1900	5.97	983.38
25	2000	6.28	1035.14

Summary for Carriage of Material for Collection System

	North							
Item	Brick MH	Road Side Chamber	Drop MH	Cement Concrete Pavement	Bedding & Road Restoration	High Alumina Cement	RCC MH	Total MT
Sand	4632.63	0	150	2810.18		678	0	82712.80
Aggregate	5085.48	0	311	5712.01	23374		0	344827.6
Bricks	15730.32	0.00					0	157303.2

BRICK MANHOLE

Rate analysis for Excavation, External plaster and Foot rest

MANHOLE DATA					EXCAVATION				PCC (M10)	Benching (M15)	COLLAR (M15)	BRICKS (1:3)					Cement Plaster Internal 1:3	Cement Plaster External Surface	Foot rest	Rate for excavation - BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75	Rate for plaster - 12 mm thick (1:3) - BSR-BCD-18-Item 13.11.1; Pg-167	Providing orange colour safety foot rest - BSR-BCD-18-Item 19.16; Pg-245	Total Amount (Rs.)
Manhole Type	No. of Manhole	Diameter of Manhole mm	Inner Diameter of Manhole m	Depth of Manhole	Excavation Depth	Excavation Diameter of Manhole m	Excavation Qty, in Cum	Total Excavation Qty Cum	Each MH	Each MH	Each MH	Upper Portion	Bottom/Middle Portion	Lower Portion	Bottom Portion	Total							
A	747.00	910.00	0.91	1.230	1.48	1.76	3.60	2689.66	0.382	0.128	0.365	0.509	0.385			0.89	2.84	4.58	4.00	319.6	153.6	240.9	2817.79
	978.00	910.00	0.91	1.50	1.75	1.76	4.26	4163.82	0.382	0.128	0.365	0.509	0.601			1.11	3.46	5.58	4.00	319.6	153.6	240.9	3182.13
	289.00	910.00	0.91	1.68	1.93	1.76	4.70	1356.97	0.382	0.128	0.365	0.509	0.746			1.25	3.88	6.26	5.00	319.6	153.6	240.9	3665.93
B	47.00	1220.00	1.22	1.68	2.01	2.07	6.76	317.92	0.686	0.269	0.365	1.457	0.102			1.56	4.70	7.07	5.00	319.6	153.6	240.9	4452.84
	0.00	1220.00	1.22	2.00	2.33	2.07	7.84	0.00	0.686	0.269	0.365	1.457	0.153			1.61	5.59	8.42	6.00	319.6	153.6	240.9	5244.87
	598.00	1220.00	1.22	2.30	2.63	2.07	8.85	5292.82	0.686	0.269	0.365	1.457	0.459			1.92	6.43	9.68	7.00	319.6	153.6	240.9	6002.45
C	208.00	1520.00	1.52	2.65	3.05	2.84	19.29	4012.15	1.617	0.507	0.365	1.787			2.391	4.18	9.79	15.13	8.00	319.6	153.6	240.9	10415.68
	148.00	1520.00	1.52	3.00	0.10	2.84	0.60	89.07	1.617	0.507	0.365	1.787	0.295		3.126	5.21	11.46	18.04	9.00	319.6	153.6	240.9	5130.86
	152.00	1520.00	1.52	3.50	3.90	2.84	24.67	3750.40	1.617	0.507	0.365	1.787	0.984	0.418	3.126	6.32	13.85	22.19	11.00	319.6	153.6	240.9	13944.29
	79.00	1520.00	1.52	4.00	4.40	2.84	27.84	2199.44	1.617	0.507	0.365	1.787	0.984	1.809	3.126	7.71	16.24	26.35	13.00	319.6	153.6	240.9	16076.63
	51.00	1520.00	1.52	4.25	4.65	2.84	29.42	1500.66	1.617	0.507	0.365	1.787	0.984	2.505	3.126	8.40	17.43	28.42	14.00	319.6	153.6	240.9	17142.80
	39.00	1520.00	1.52	4.50	4.90	2.84	31.01	1209.33	1.617	0.507	0.365	1.787	0.984	3.201	3.126	9.10	18.63	30.50	14.00	319.6	153.6	240.9	17968.07
	45.00	1520.00	1.52	5.00	5.40	2.84	34.18	1537.91	1.617	0.507	0.365	1.787	0.984	4.593	3.126	10.49	21.01	34.66	16.00	319.6	153.6	240.9	20100.41
	25.00	1520.00	1.52	5.50	5.90	2.84	37.34	933.58	1.907	0.507	0.365	1.787	0.984	5.985	3.126	11.88	23.40	38.81	18.00	319.6	153.6	240.9	22232.75
	17.00	1520.00	1.52	6.00	6.40	2.84	40.51	688.68	1.907	0.507	0.365	1.787	0.984	7.377	3.126	13.27	25.79	42.97	19.00	319.6	153.6	240.9	24124.19
	19.00	1520.00	1.52	6.50	6.90	2.84	43.68	829.88	1.907	0.507	0.365	1.787	0.984	8.768	3.126	14.67	28.18	47.12	21.00	319.6	153.6	240.9	26256.53
	21.00	1520.00	1.52	7.00	7.40	2.84	46.85	983.75	1.907	0.507	0.365	1.787	0.984	10.160	3.126	16.06	30.57	51.28	23.00	319.6	153.6	240.9	28388.87
	2.00	1520.00	1.52	7.50	7.90	2.84	50.01	100.03	1.907	0.507	0.365	1.787	0.984	11.552	3.126	17.45	32.95	55.43	24.00	319.6	153.6	240.9	30280.31

RATE ANALYSIS FOR GRANULAR BEDDING

Sr. No.	Decscription of item	Unit	Rate in Rs. (BSR-18)
1)	Cost of 20 mm aggregates	Cum	556.33
	Add Contractors Profit 10%		55.63
	Add Overhead Charges 10%		61.20
	BSR-BCD-18; Sr. No.-0295; Pg.-6/45 & BSR-BCD-18; Sr. No.-1.1; Pg.-77 & 79/ 118 & 120 ('@151.10/cum-loading & unloading & '@ 7.40-Haulage t.km (Unit wt. 2900 tonne.cum	Total	673.16
2)	Labour for laying Jointing	10%	740.48
		Say Rs.	**740.00**

Rate Analysis for Road Side Chamber					
Sr. No.	**Description**	**Unit**	**Quantity**	**Rate in Rs.**	**Amount in Rs.**
1	**Excavation :**				
	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	2.12	360.70	**765.69**
	BSR-BCD-17-Item 2.8.1; Pg-69				
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering-all work up to plinth level.				
	M - 10	Cum	0.32	3387.10	**1090.86**
	M - 15	Cum	0.01	3953.40	**23.58**
	M - 20	Cum	0.08	4380.40	**350.92**
	BSR-BCD-17; Sr. No.-4.1.5,4.1.3 and 4.1.2; Pg-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	1.02	116.50	**118.99**
	BSR-BCD-17-Item 2.26; Pg-72				
4	Brick work with bricks of class designation 100A in foundations and plinth in :				
	Cement Mortar 1:4 (1Cement : 4 Coarse Sand)	Cum	0.64	5048.20	**3211.53**
	BSR - BCD-17- Item- 6.1.12/1, P-87				
5	20 mm cement plaster 1:3 (1 cement : 3 coarsed sand) finished with a floating coat of neat cement.				
	BSR-BCD-17; Item-13.13.1, Pg-147	Sq m	8.06	218.60	**1761.52**
6	**Disposal of Excavated Earth**				
	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1.10	263.20	**289.88**
	Rate analysis				
7	**SFRC Frame Cover**				
	Providing & fixing of Circular shape 450 mm dia SFRC manhole cover with frame - MD - 10	No.	1.00	942.20	**942.20**
	BSR - BCD-17- Item- 19.19.1.3, P-202				
8	**Miscelleneous Items :**				
	Repairing the damaged water supply lines, telephone cables, electrical cables & other cables, taking required permissions if required from private or government agencies, etc. as required in order to complete the execution of the sewerage scheme in all respect.	L.S.	1.00	1000.00	**1000.00**
	TOTAL =				**9555.16**
	Rate per Road Side Chamber =				**9555.00**

Rate Analysis for Repairing water Supply Lines, Cabels etc.
(UTILITY SHIFTING)

S. No.	Particulars	No.	Qty.	Unit	Total Qty.	Rate	Amount Rs.
1	**REPAIRING THE DOF WATER SUPPLY PIPE LINES, ELECTRICAL CABLE UTILITY LINES DURING THE EXCAVATION & LAYING OF DRAINAGE PIPE ETC.**						
	Total No. of properties in 1.00 Km length in city Area Consider property connection at 30 mtr distance	1000/30		No.	33.00		
	i) Consider 10% comercial properties in 1.00 km	33 x 10%		No.	4.00		
	ii) Consider 90% Recidencial properties in 1.00 km	33 x 90%		No.	29.00		
1.1	**COST OF MATERIAL**						
	i) 20 mm dia. G.I. pipe (For Commercial)	4	2.5	Rmt	10.00	92.14	921.40
	ii) 15 mm dia. G.I. pipe (For Residential)	29	2.5	Rmt	72.50	71.67	5,196.08
	iii) 20 mm dia. G. I. Coupler	4	1	Nos.	4.00	81.90	327.60
	iv) 15 mm dia. G. I. Coupler	29	1	Nos.	29.00	62.36	1,808.44
	v) 20 mm dia. G. I. Union	4	1	Nos.	4.00	46.54	186.16
	vi) 15 mm dia. G. I. Union	29	1	Nos.	29.00	27.92	809.68
	Total cost of Material						**9,249.36**
	vii) Add 2 % Misc. Material charges						184.99
1.2	**COST OF LABOUR**						
	i) Plumber			No	1.00	323.00	323.00
	ii) Helper			No	1.00	254.00	254.00
	Total cost of Labour						**577.00**

1.3	**COST OF CABLE**						
	Consider 100 mtr cable replacement for 1.00 Km			LS			500.00
	Total cost of Cable						**500.00**
	TOTAL						**10,511.34**
						Say Rs.	**10,511.00**

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	t.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate	Amount	Reference
148	148	BSR-RCD 2016 Item 1.1, PG.No. 8
7.82609	62.6087	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

assumed soil density =1840 kg/cu.m

210.609	210.609

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - COLLECTION SYSTEM FOR GAYA SOUTH

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	**Clearing jungle** including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth upto 30 cm measured at a height of 1 m above ground level and removal of rubbish upto a distance of 50 m outside the periphery of the area cleared.	Sqm	6000.00	5.80	34800.00
	SOR-BCD-20; It.-2.32; Pg.-96				
B)	**EXCAVATION AND REFILLING**				
2	Earthwork in excavation in foundation trenches or drains(not exceeding 1.5 m in width or 10 sq.m. on plan)including dressing of sides and ramming of bottoms, lift upto 1.5 m. including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	Upto 1.5 m	Cum	91730.00	360.70	33087011.00
b)	From 1.5 m to 3.0 m	Cum	28878.00	407.00	11753346.00
c)	From 3.0 m to 4.5 m	Cum	8114.00	453.30	3678076.00
d)	From 4.5 m to 6 m	Cum	2420.00	499.60	1209032.00
e)	From 6m to 7.5 m	Cum	246.00	545.90	134291.00
	SOR-BCD-20; It.-2..8.1; Pg.-93 and 2.27.1 Pg-96				
3	Excavation work in foundation trenches including dressing of sides and ramming of bottoms for all lifts, including getting cut the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m .				
I)	**Ordinary Rock**				
a)	From 4.5m to 6.0 m	Cum	121.00	901.00	109021.00
b)	From 6m to 7.5 m	Cum	14.00	984.10	13777.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II)	**Hard Rock (Blasting Prohibited)**				
a)	From 4.5m to 6.0 m	Cum	121.00	1500.50	181560.50
b)	From 6m to 7.5 m	Cum	14.00	1449.00	20286.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96	Cum			
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering for all lifts and leads.	Cum	114545.00	116.50	13344493.00
	BSR-BCD-18-Item 2.26; Pg-75				
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	15000.00	102.60	1539000.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
6	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete including loading and unloading and transportation charges and as per direction of engineer in charge.	Cum	24681.00	262.50	6478763.00
	Rate analysis				
C)	**PIPE MATERIAL**				
I)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP3 class** (with s/s ends IS: 458 - 1988 (amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.				
a)	200 mm internal diameter	M	67749.00	636.51	43122915.99
	SOR-RUIDP-17; Item-17.19 to 17.19.19., and Item 17.21 to 17.21.2.19 Pg.-66 and rate analysis				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
II)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP4 class** (with s/s ends IS: 458 - 1988 (amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.				
a)	200 mm internal diameter	M	3846.00	677.51	2605703.46
b)	250 mm internal diameter	M	1096.00	947.89	1038887.44
c)	300 mm internal diameter	M	196.00	1238.77	242798.92
d)	350 mm internal diameter	M	110.00	1865.65	205221.50
e)	400 mm internal diameter	M	102.00	2128.03	217059.06
f)	450 mm internal diameter	M	18.00	2590.41	46627.38
	SOR-RUIDP-17; Item-17.18 to 17.18.19., and Item 17.21 to 17.21.2.19 Pg.-68,65 and rate analysis				
7	**Property connection (House connection)**				
	Providing at site, lowering and laying tranches, aligning & jointing of PVC-U pipes (SN 8) as per IS 15328 (amended up to date) and as per specifications with rubber rings with socket and spigot joint, (EPDM/SBR) for all depths for pipe length as per drawing and specification including hydraulic field testing (including the cost and conveyance of water to site for testing) and commissioning etc. complete as directed by Engineer.				
a)	110 mm dia	M	34656.00	244.00	8456064.00
	SOR-RUIDP-17; Item-17.25.1 Page 70				
8	Providing and placing in position precast **RCC in vertical post of** size 40x90x1500 mm depth **at each House service connection** in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centering complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	Cum	12.00	6675.00	80100.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48				
D)	**MANHOLES**				
9	Constructing **brick masonry circular type manhole Type "A" with 0.91 m internal dia** at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer Incharge : .91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out with sewer bricks confirming to IS: 4885 etc as per drawing and as directed by Engineer.				
	For Sewer Diameter - upto 400 mm dia				
a)	Upto 1.23 m depth to invert	No.	870.000	11403.94	9921431.62
b)	Upto 1.50 m depth to invert	No.	1096.00	13120.27	14379819.00
c)	Upto 1.65 m depth to invert	No.	321.00	14484.59	4649552.00
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
10	Constructing **brick masonry circular manhole** Type "B" **1.22 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement :4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, 1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering , refilling,all complete.Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out with sewer bricks confirming to IS:4885 all complete as per standard drawing and as directed by Engineer Incharge.				
	For Sewer Diameter - upto 700 mm dia				
a)	Upto 1.68m depth to invert	No.	61.00	18358.94	1119896.00
b)	Upto 2.00 m depth to invert	No.	0.00	21183.22	0.00
c)	Upto 2.30 m depth to invert	No.	713.00	23846.04	17002229.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing **brick masonry circular manhole Type "C" 1.52 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, 2.30 m deep with SFRC Cover and frame (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out :with sewer bricks conforming to IS:4885 all complete as per standard drawing and as directed by Engineer Incharge.				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis				
	For Sewer Diameter - upto 800 mm dia				
a)	Upto 2.65 m depth to invert	No.	198.00	46826.65	9271677.00
b)	Upto 3.00 m depth to invert	No.	172.00	53565.50	9213267.00
c)	Upto 3.50 m depth to invert	No.	146.00	63330.09	9246194.00
d)	Upto 4.00 m depth to invert	No.	124.00	73094.68	9063741.00
e)	Upto 4.25 m depth to invert	No.	45.00	77976.98	3508964.00
f)	Upto 4.50 m depth to invert	No.	27.00	82618.37	2230696.00
g)	Upto 5.00 m depth to invert	No.	49.00	92382.96	4526765.00
h)	Upto 5.50 m depth to invert	No.	64.00	102147.55	6537443.00
i)	Upto 6.00 m depth to invert	No.	19.00	111671.24	2121754.00
j)	Upto 6.50 m depth to invert	No.	13.00	121435.83	1578666.00
k)	Upto 7.00 m depth to invert	No.	11.00	131200.42	1443205.00
E)	**Bedding**				
12	Providing and laying Compacted **Granular Bedding** in thick layers and well compacted etc. complete **(Type A bedding)**	cum	11476.00	740.00	8492240.00
	Rate analysis				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
F)	**TIMBERING AND BARRICADING**				
13	**Close timberin**g in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):				
a)	Depth not exceeding 1.5 m	Sqm	144576.00	110.40	15961190.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	Sqm	68110.00	115.00	7832650.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	Sqm	20505.00	126.40	2591832.00
d)	Depth more than 4.5 m and upto 6.0 m	Sqm	6061.00	137.80	835206.00
e)	Depth more than 6.0 m and upto 7.5 m	Sqm	644.00	149.20	96085.00
f)	Depth more than 7.5 m and upto 9.0 m	Sqm	1.00	160.60	161.00
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for **planking, strutting and packing** materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	Sqm	2399.00	1480.10	3550760.00
	BSR-BCD-20; Item-2.19, Pg-95				
15	Open timbering in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):				
a)	Depth not exceeding 1.5 m	Sqm	7647.00	56.70	433585.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	Sqm	4761.00	60.10	286136.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	Sqm	1444.00	65.50	94582.00
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for planking, strutting and packing materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	Sqm	24.00	758.20	18197.00
	BSR-BCD-20; Item-2.23, Pg-95				
17	Providing and fixing Barricading at site of work for restricting the general public using 80-100 mm dia Wooden Ballies as vertical post with average spacing of 1.80 meter between two vertical posts, having height at least 1.5 m above road/ ground level and at least 30-45 cm below road/ ground level by making suitable size hole in road/ ground, providing and fixing two rows of 80-100 mm Wooden Ballies as horizontal members with jute russies. Both vertical and horizontal members shall be painted in red and white colour strips as per approved pattern as and when it becomes shabby but at least after every alternate shifting at new location. After shifting/ removal of barricading holes shall be filled up properly and site is to be cleared in all respect. (Note: measurement is to be done in linear basis.	M	153884.00	84.00	12926256.00
	RUIDP SOR Item-4.26, Pg-13				
G)	**ROAD RESTORATION AND DISMENTLING WORKS**				
18	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum	2259.00	342.00	772578.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
19	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum	5309.00	1520.00	8069680.00
	RCD/SOR-18; Item-2.6; Pg-29				
20	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sq m	2188.00	74.90	163881.20
	BSR-BCD-20; Item-15.43.1, Pg-188				
	Cement concrete road Restoration				
21	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	1712.00	10.00	17120.00
	BSR-BCD-18; Item-2.39, Pg-97				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
22	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	1427.00	103.30	147409.10
	BSR-BCD-20; Item-2.40, Pg-97				
23	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	Cum	5309.00	4461.00	23683449.00
	Restoration of WMM Road				
	RCD/SOR-18; Item-6.2; Pg-138				
24	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	678.00	637.00	431886.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
25	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	407.00	896.00	364672.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	Reconstruction of Bituminous Asphalt Roads				
26	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)				
	Grading II: 100 mm thick	Cum	417.00	904.00	376968.00
	Grading III: 100 mm thick	Cum	417.00	949.00	395733.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	4517.00	30.30	136865.10
	BSR-RCD-18-Item 5.1, Pg-84				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
28	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	Sqm	4517.00	11.10	50138.70
	BSR-RCD-18-Item 5.2, Pg-84				
29	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, Transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	181.00	5406.00	978486.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	Sqm	4517.00	246.00	1111182.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	Sqm	4517.00	110.00	496870.00
	SOR-RCD-GoB-18-Item 5.9 B I, Pg- 132				
32	**Demolishing stone rubble masonry** including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	Cum	1039.00	385.70	400742.00
	In Cement Mortar	Cum	1039.00	817.10	848967.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-18; Item-15.9.2, Pg-222				
33	**Dismantling stone slab flooring** laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	Sqm	3462.00	88.70	307079.00
	BSR-BCD-20; Item-15.25, Pg-24				
34	**Demolishing Cement Concrete** including disposal of materials within 50 meter lead:				
	1:3:6 or richer mix	Cum	385.00	807.20	310772.00
	1:4:8 or leaner mix	Cum	385.00	498.80	192038.00
	BSR-BCD-18; Item-15.2.1, Pg-185, BSR-BCD-18; Item-15.2.2, Pg-185				
35	**Demolishing R.C.C.work** including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	Cum	769.00	1172.70	901806.00
	BSR-BCD-20; Item-15.3, Pg-222				
36	**Installation of laboratory** for testing various materials and concrete cubes required for the project components as specified in specifications and as directed by Engineer in charge etc complete	L.S.	1.00	500000.00	500000.00
	LS				
37	**Utility Shifting:** Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	Km	8.00	10511.00	84088.00

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
	Analysis				
38	Construction of 450 mm internal dia circular Road side Chamber in all types of soil with 225mm thick BB masonary in CM (1:4), M20 PCC bed block, 225 mm thick PCC of M10 in foundation, 20mm thick inside and outside plastering with CM (1:4), finished with PCC M15 flooring of 75mm thick as per drawings, including Providing and fixing SFRC Medium duty Manhole Frame & cover of clear opening 450 mm dia, complete as per drawing and/or directed by Engineer.	No.	98.00	9554.00	936292.00
	Rate Analysis				
39	Providing **PVC-U pipes as per IS 15328 drop connection** externally for depth from 0.60 m and upto 1.0 m drop from branch sewer line to main sewer manhole or vise versa including inspection and cleaning eye, PVC-U drop pipe and bend encased around with cement concrete M15 with all form work, cutting holes in walls and making good with brick/ stone masonry work in cement sand mortar 1:4 plastered with cement sand mortar 1:3 with stiff cement mortar 1:1 around PVC-U pipe in brick masonry wall, making required channels complete as per standard design and specifications and/ or as the directed of the Engineer:				
A)	315 mm nominal dia				
a)	For 0.6 m to 1.0 m drop	No.	168.00	27700.00	4653600.00
b)	Upto 1.5 m drop	No.	125.00	29200.00	3650000.00
c)	upto 2 m drop	No.	91.00	30700.00	2793700.00
d)	upto 2.5 m drop	No.	54.00	32200.00	1738800.00
e)	upto 3.0 m drop	No.	43.00	33700.00	1449100.00
f)	upto 3.5 m drop	No.	25.00	35200.00	880000.00
g)	upto 4.0 m drop	No.	21.00	36700.00	770700.00
h)	upto 4.5 m drop	No.	13.00	38200.00	496600.00
i)	upto 5.0 m drop	No.	5.00	39700.00	198500.00
j)	upto 5.5 m drop	No.	1.00	41200.00	41200.00
	SOR-RUIDP-17; Item-17.66.1& 17.67 Pg.-89				
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by **trenchless method** adopting any suitable technology below ground at required depth including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipment for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit upto 3 metre depth with proper protection at the three sides, providing and casting of MS cutting edges for front shield and constructing thrust bed at designed level as directed by the Engineer, crane for handling of pipes, and any other machinery, tool & tackles required, complete in all respect as per specification and the direction of the Engineer.				
	SOR-RUIDP-17; Item-17.81 to 17.81.5.Pg.-94				
	In all types of soils				
a)	200 mm internal diameter	M	1884.00	7180.00	13527120.00
b)	250 mm internal diameter	M	29.00	7420.00	215180.00
c)	300 mm internal diameter	M	10.00	10600.00	106000.00
d)	350 mm internal diameter	M	10.00	12150.00	121500.00
e)	400 mm internal diameter	M	10.00	13700.00	137000.00
f)	450 mm internal diameter	M	10.00	15400.00	154000.00
	SOR-RUIDP-17; Item-17.79 to 17.79.2.10,Pg.-92				

Sr. No.	Description	Units	Qty.	Rate in Rs.	Amount in Rs.
41	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in **trenchless technology**, with proper protection at three sides with shoring sheets/ wooden planks and ISMB's, maintaining during pushing/ puling of pipe, back filling, necessary de-watering including all machinery, tools, and tackles required as per specification and the direction of the Engineer				
	SOR-RUIDP-17; Item-17.70 to 17.70.1.Pg.-95	Nos			
a)	In all types of soils	per pit per metre	19.00	24200.00	459800.00
				Sub Total A	**359604516**
42	**Carriage of Material**				
a)	Sand	MT	80518.00	9.40	756869.00
b)	Aggregate	MT	374737.00	9.40	3522528.00
c)	Bricks	MT	175999.00	9.40	1654391.00
				Sub Total B	**5933788**
	Total Cost (A+B)				**365538304**

Dia/Depth	0.6	1	1.5	2	2.5	3	3.5	4
200		168	**125**	**91**	**54**	**43**	**25**	**21**
250		-	-	-	-	-	-	-
Nos.								
200		168	125	91	54	43	25	21

Nos.	
200	168

4.5	5	5.5	
13	**5**	**1**	
-	-	-	
13	5	1	546

0.6 to 1 m		1.001 t
200.000	0.995	200
200.000	0.991	200
200.000	0.986	200
200.000	0.980	200
200.000	0.980	200
200.000	0.978	200
200.000	0.976	200
200.000	0.974	200
200.000	0.972	200
200.000	0.970	200
200.000	0.968	200
200.000	0.966	200
200.000	0.966	200
200.000	0.959	200
200.000	0.957	200
200.000	0.957	200
200.000	0.957	200
200.000	0.953	200
200.000	0.943	200
200.000	0.938	200
200.000	0.935	200
200.000	0.935	200
200.000	0.935	200
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200.000	0.878	200

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200.000	0.869		200
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200.000	0.668		
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200.000	0.659		
200.000	0.654		

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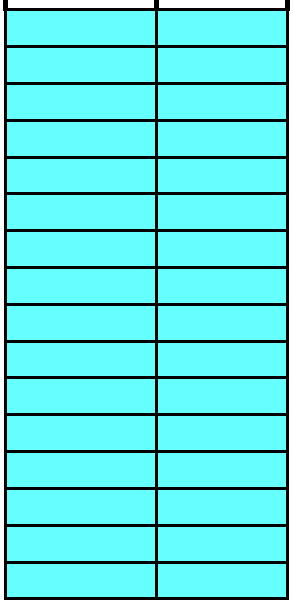

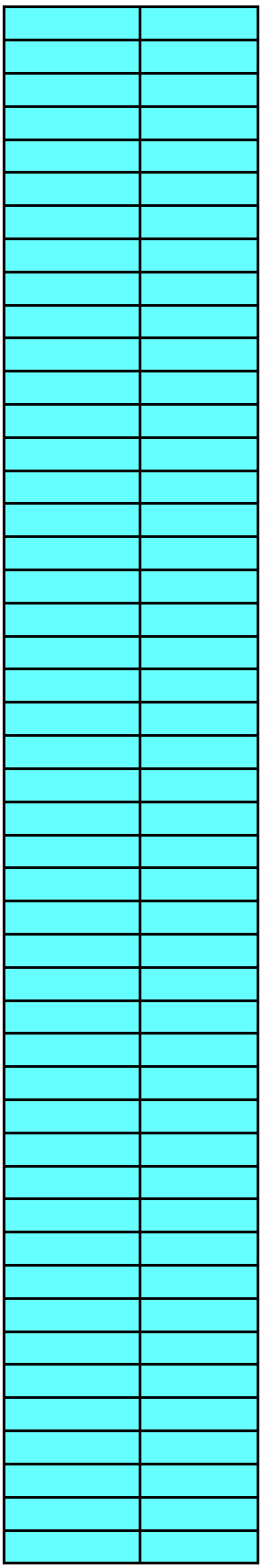

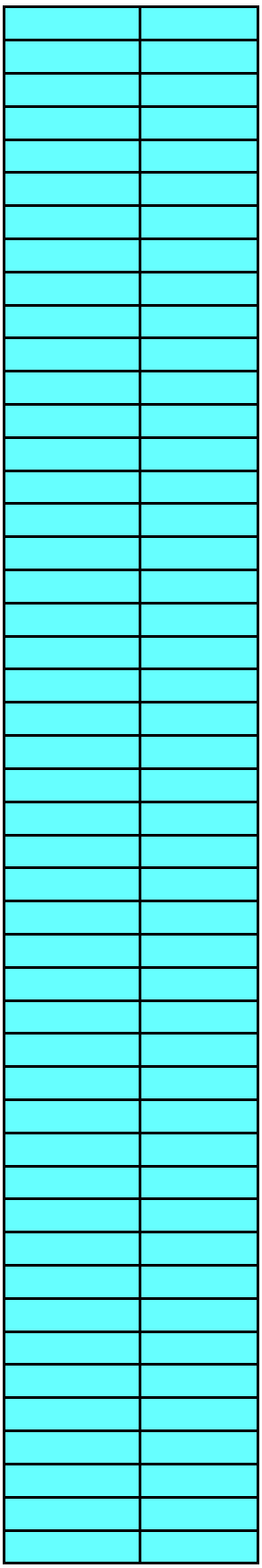

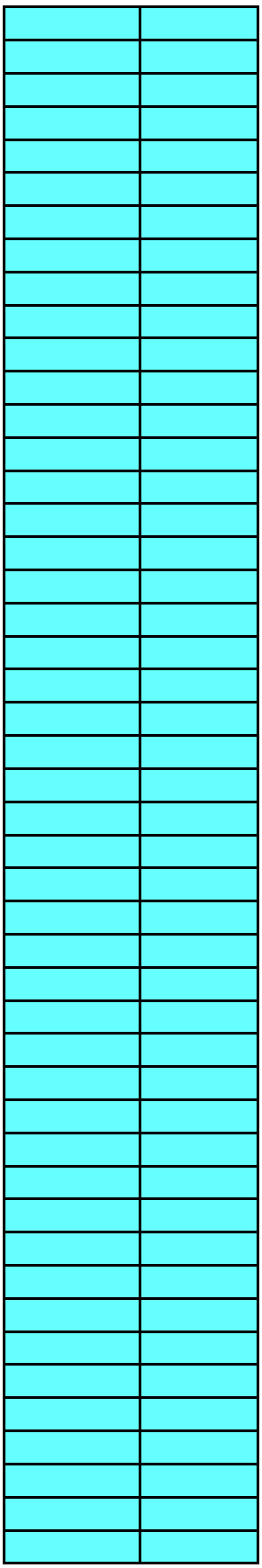

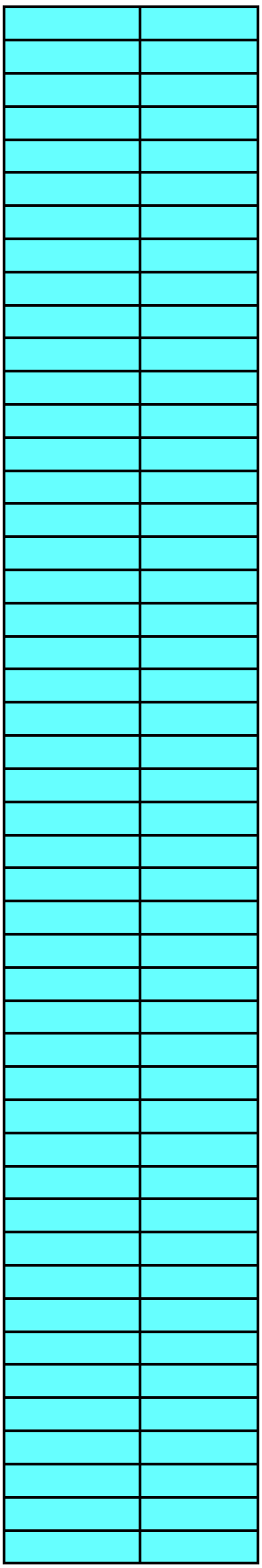

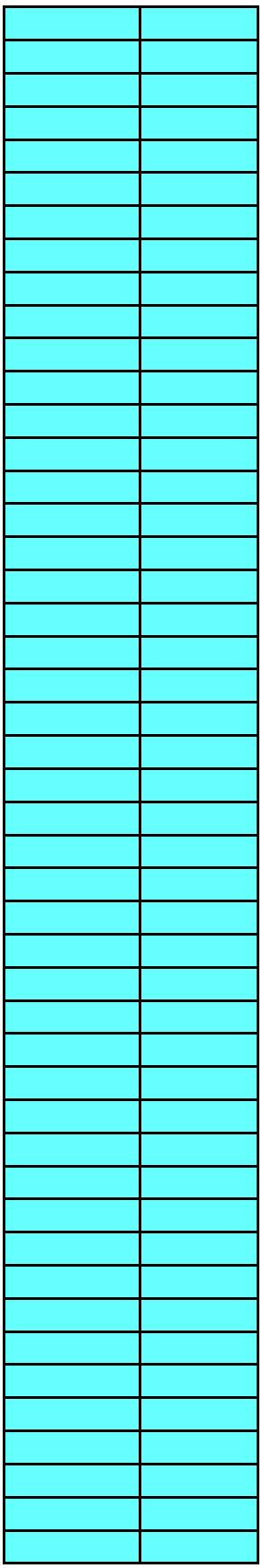

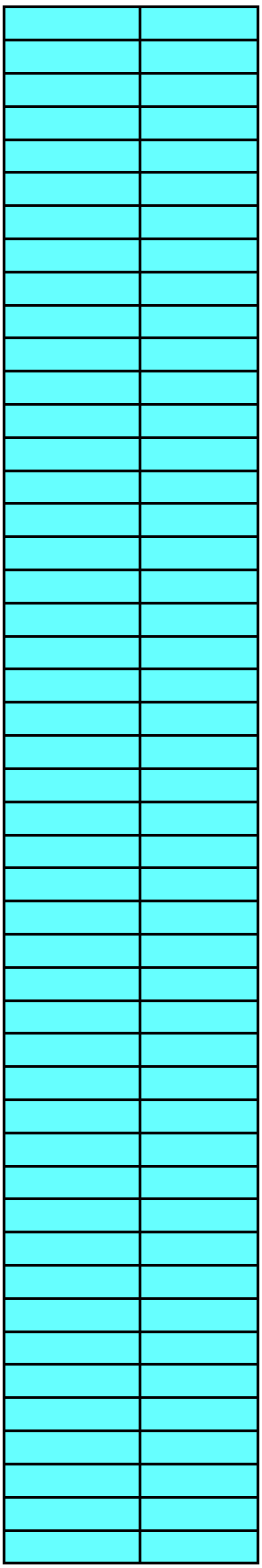

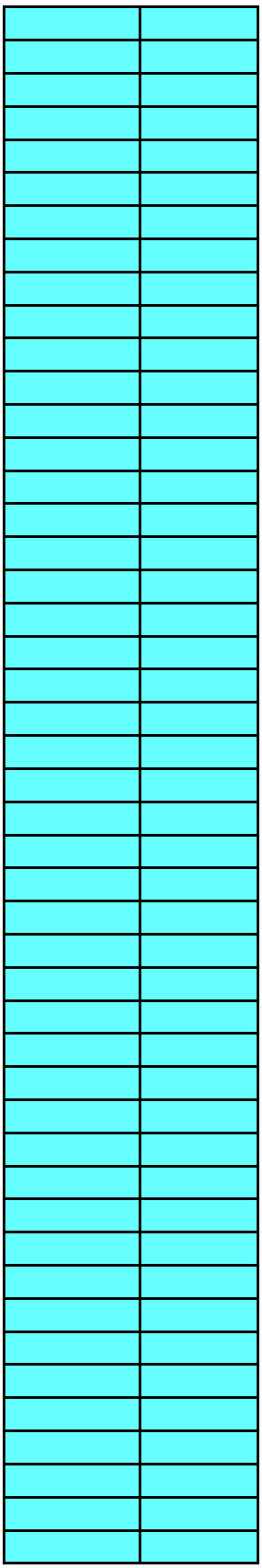

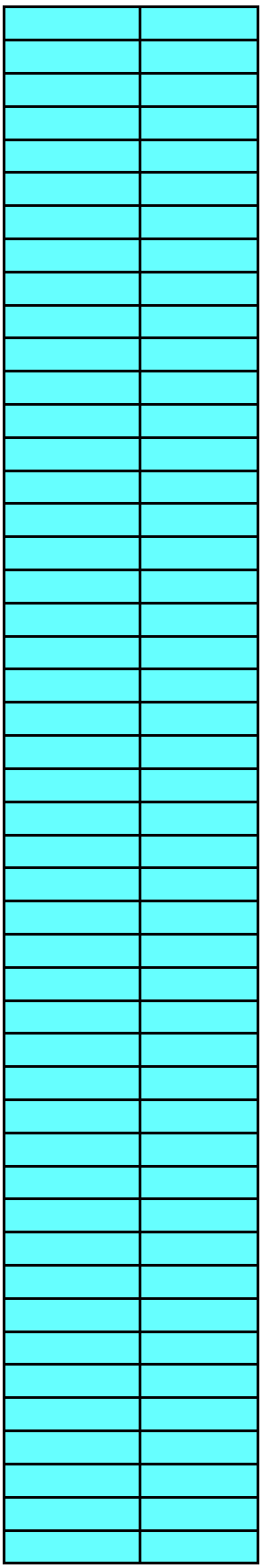

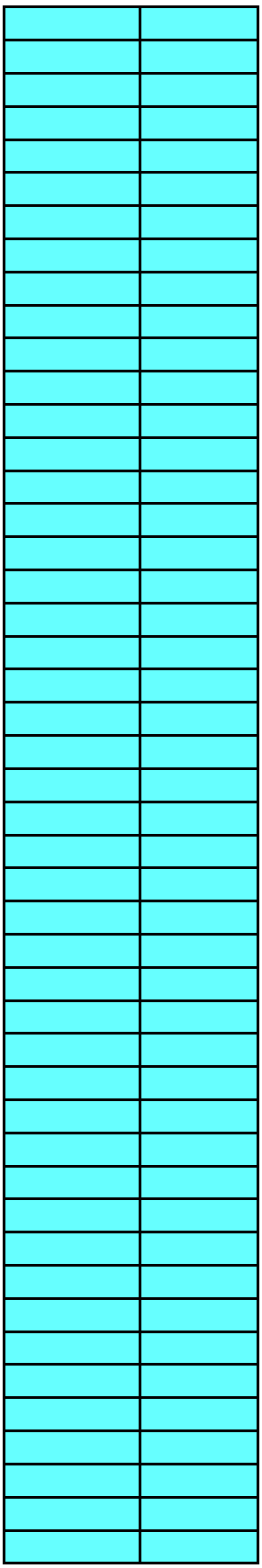

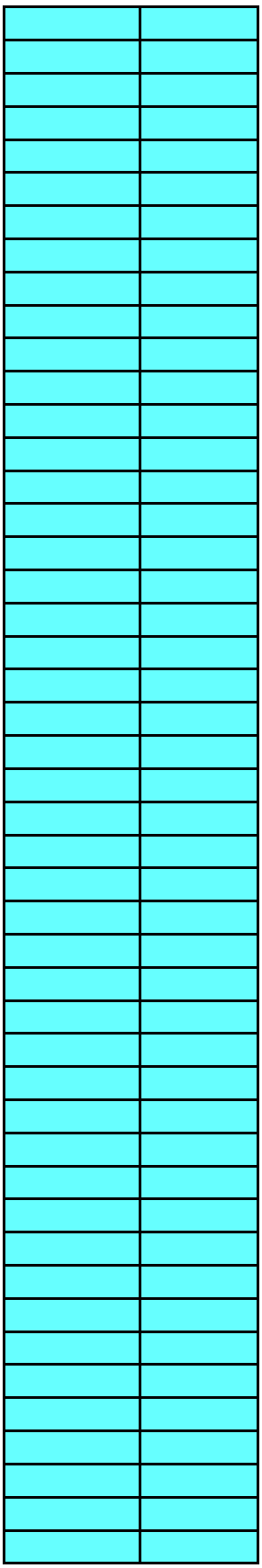

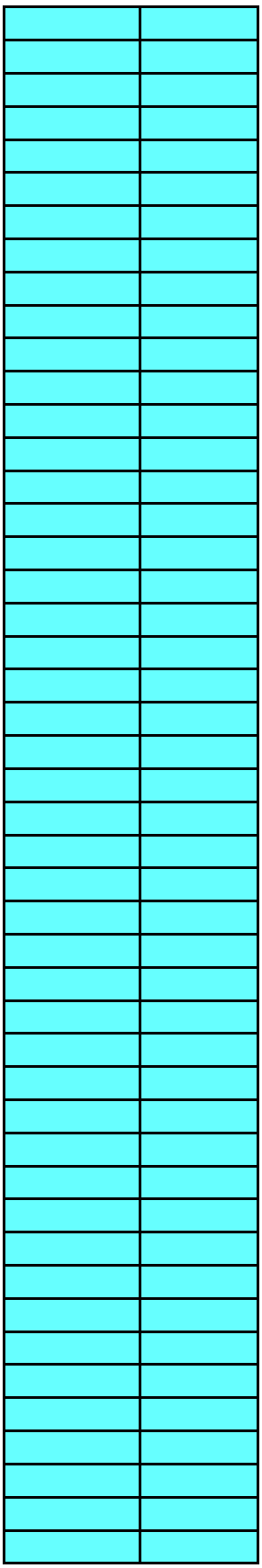

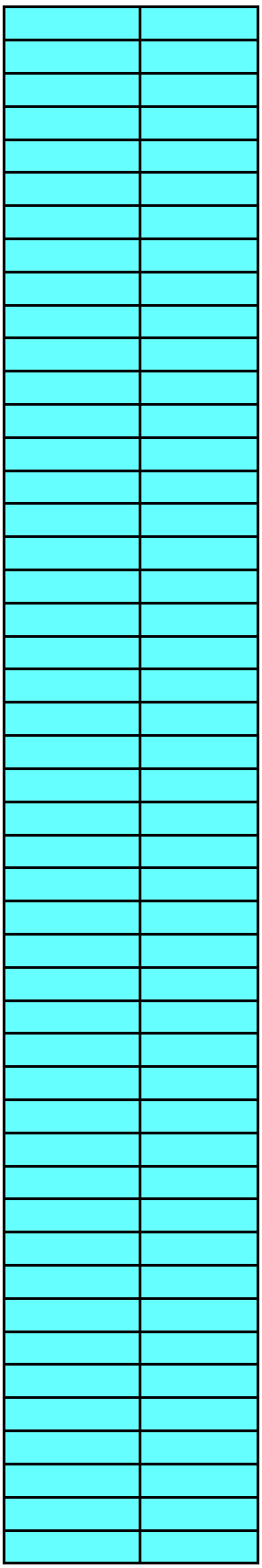

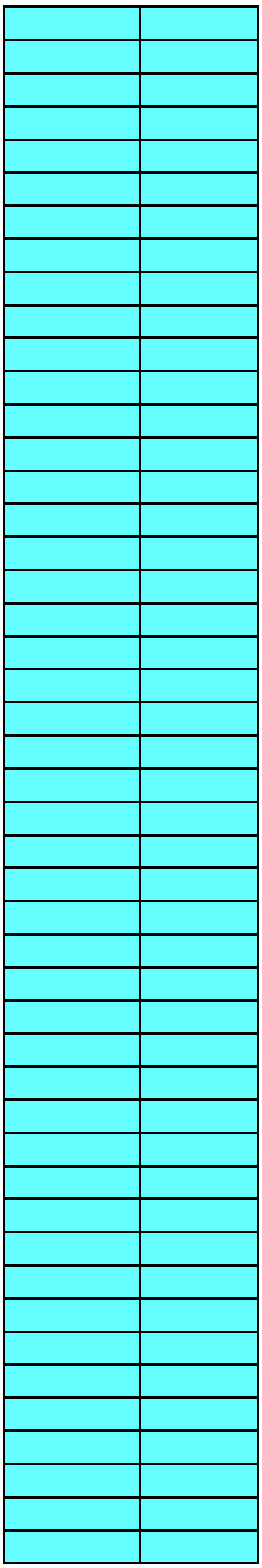

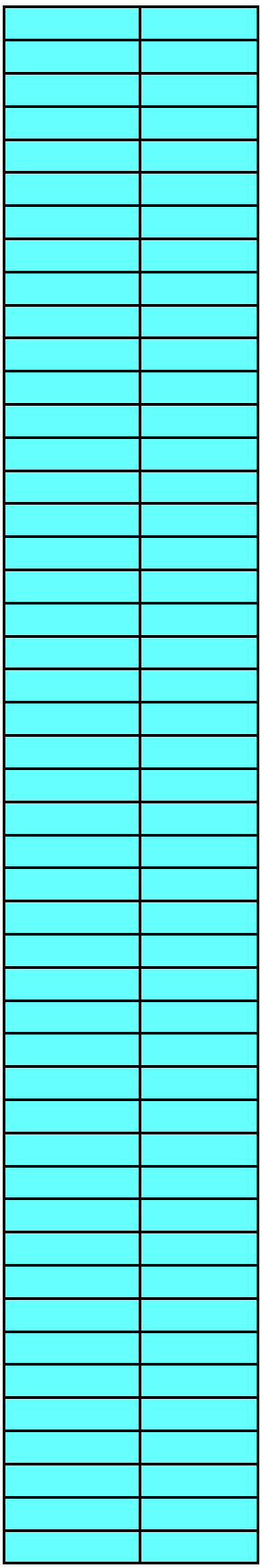

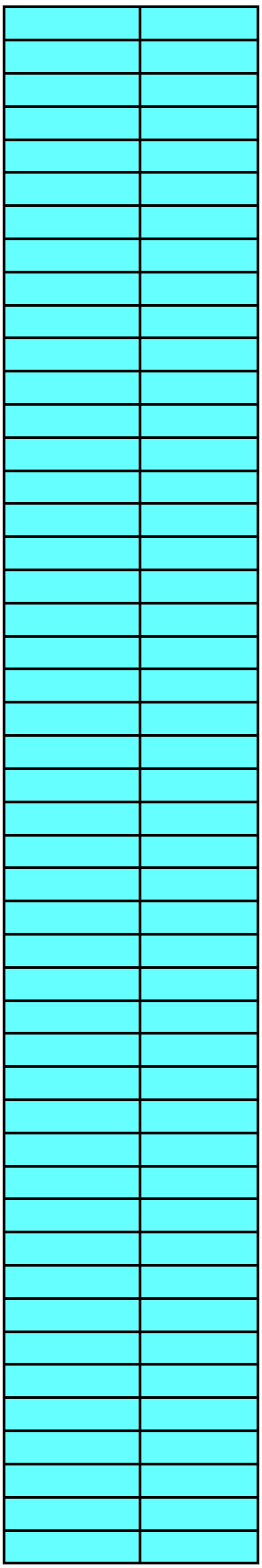

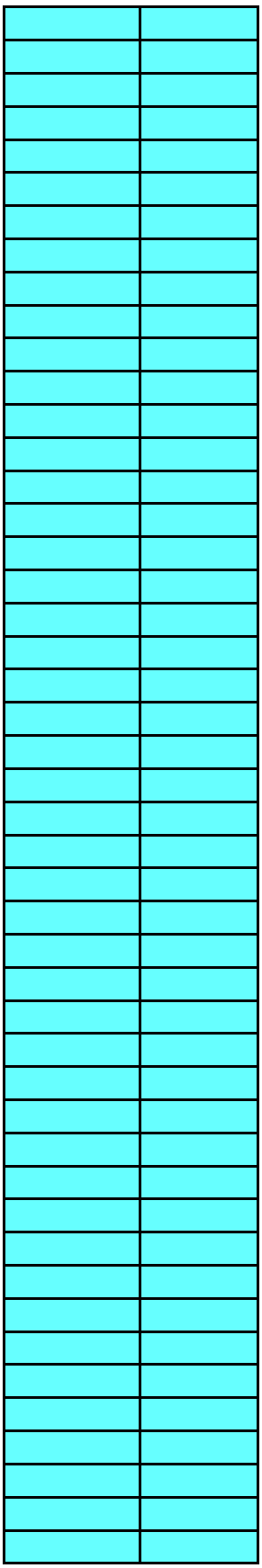

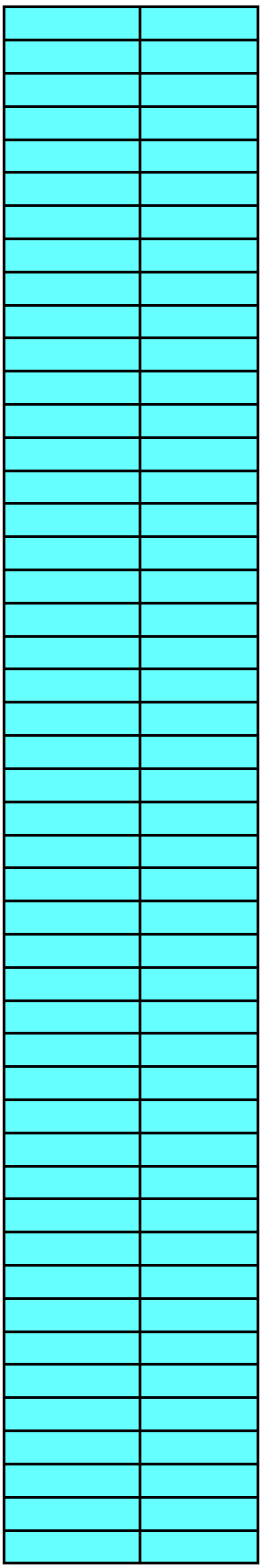

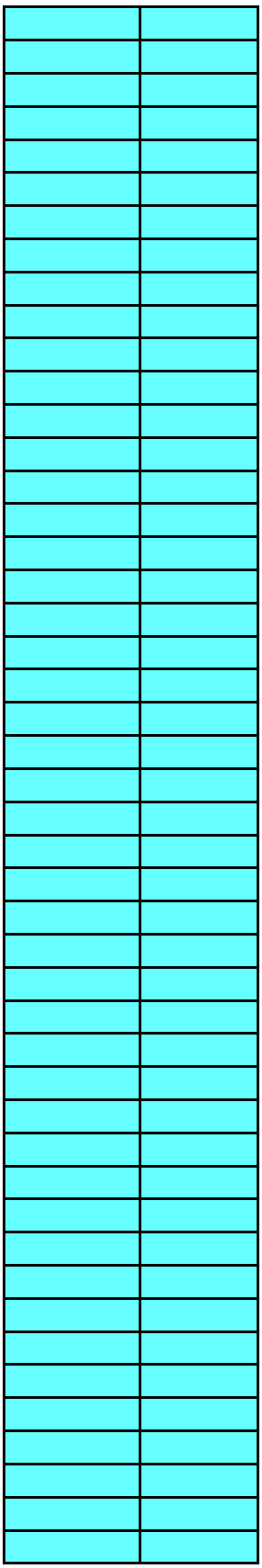

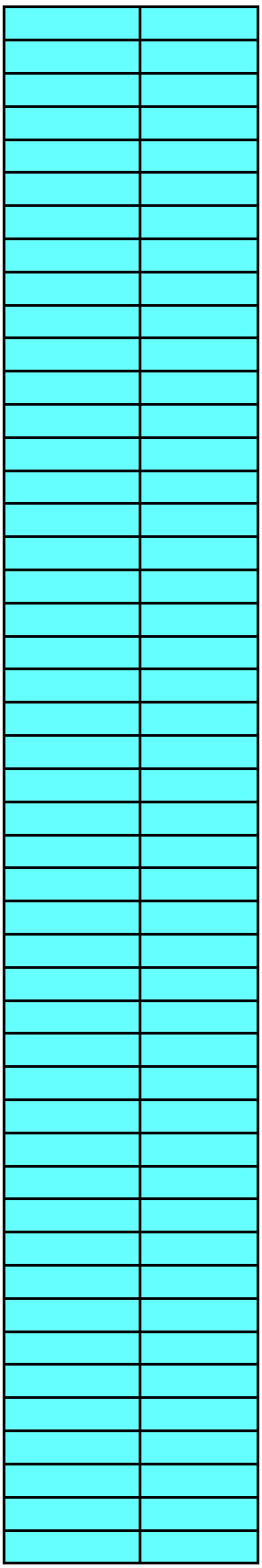

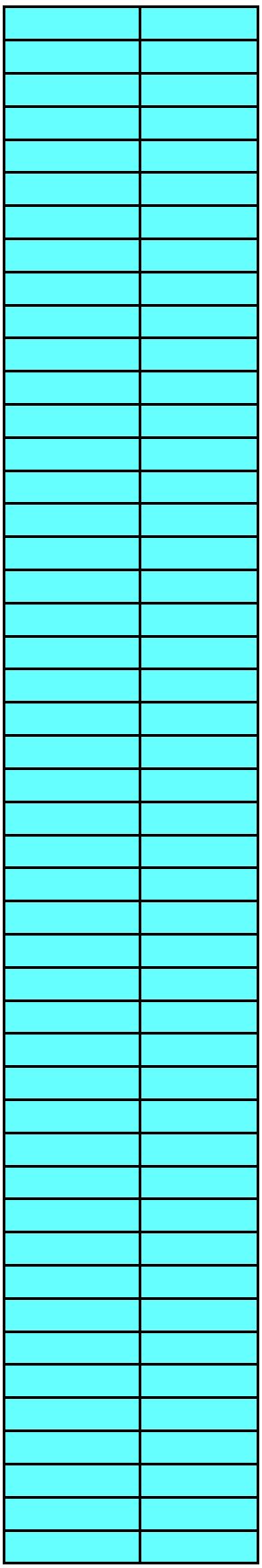

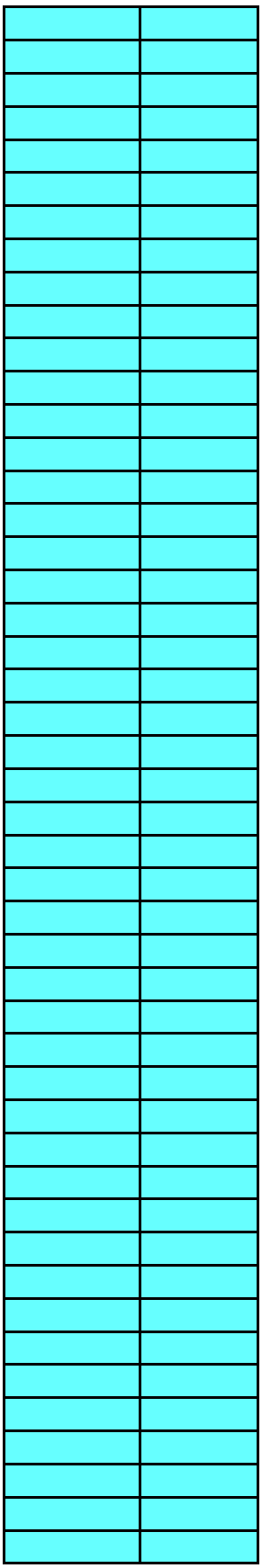

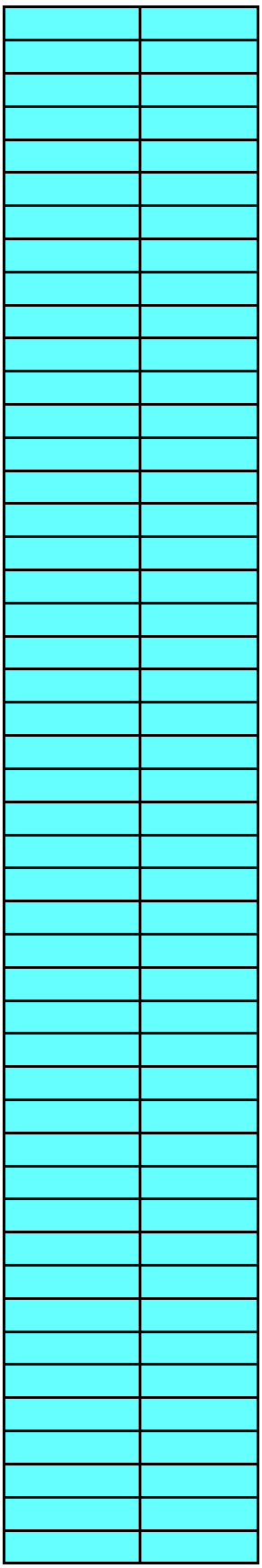

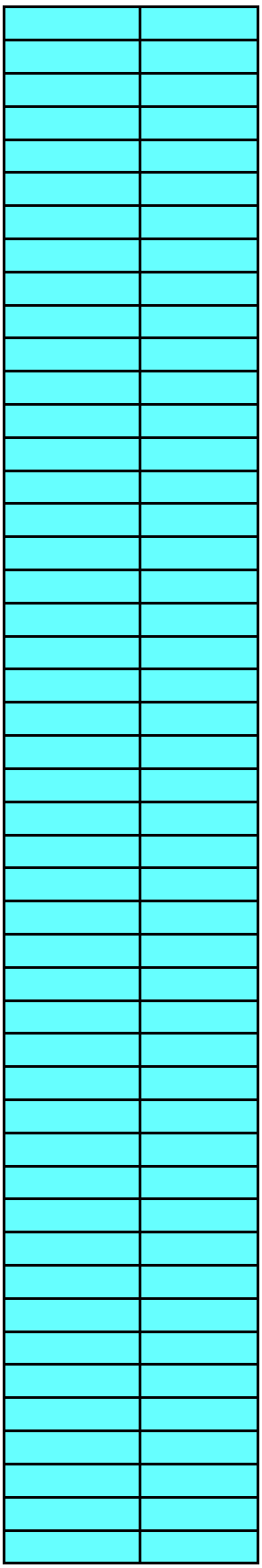

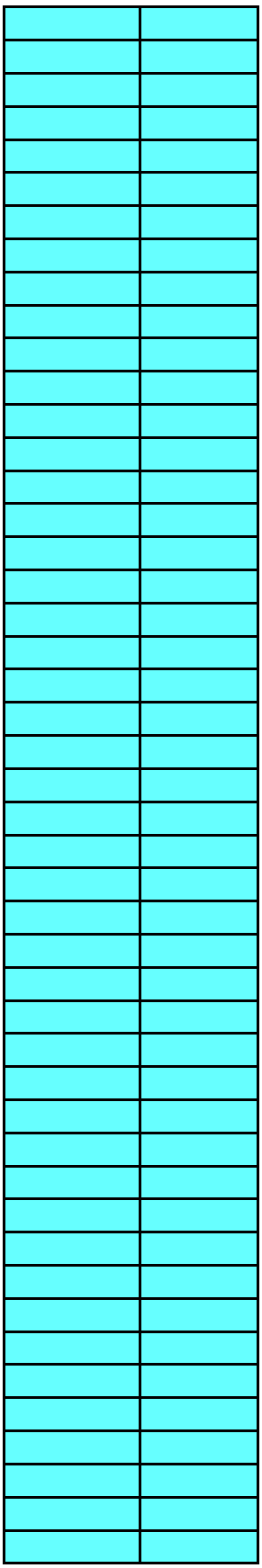

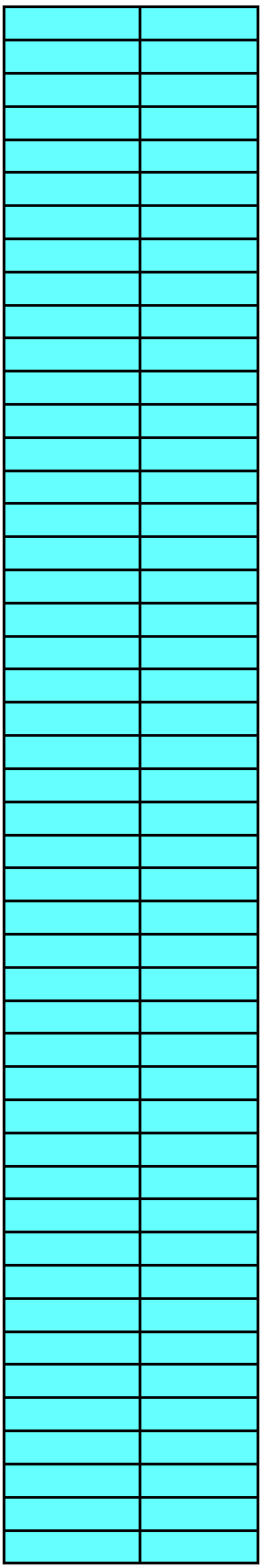

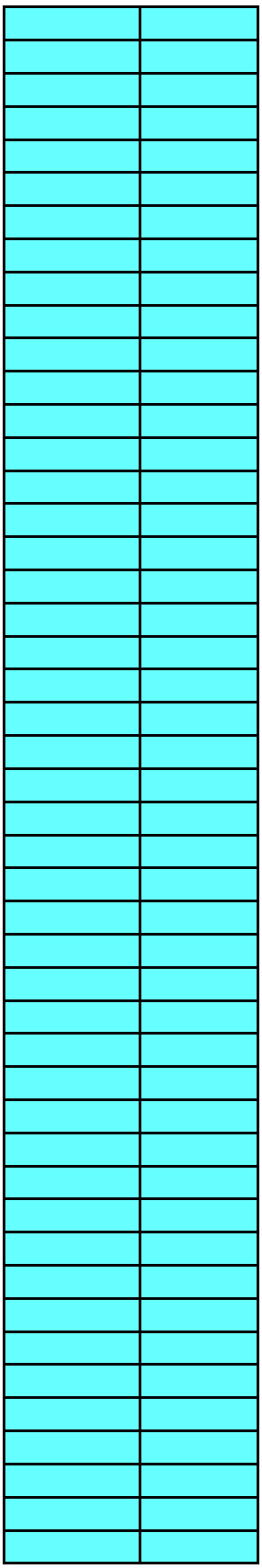

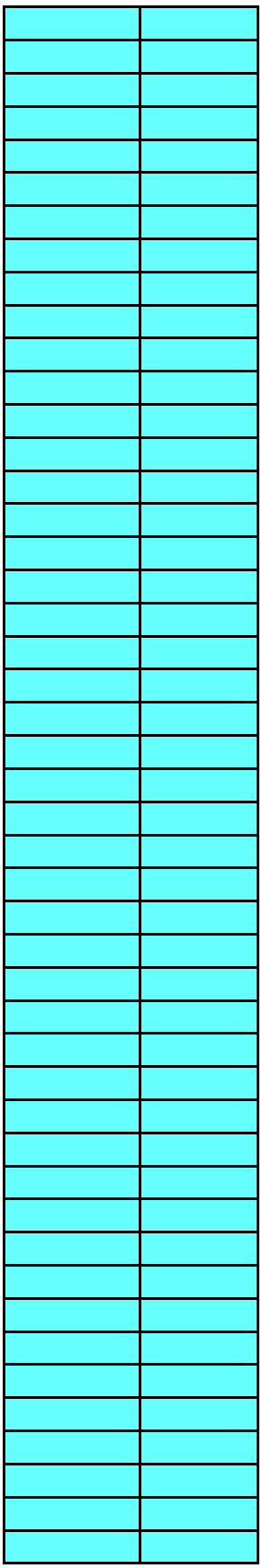

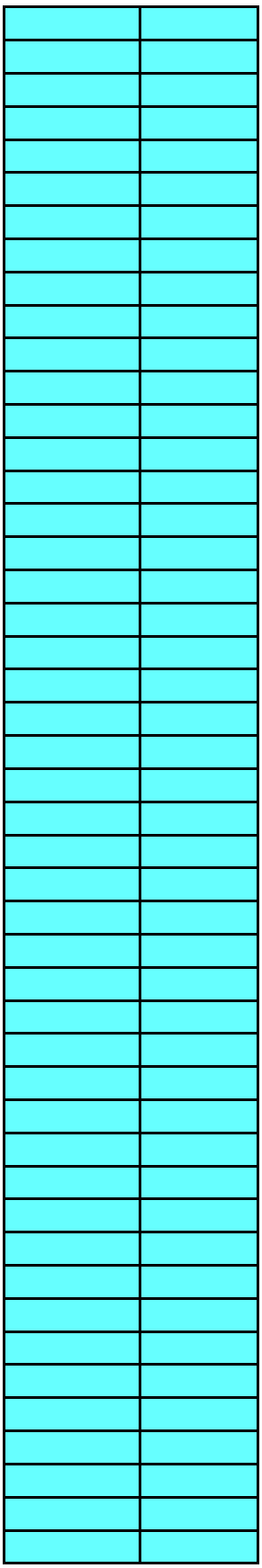

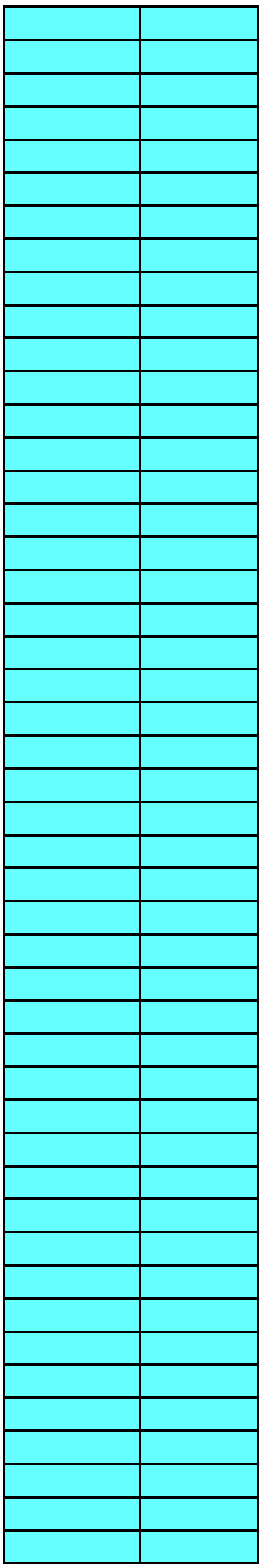

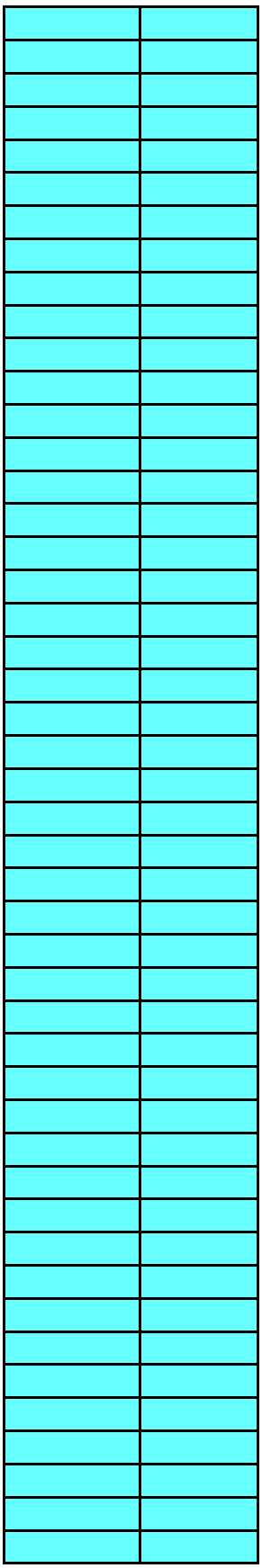

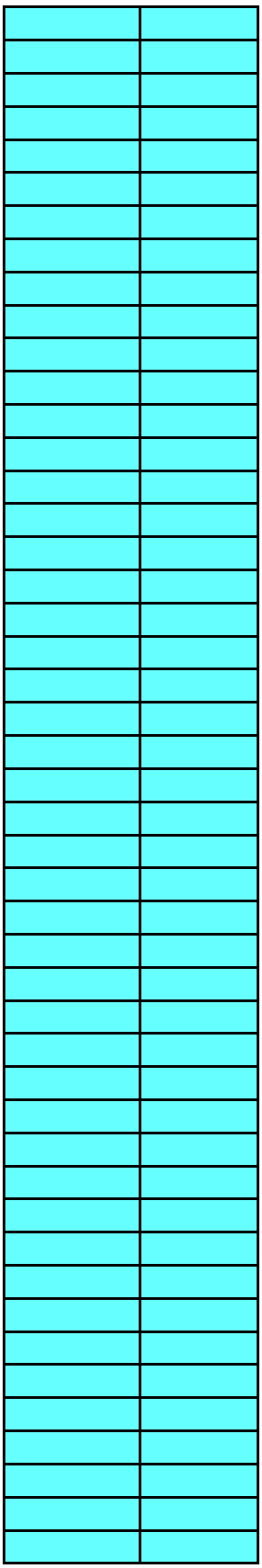

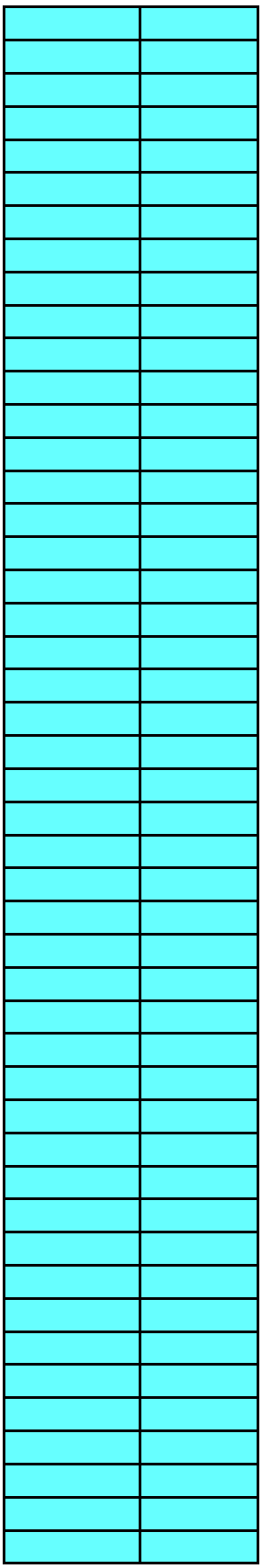

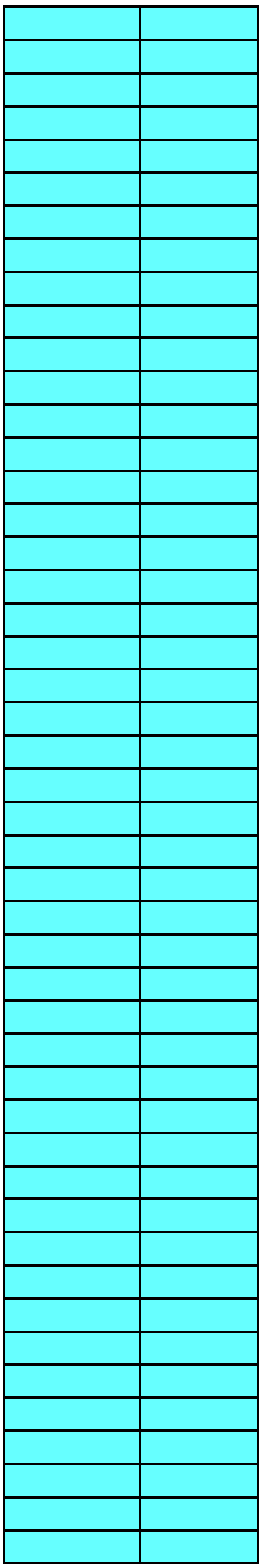

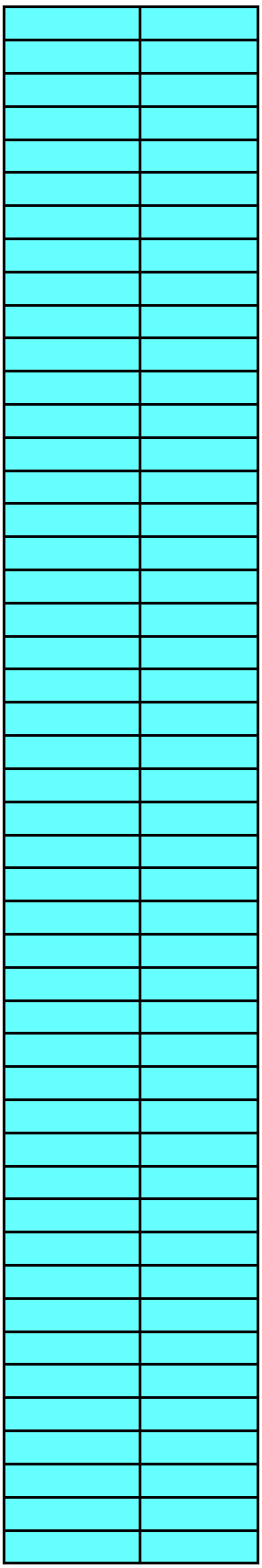

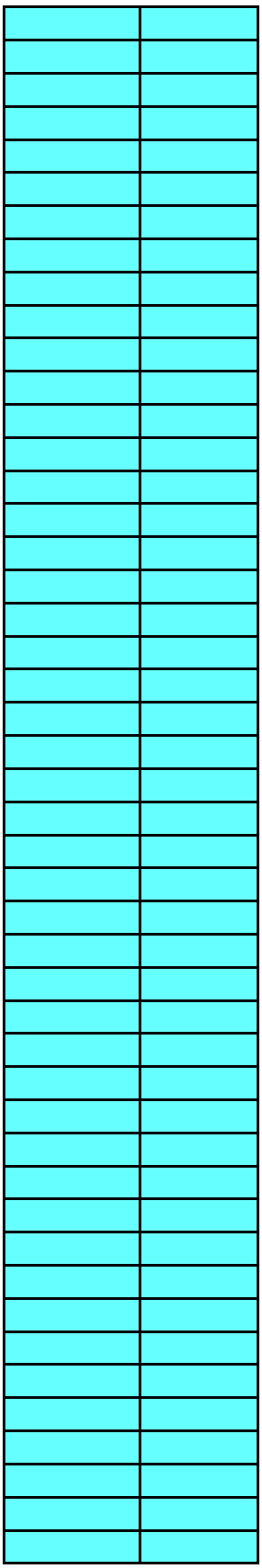

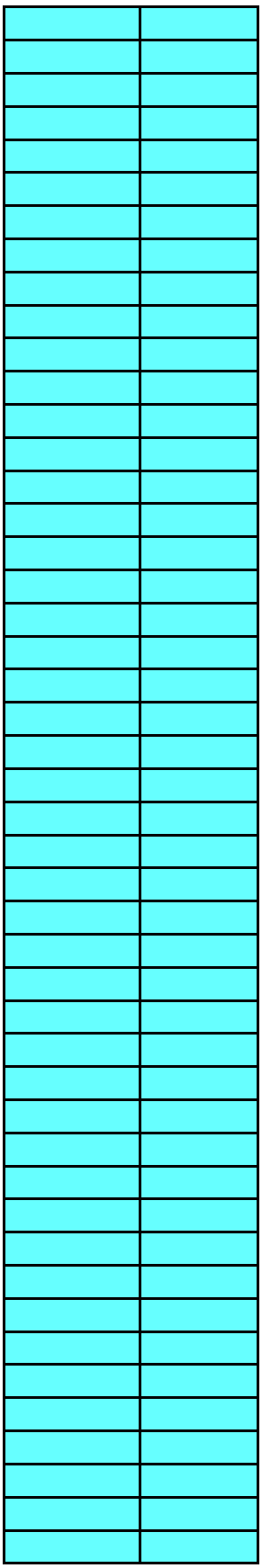

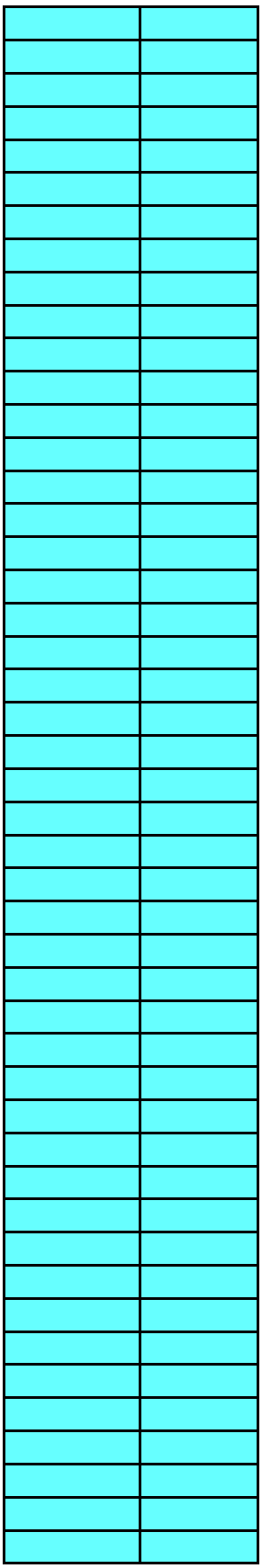

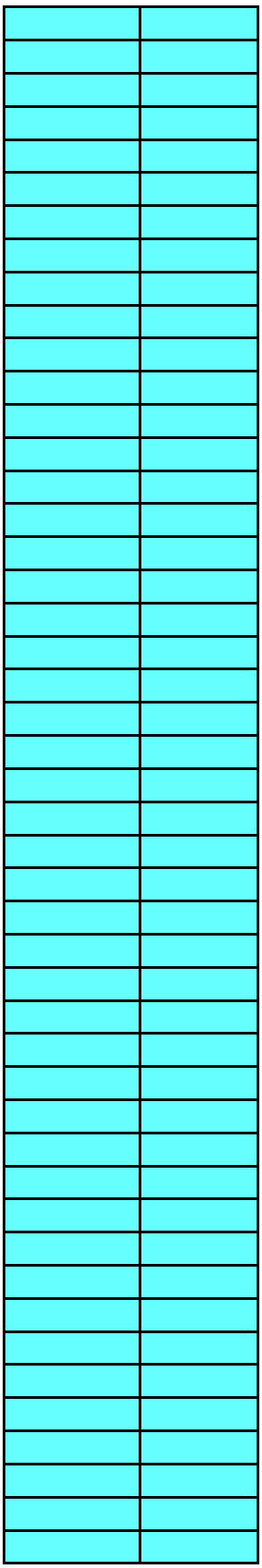

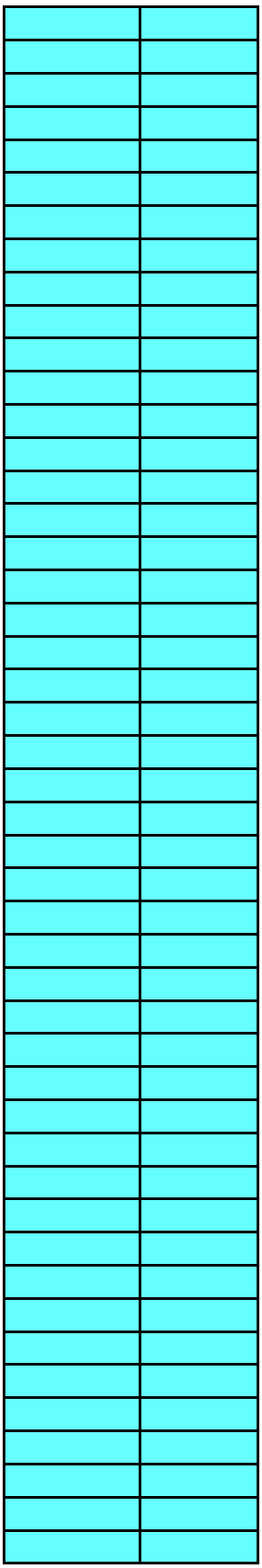

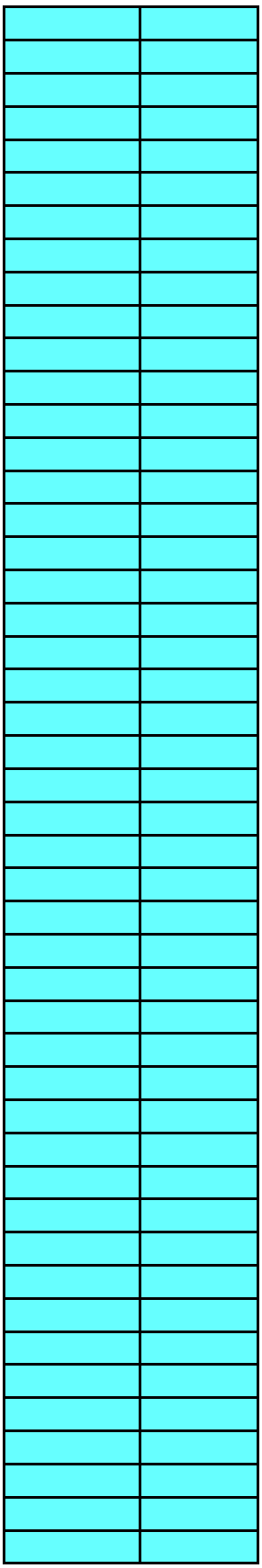

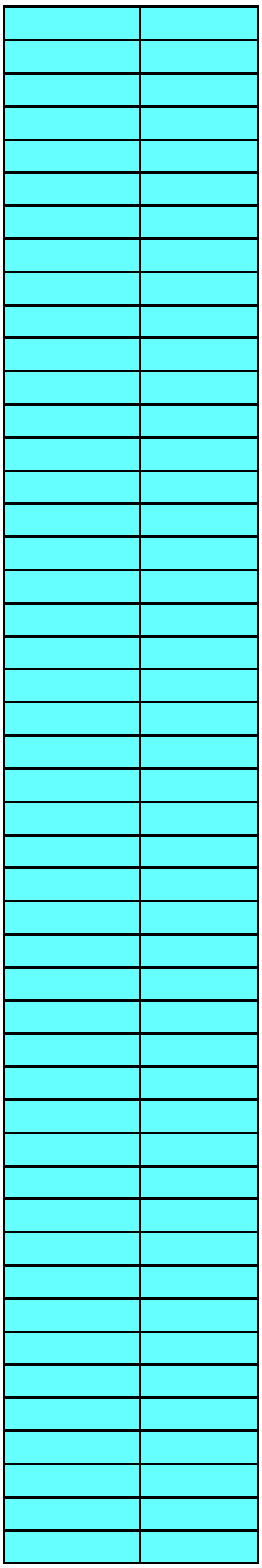

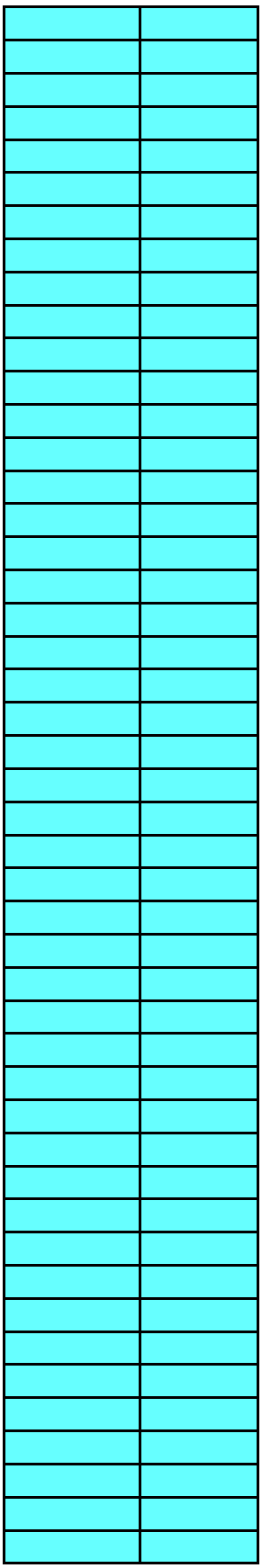

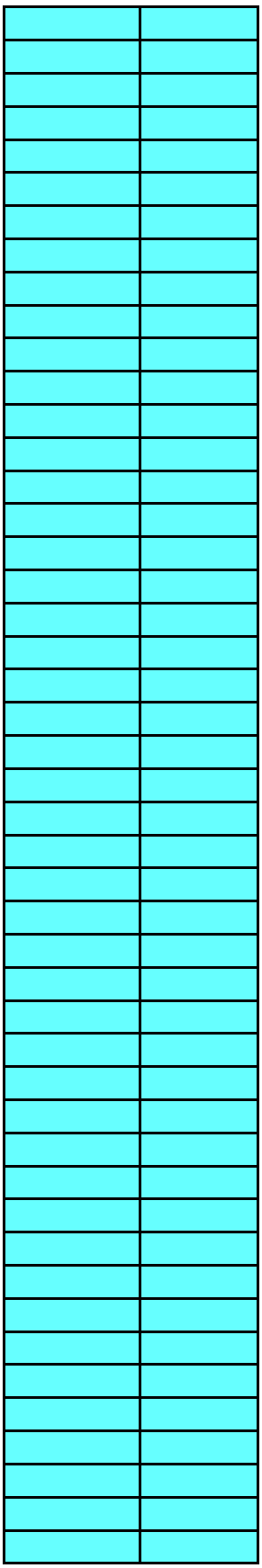

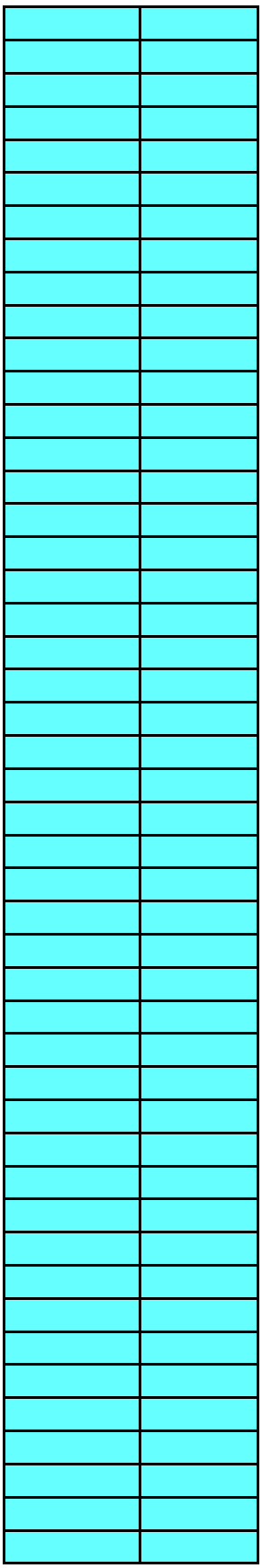

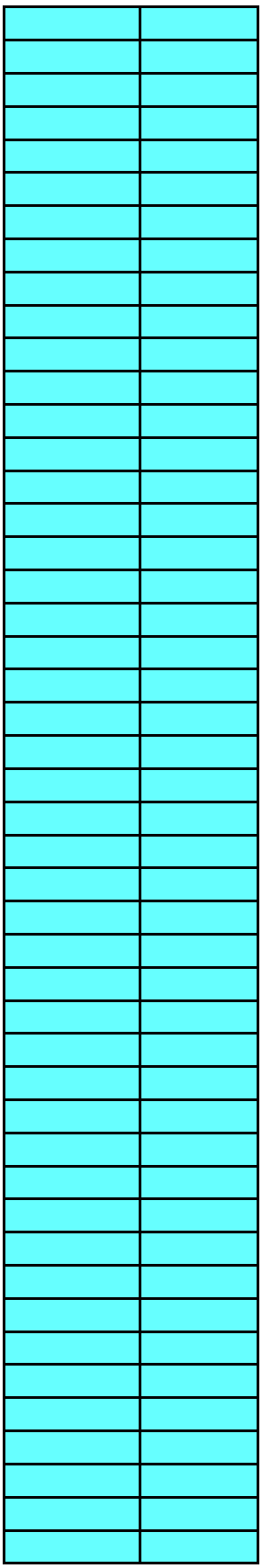

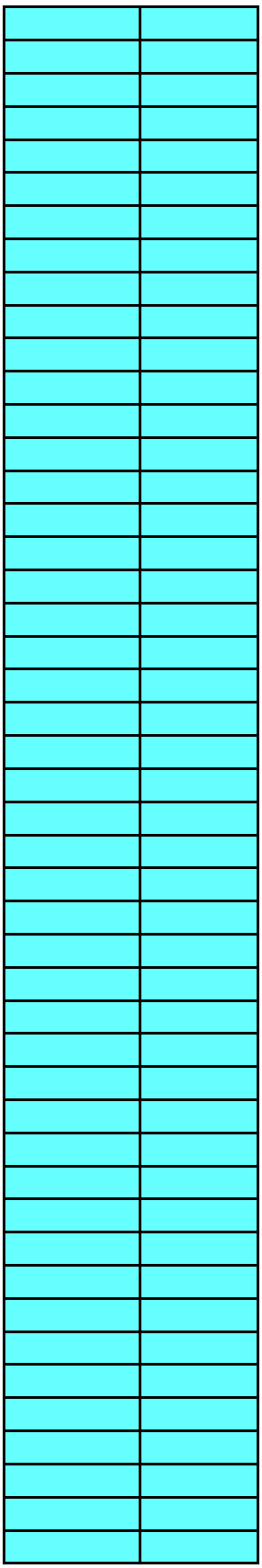

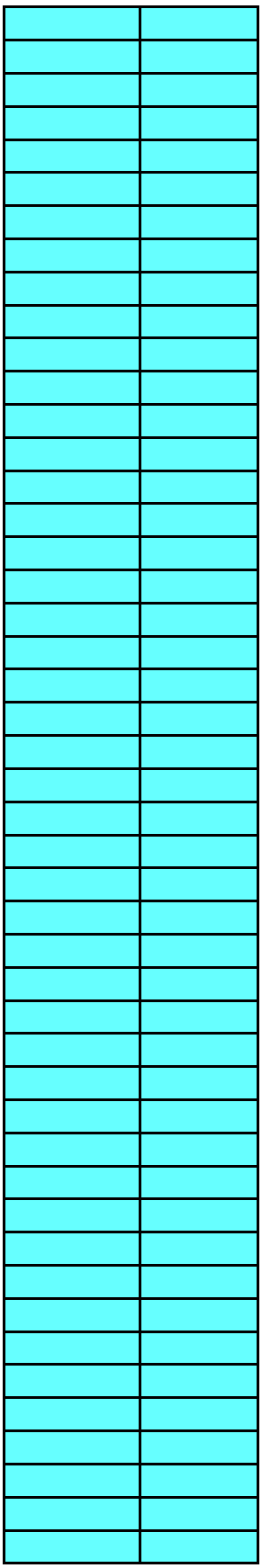

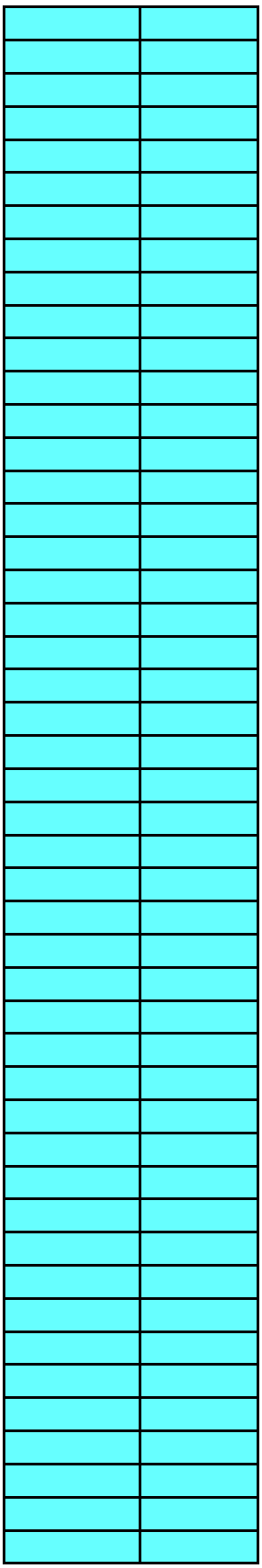

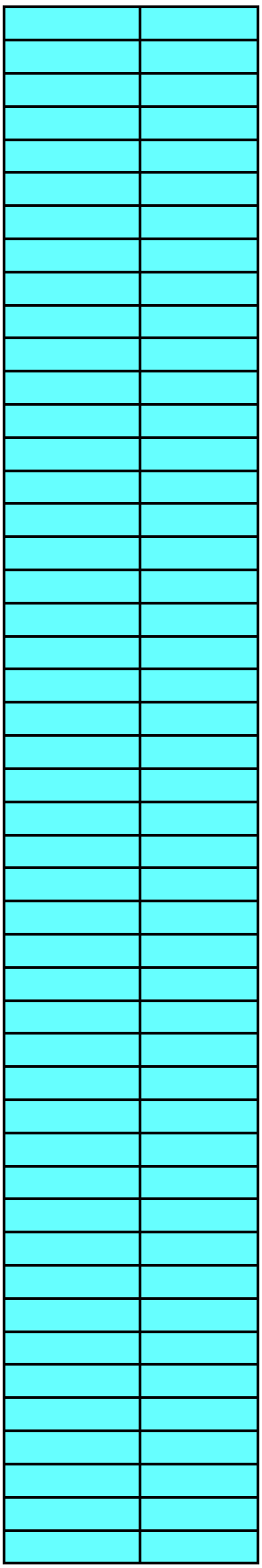

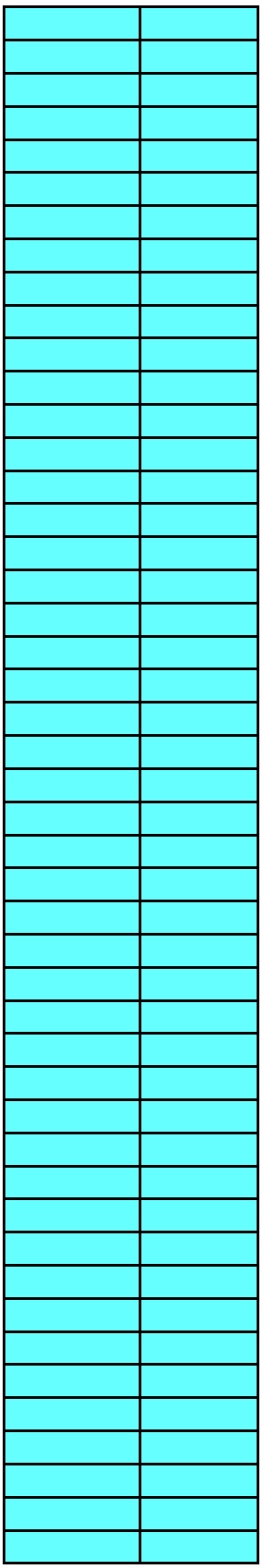

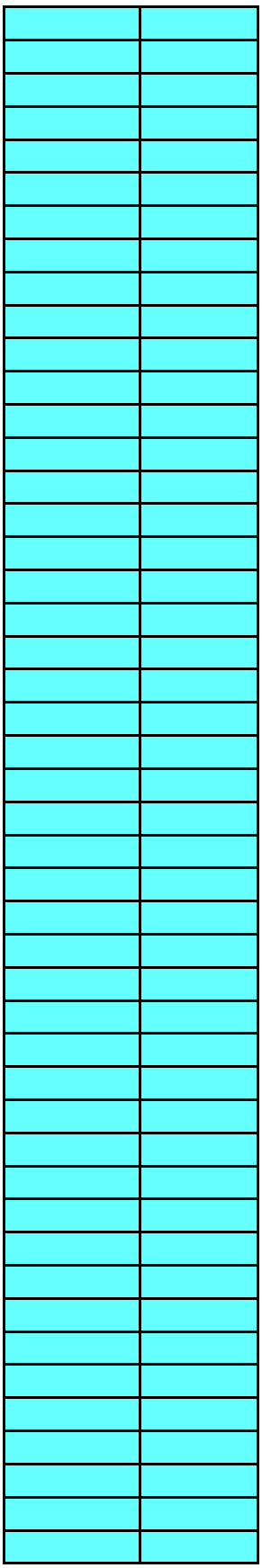

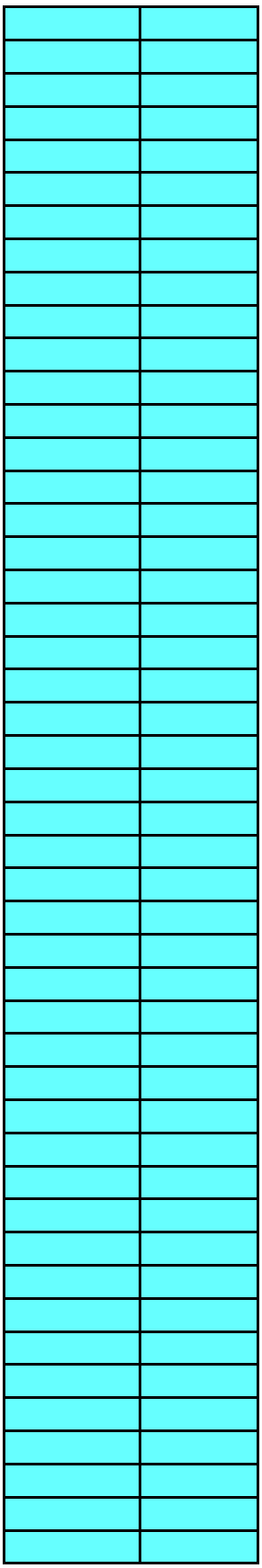

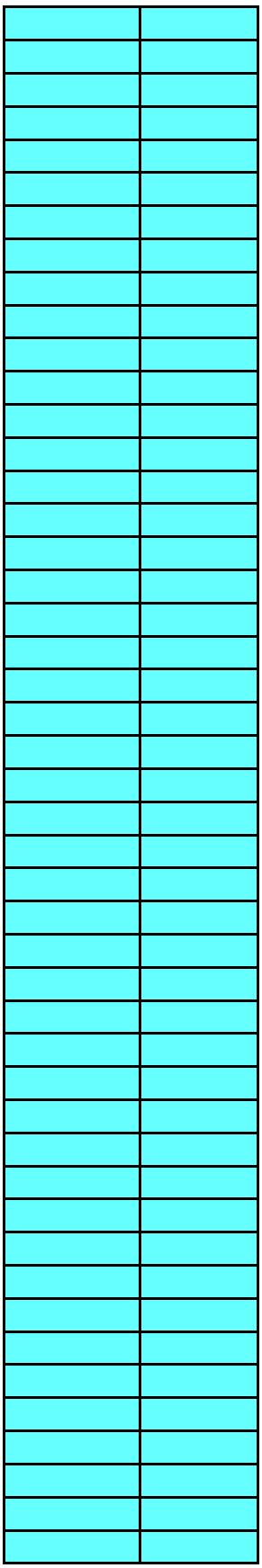

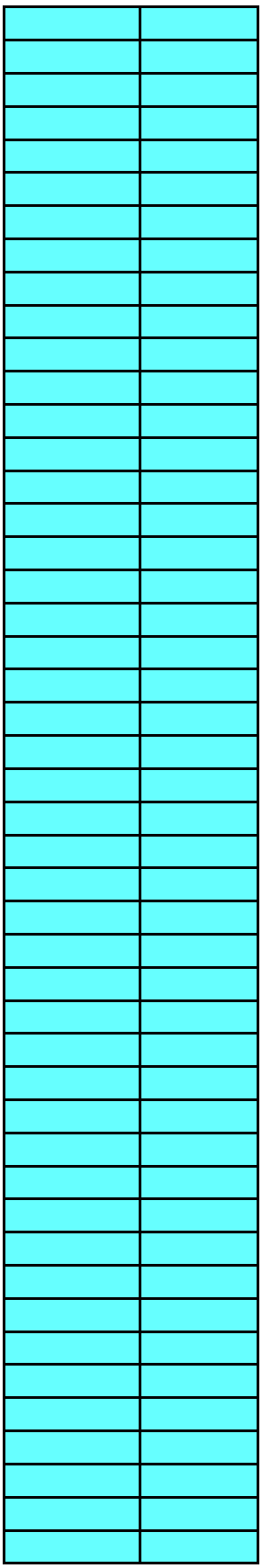

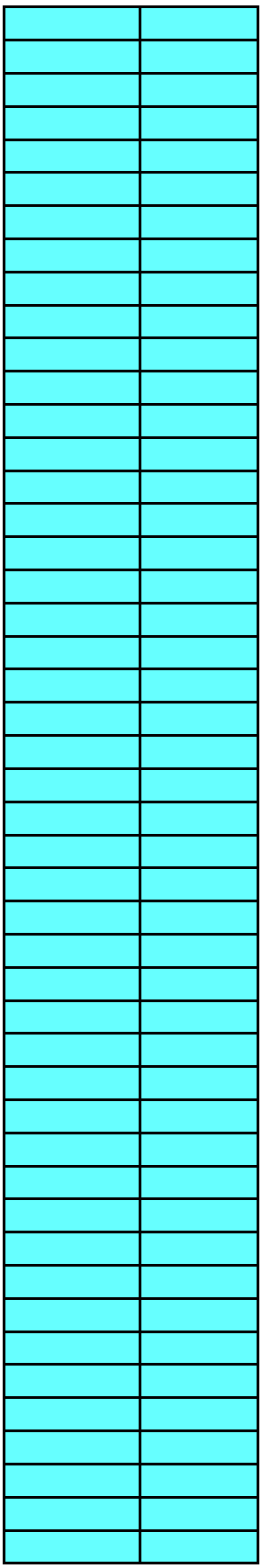

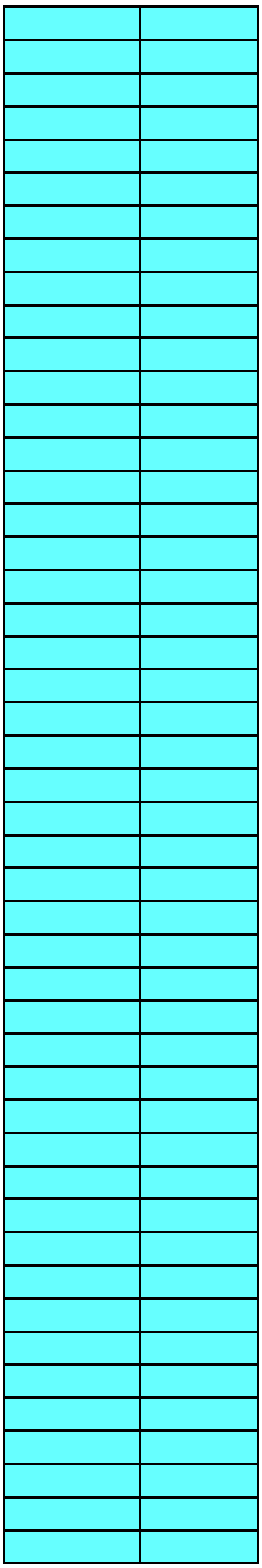

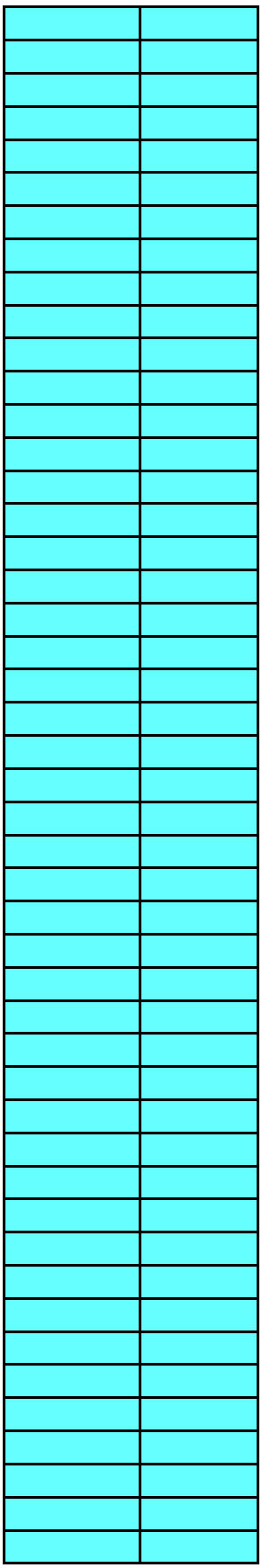

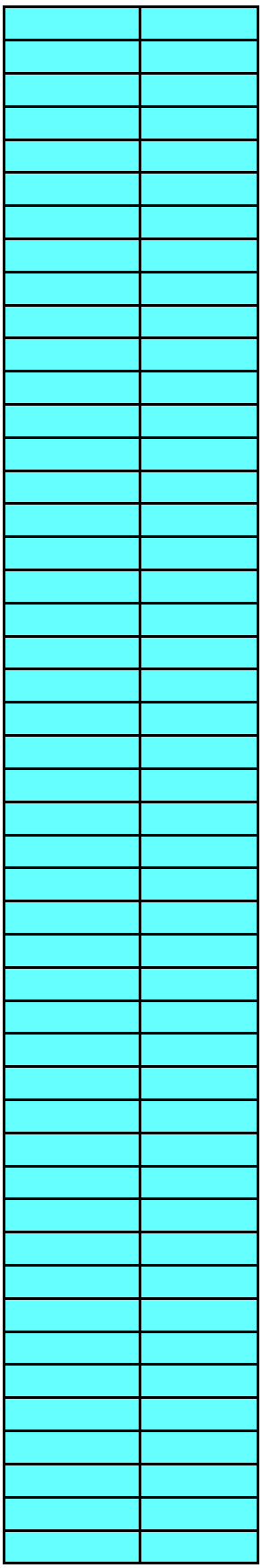

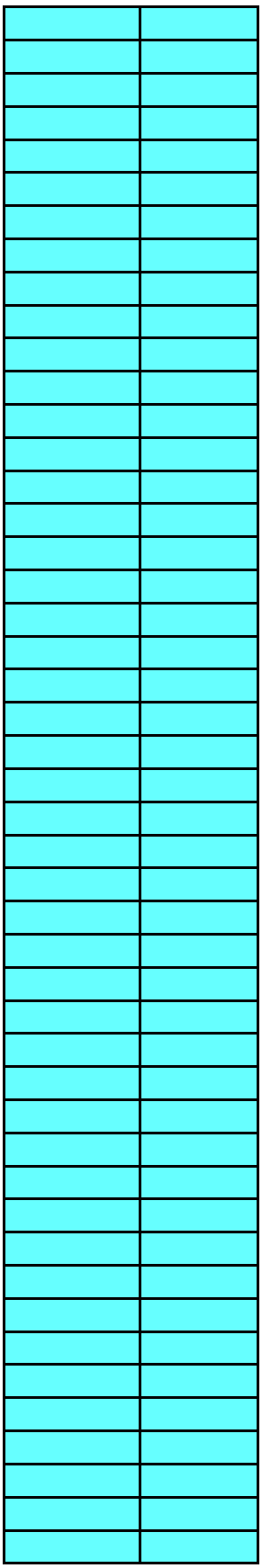

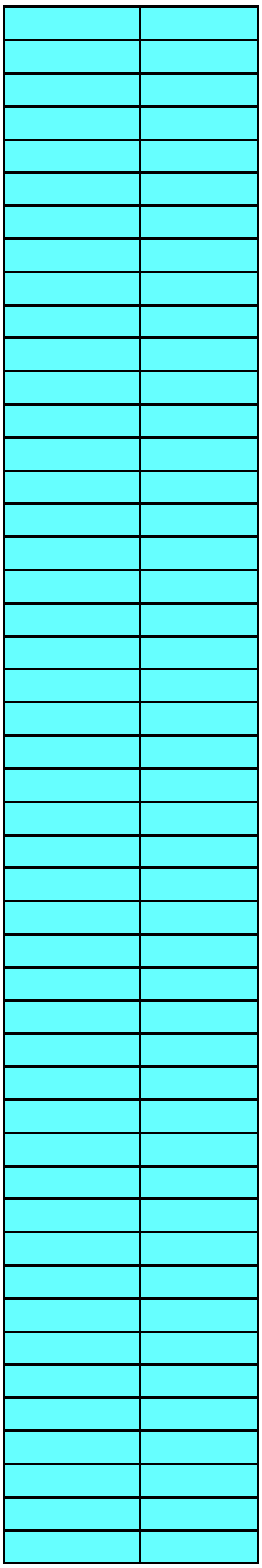

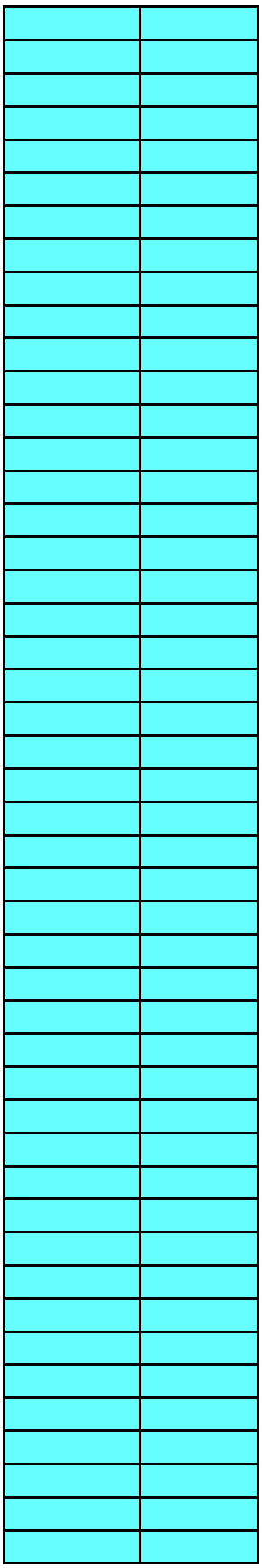

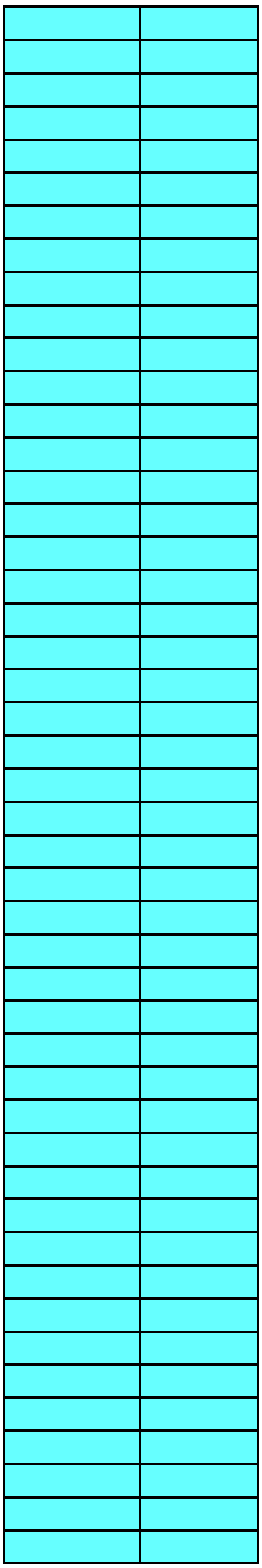

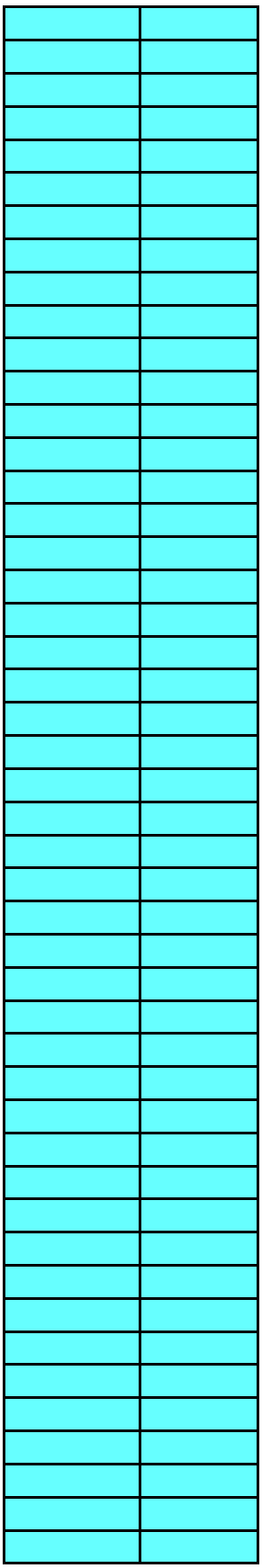

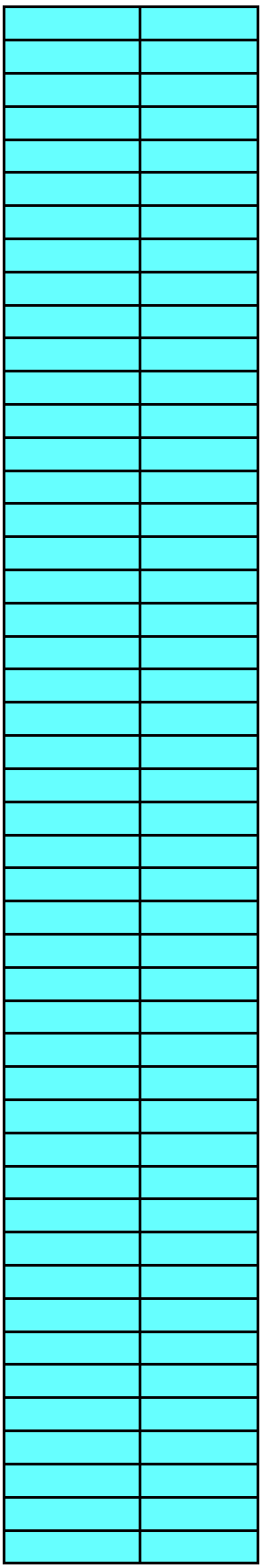

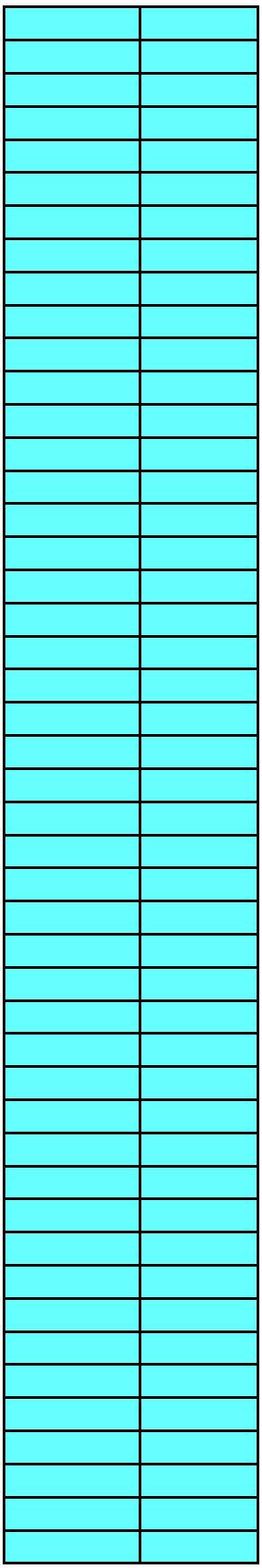

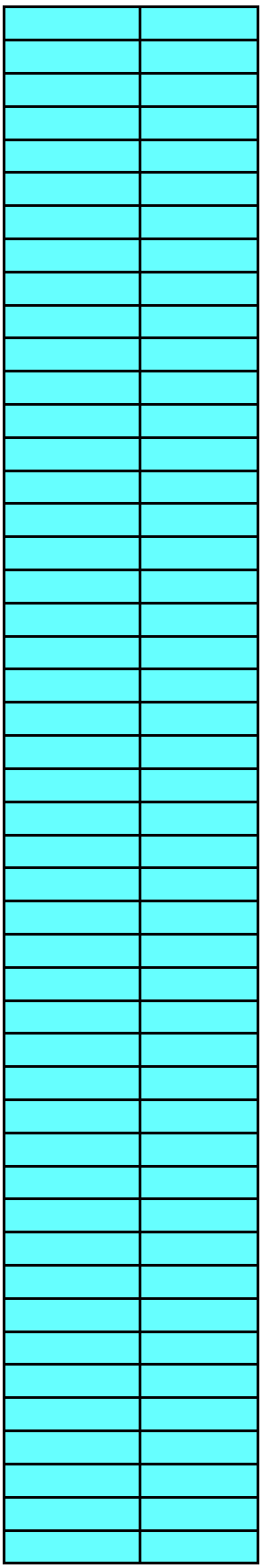

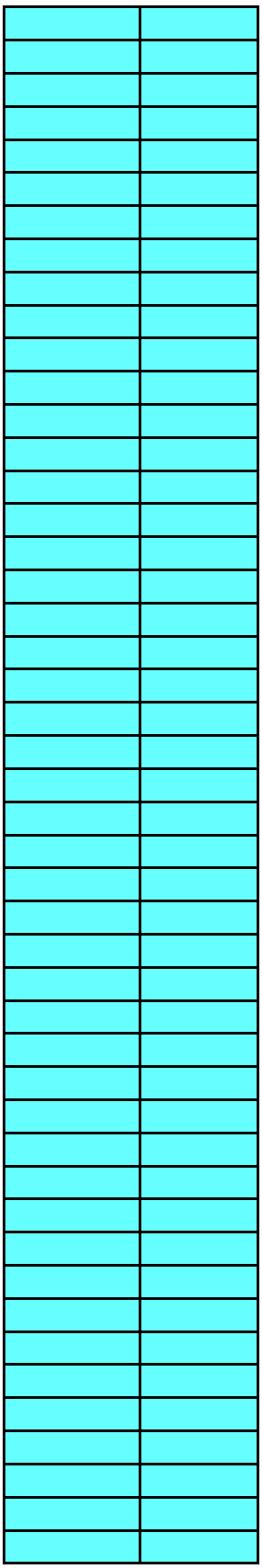

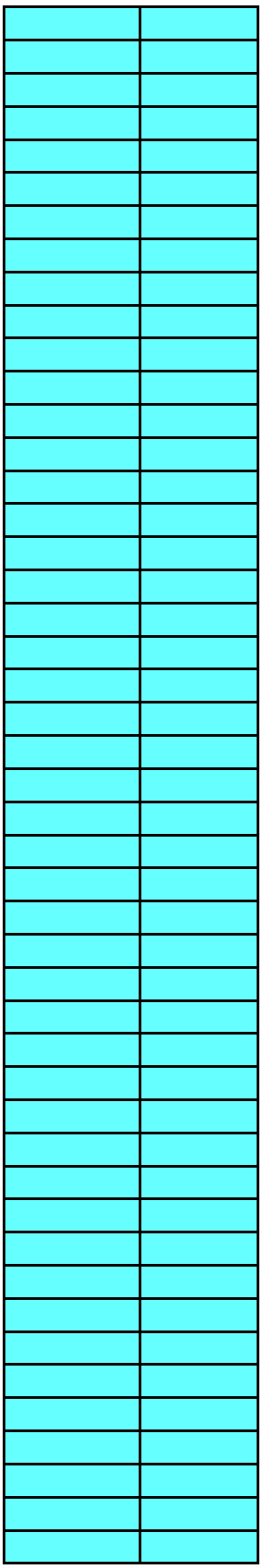

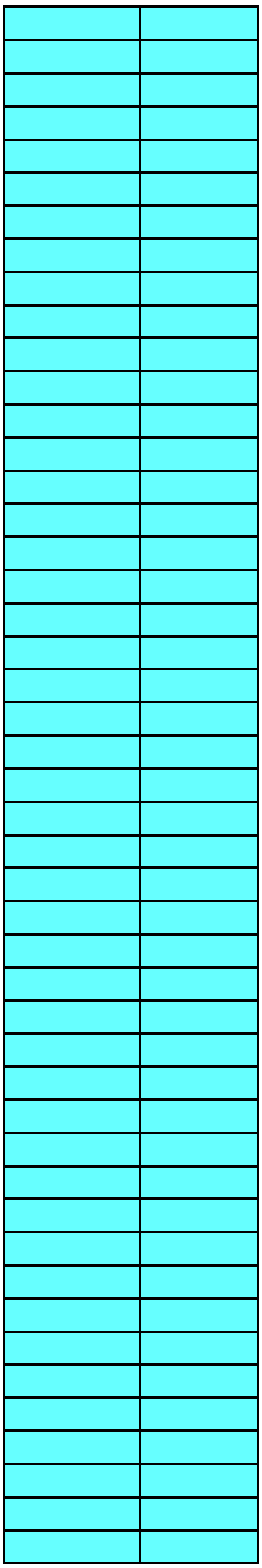

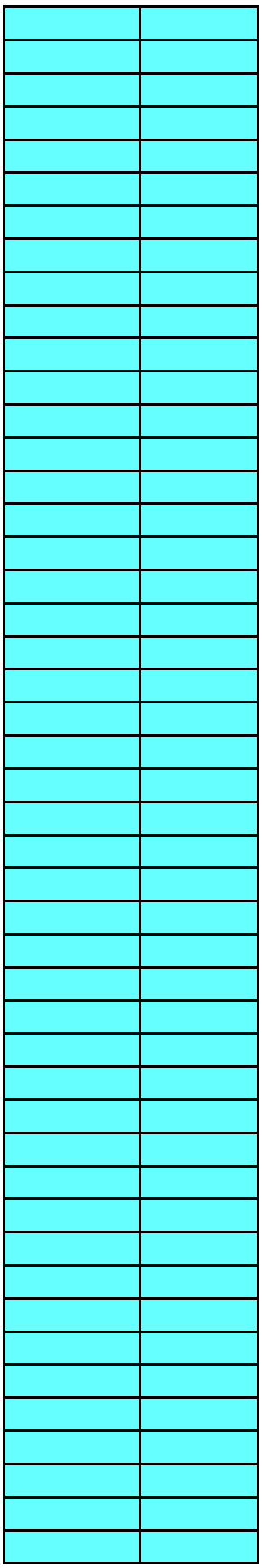

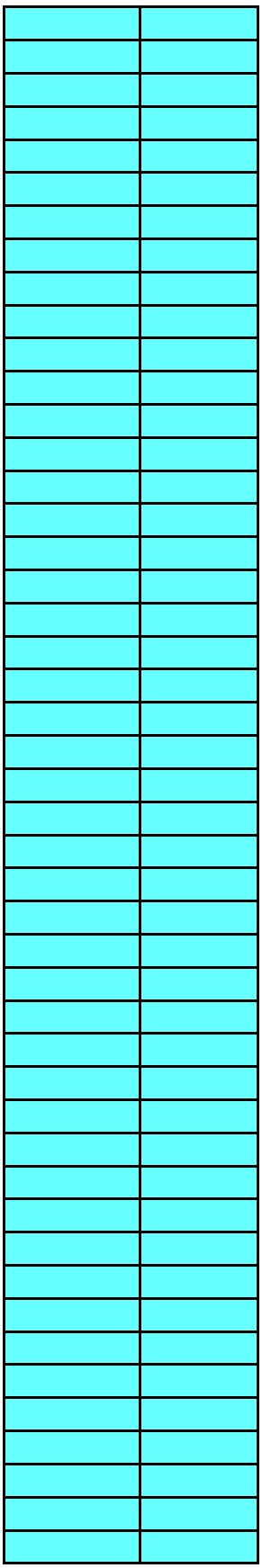

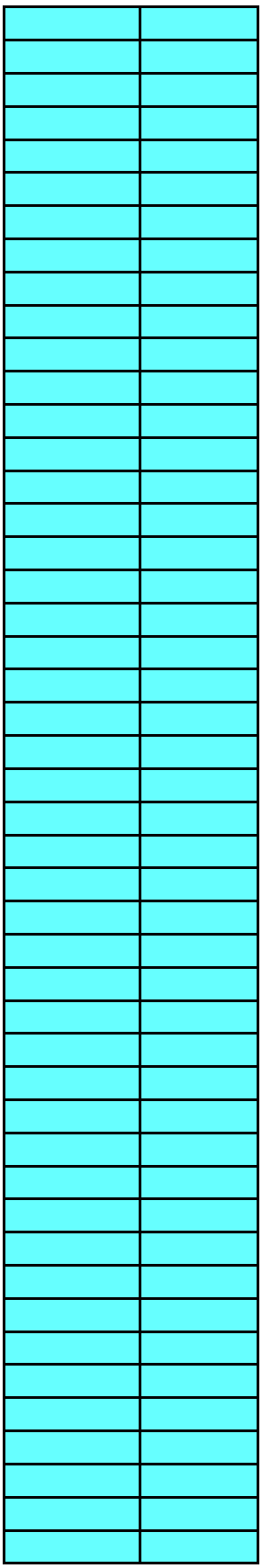

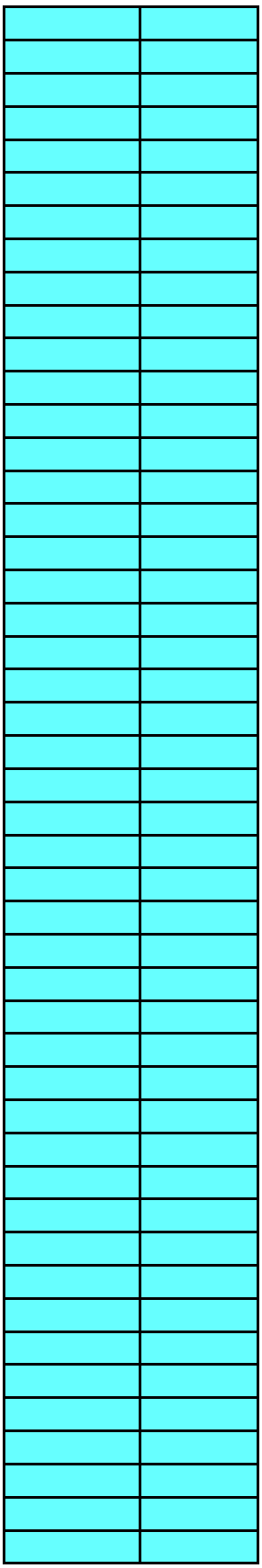

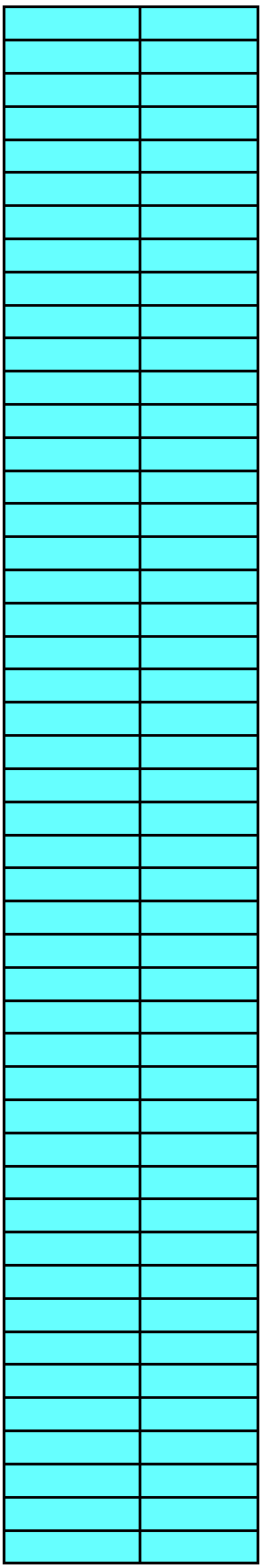

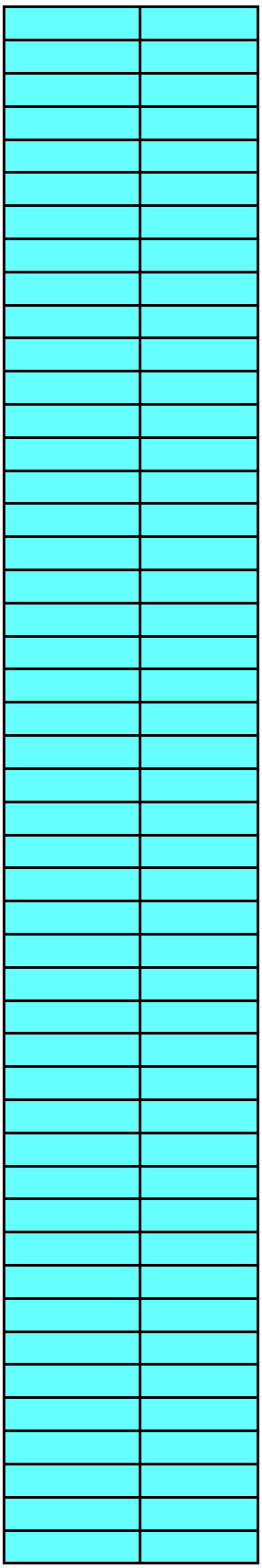

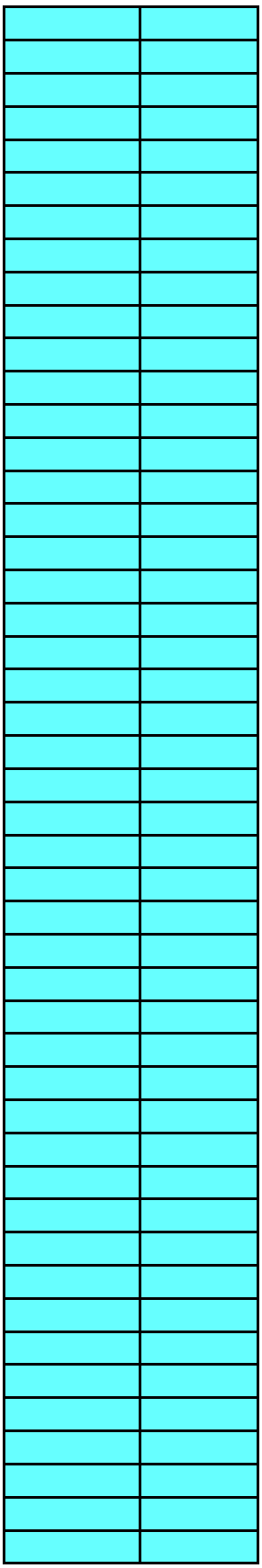

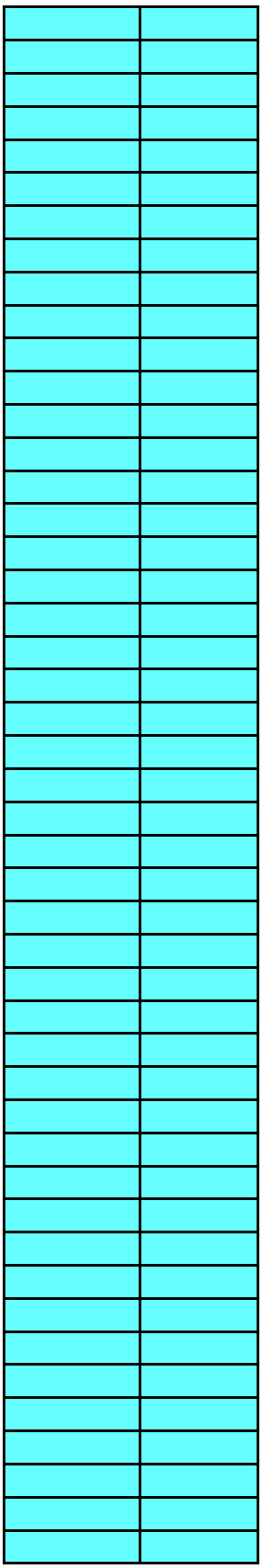

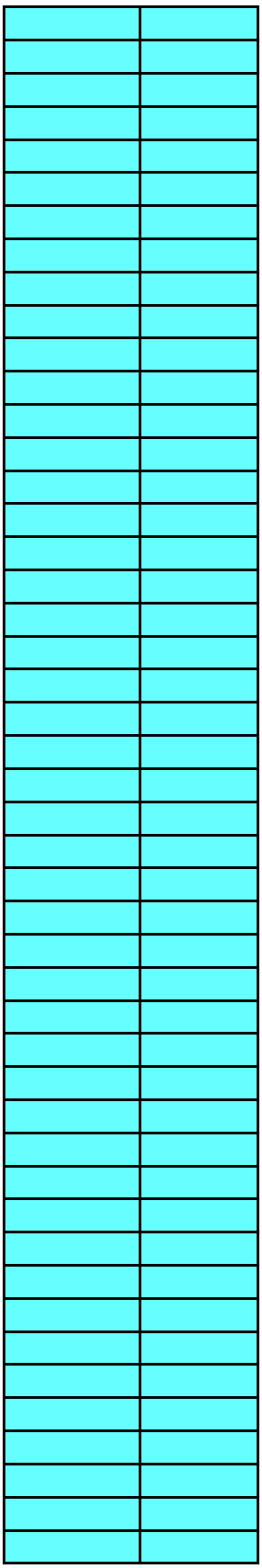

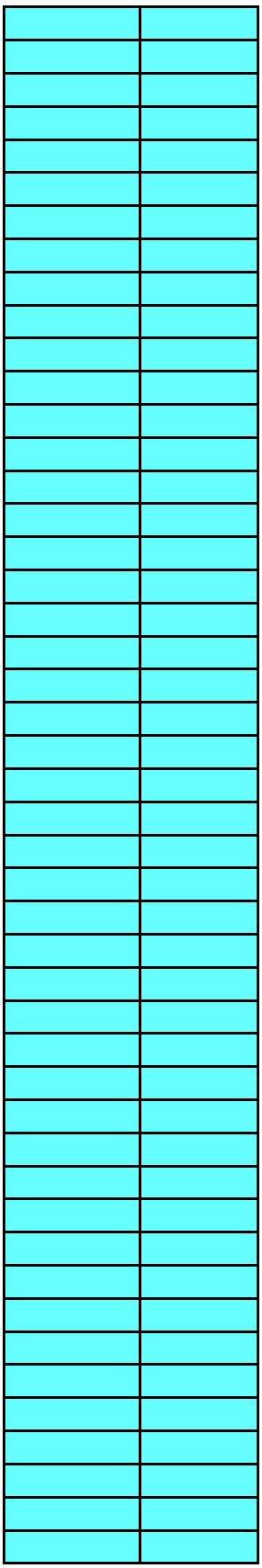

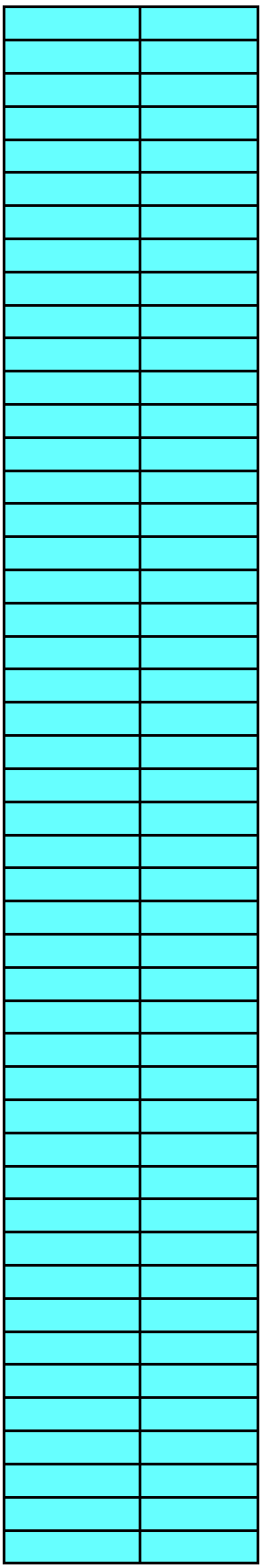

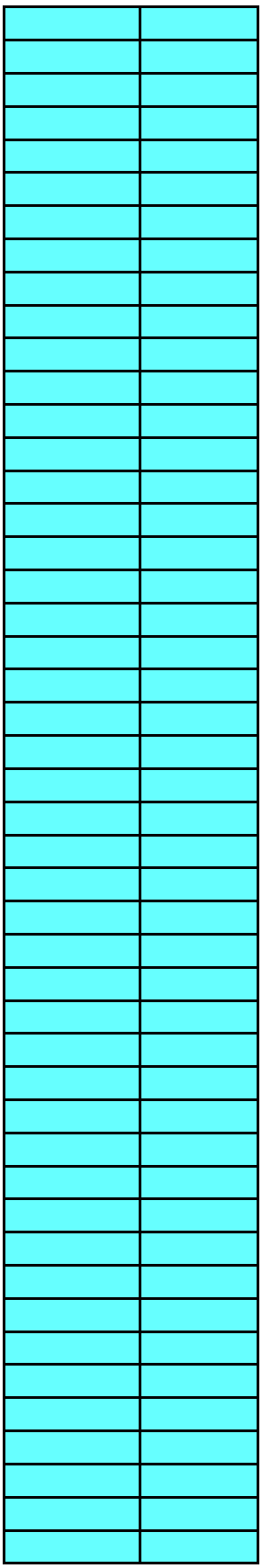

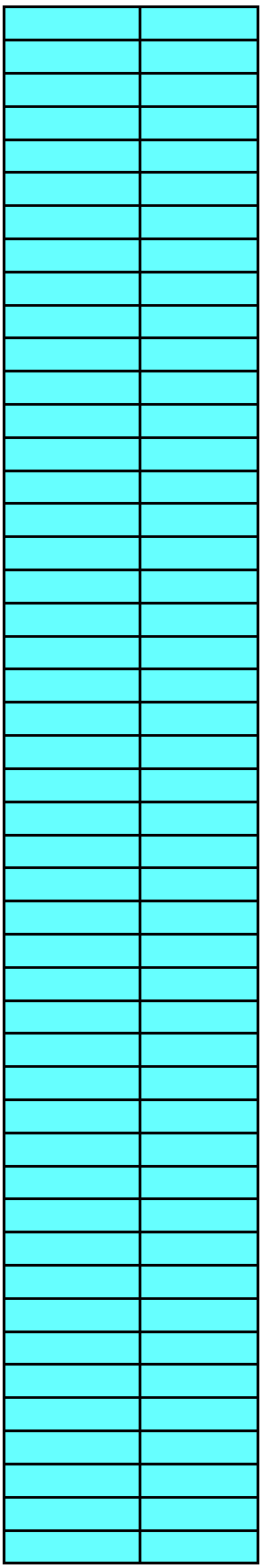

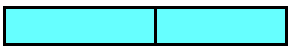

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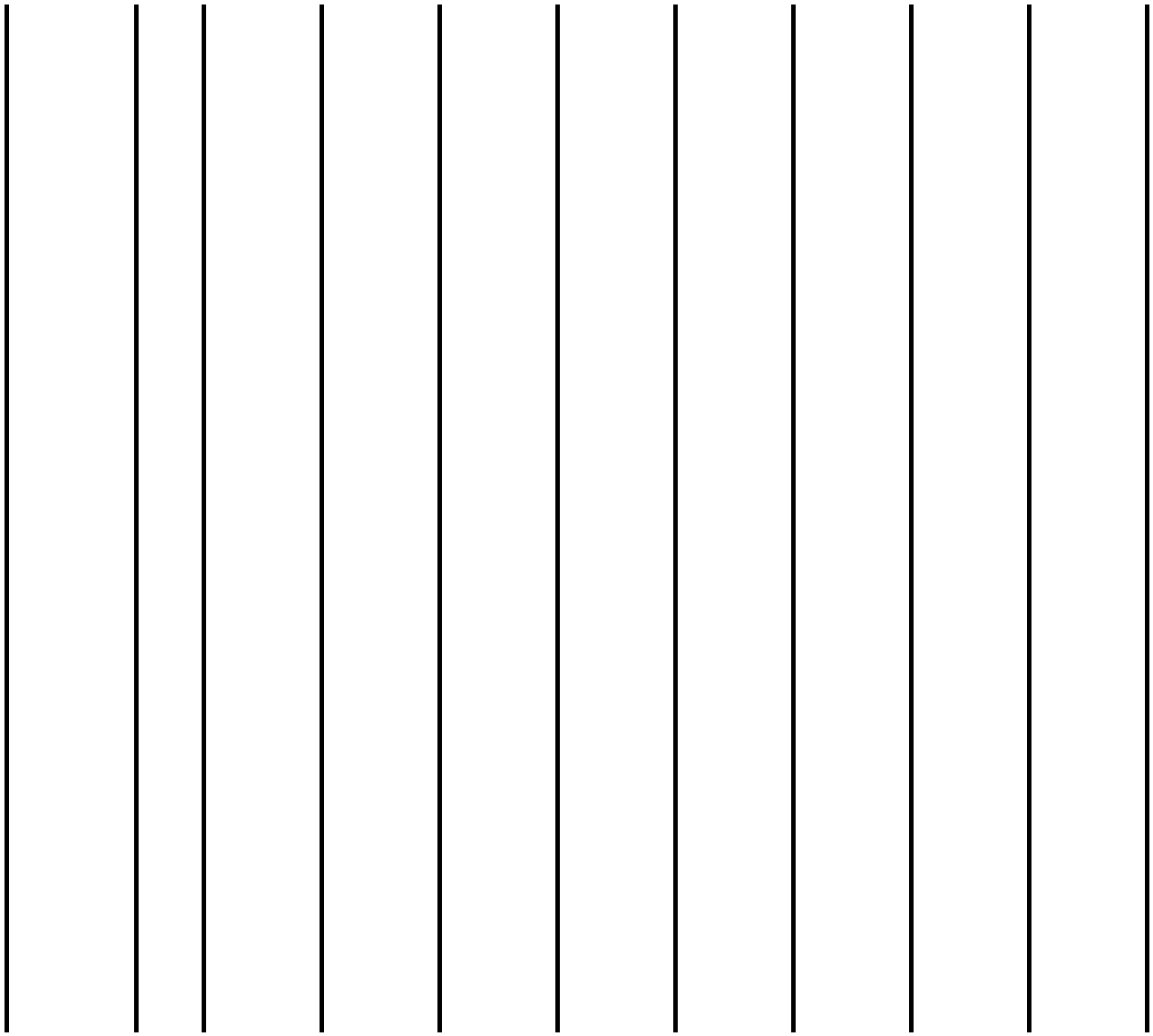

3.001 to 3.500	
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200	3.475
200	3.451
200	3.385
200	3.385
200	3.371
200	3.347
200	3.319
200	3.303
200	3.280
200	3.259
200	3.258
200	3.247
200	3.221
200	3.201
200	3.142
200	3.125
200	3.120
200	3.109
200	3.086
200	3.069
200	3.065
200	3.048
200	3.031
200	3.019

3.501 to 4.000	
200	3.982
200	3.976
200	3.956
200	3.934
200	3.927
200	3.902
200	3.861
200	3.795
200	3.793
200	3.791
200	3.791
200	3.710
200	3.705
200	3.683
200	3.642
200	3.618
200	3.596
200	3.591
200	3.566
200	3.526
200	3.507

4.001 to 4.500	
200	4.456
200	4.428
200	4.390
200	4.231
200	4.226
200	4.220
200	4.209
200	4.208
200	4.190
200	4.172
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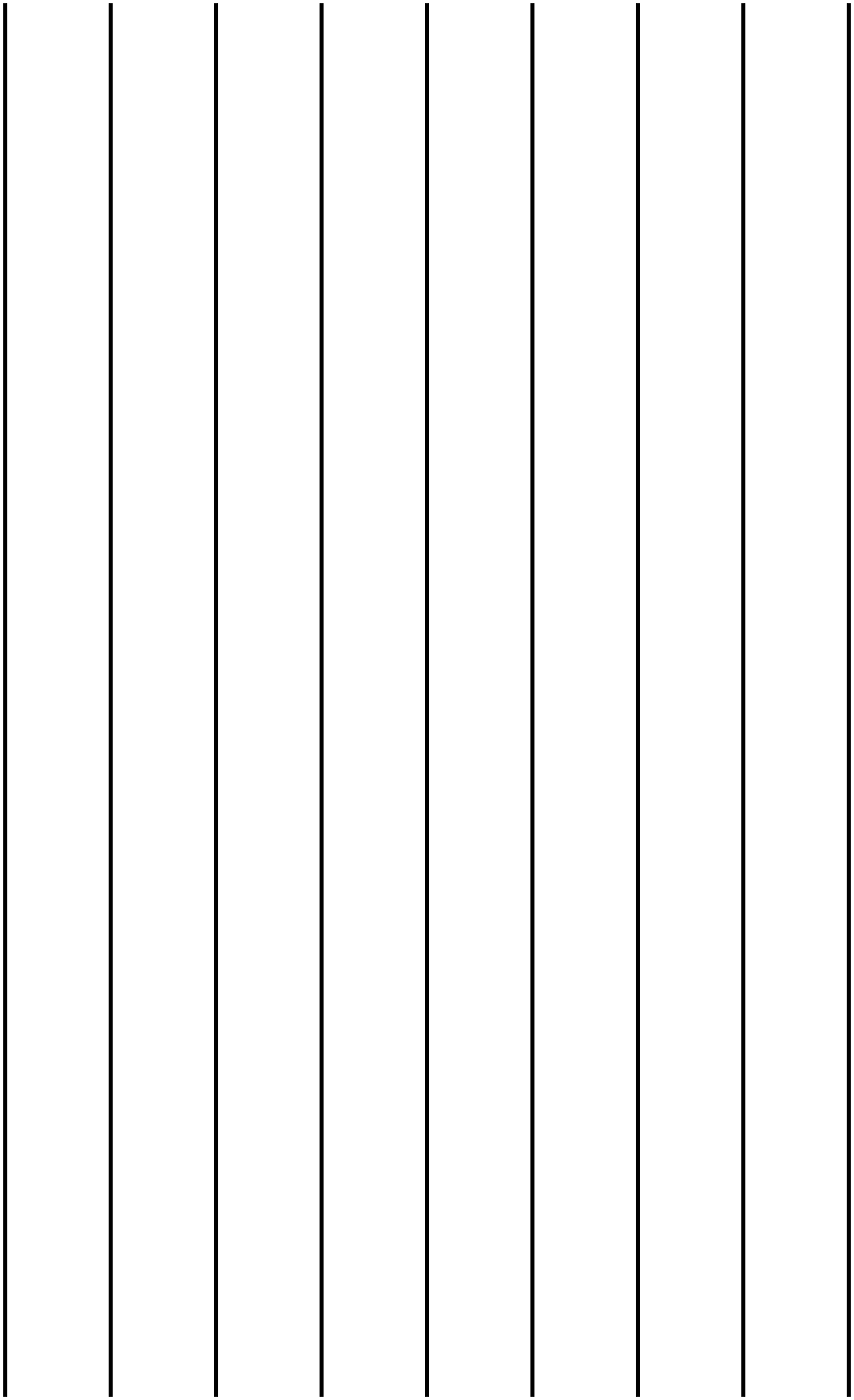
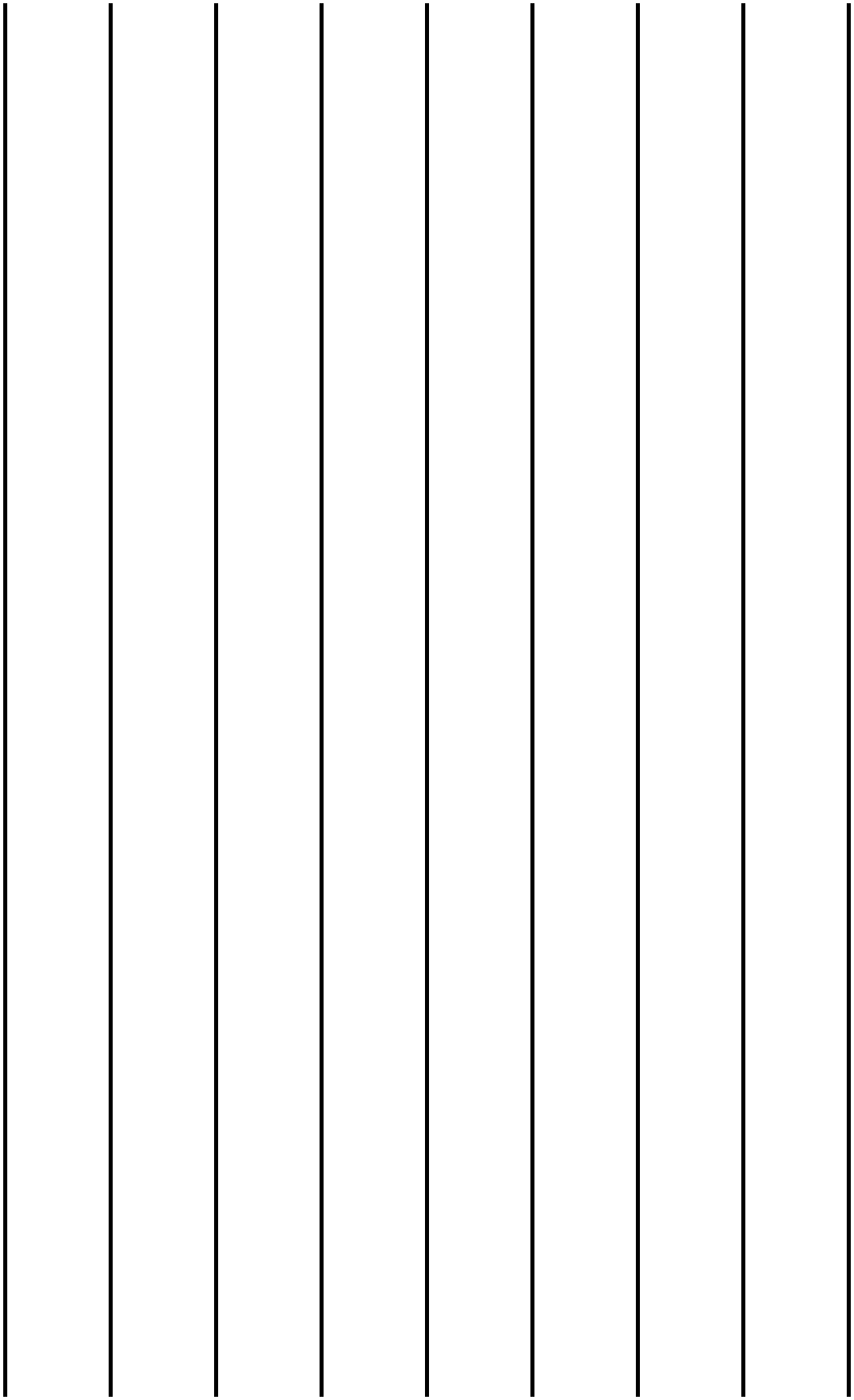
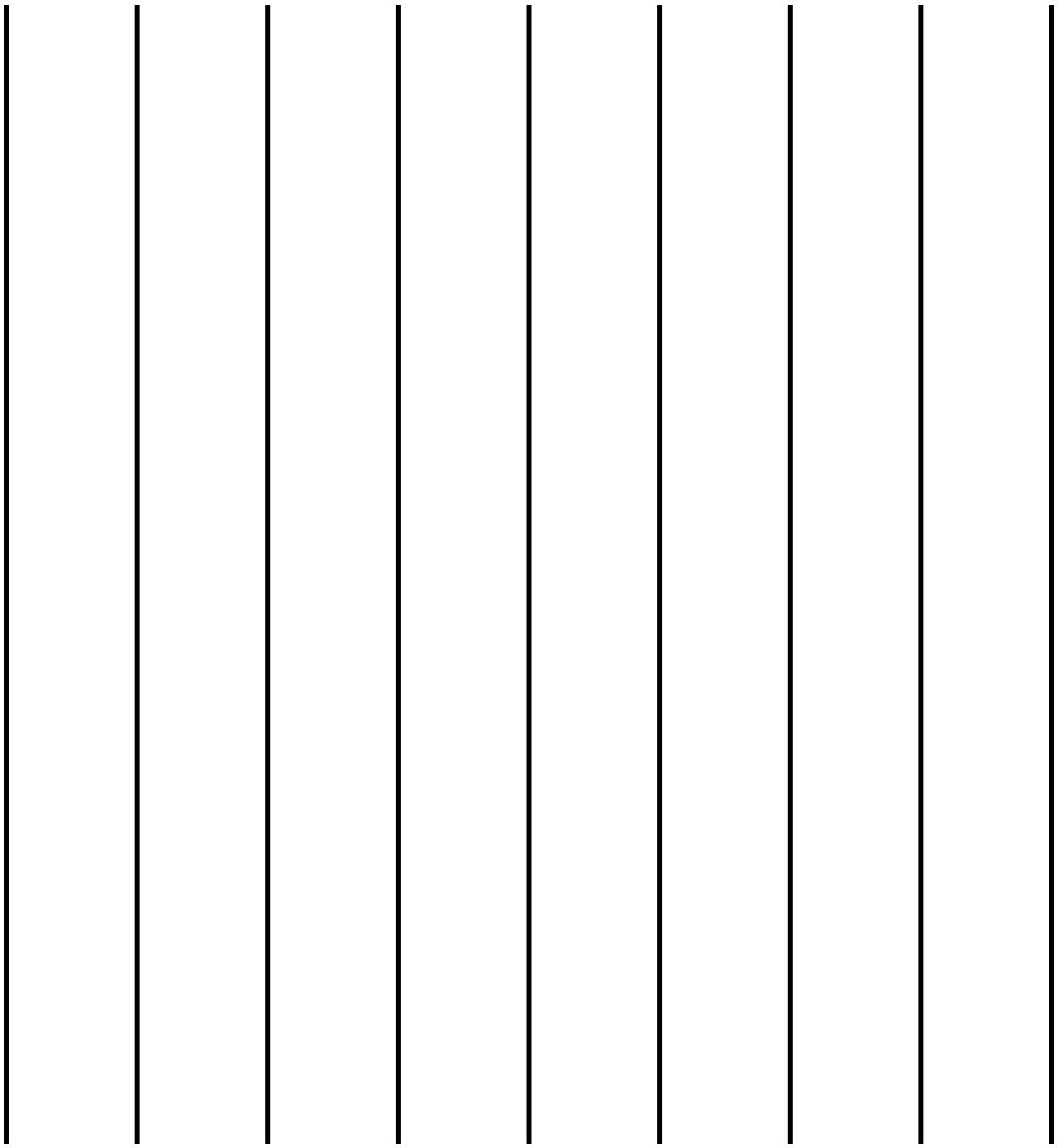
200	4.083
200	4.028

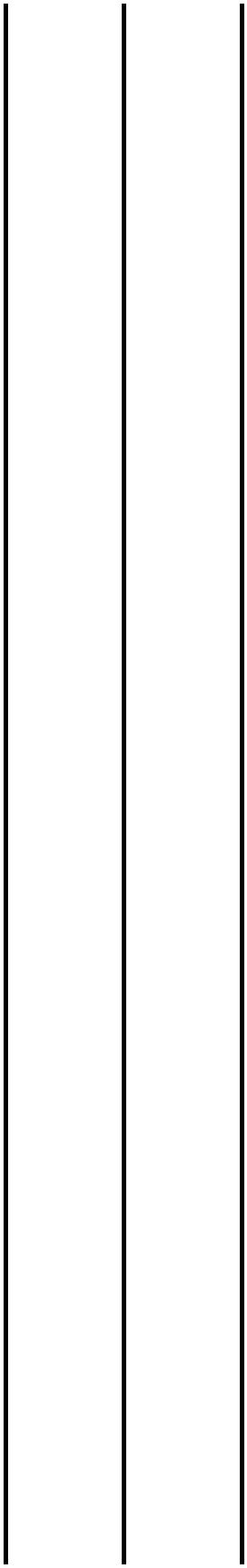


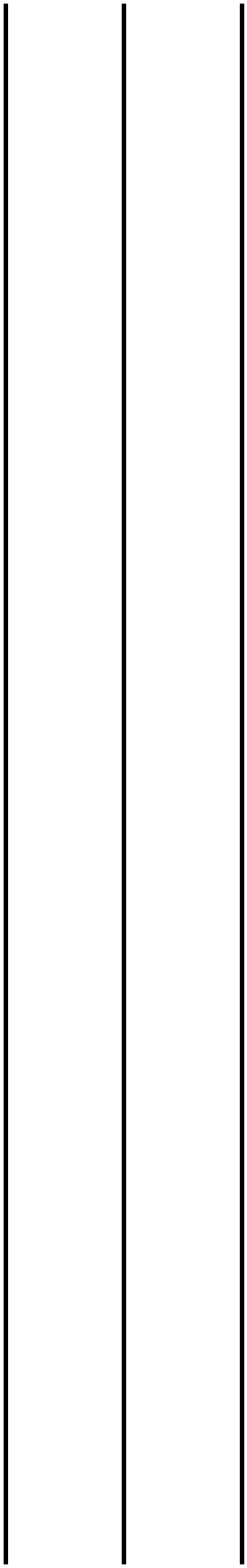


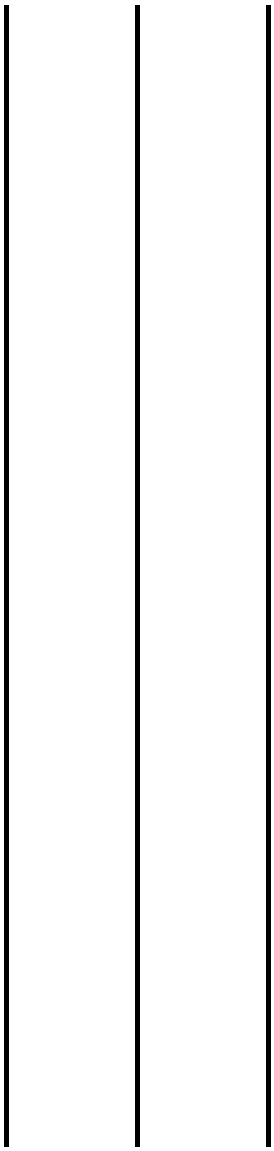


4.501 to 5.000	
200	4.951
200	4.736
200	4.608
200	4.568
200	4.539

5 to 5.5	
200	5.156



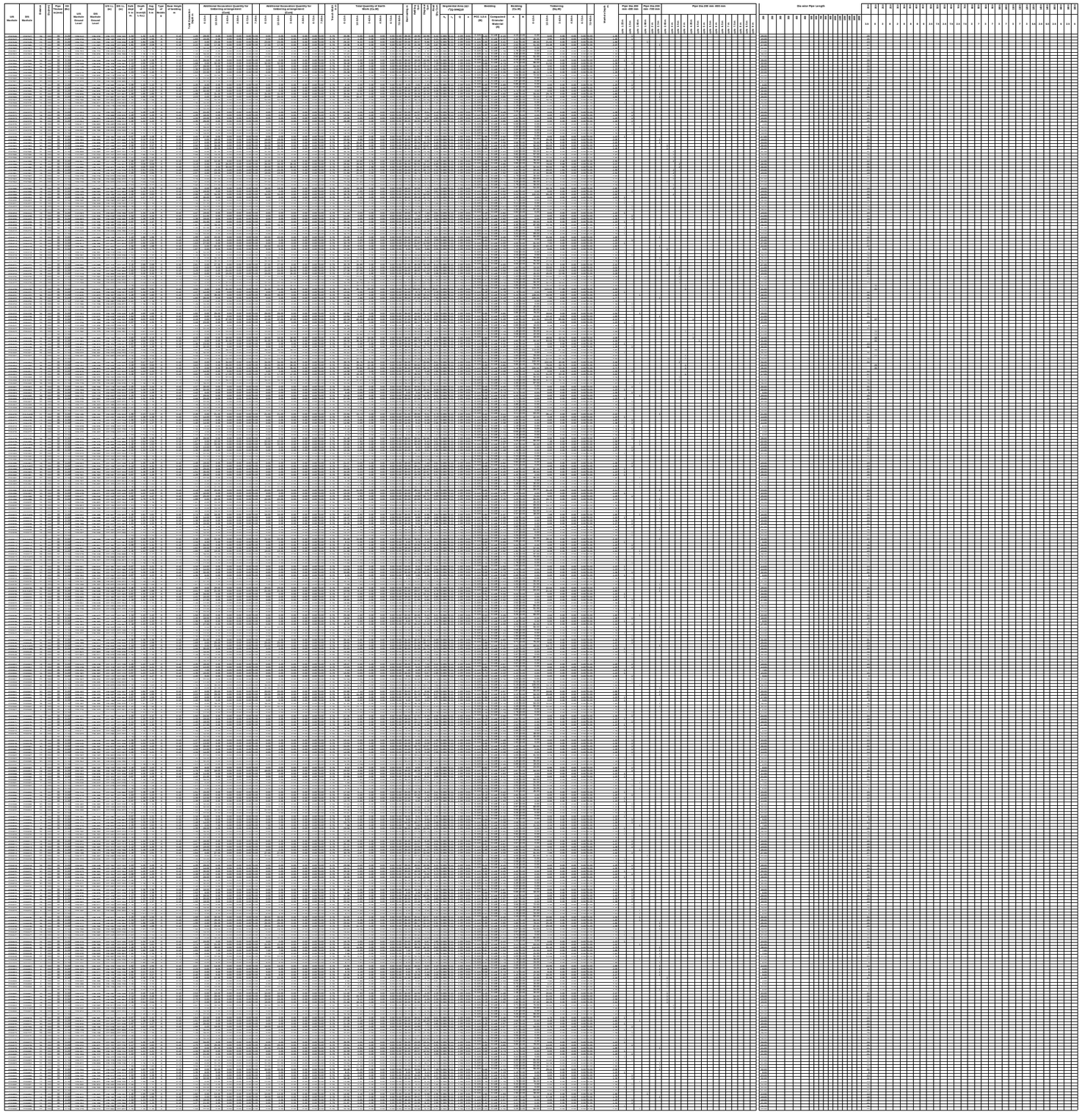




Gopa Sewerage Project

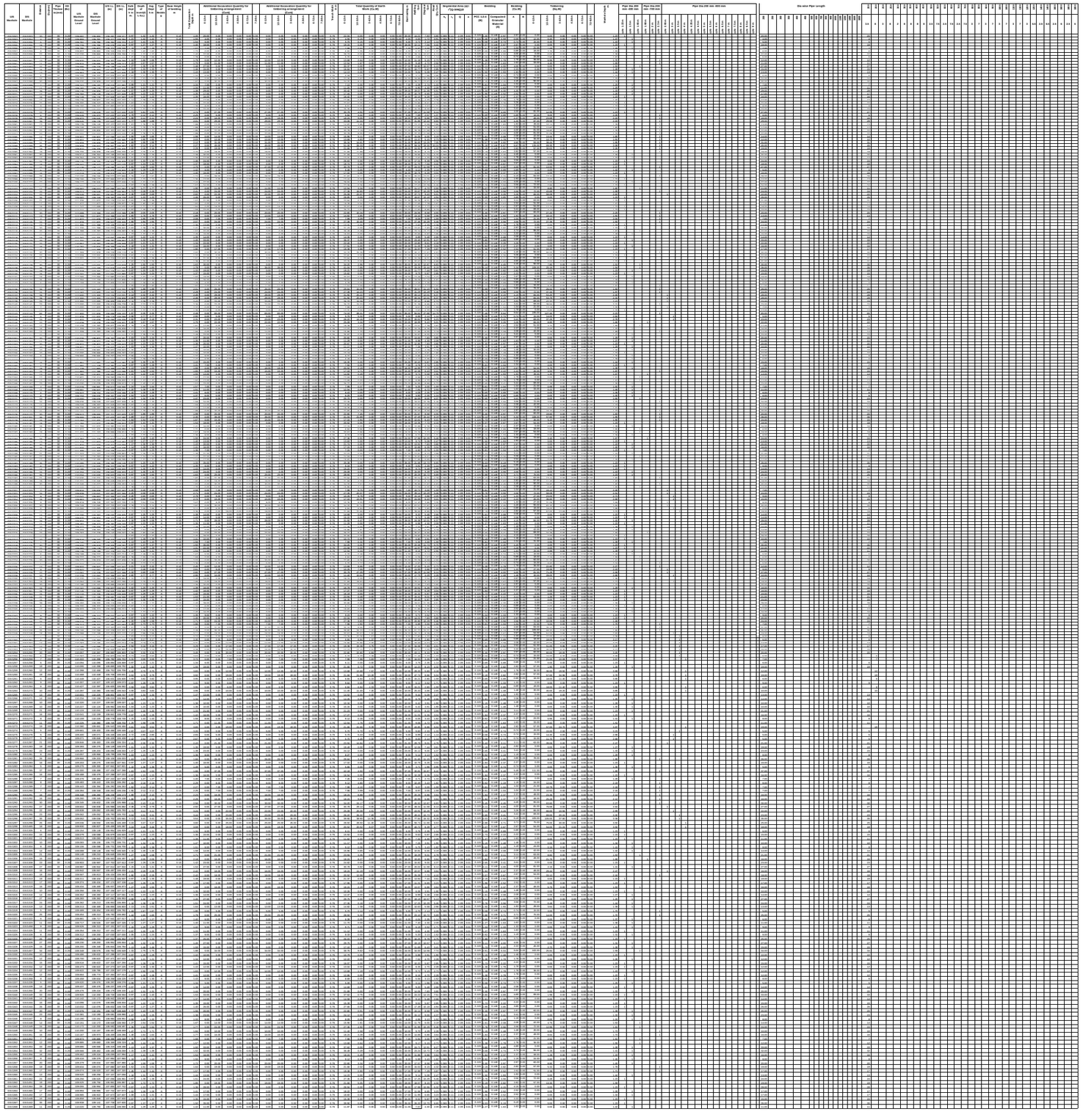
Hydraulic statement for Gora sewaage collection system - South

| UM Manhole | DM Manhole | Status | Pipe Passed (Y/N) | DM Reduced Ground Level | DM Invert Ground Level | DM I.L. (m) | DM O.L. (m) | Sump Depth (m) | Depth of Manhole (m) | Prop. Road | Type of Manhole | Base Height of Holding m | Top Cover Slab Height | Additional Excavation Quantity for Sidboring arrangement (Cum) | | | | Additional Excavation Quantity for Sidboring arrangement (Cum) | | | | Total Volume of Earth Work (Cu.M) | | | | Total Volu. (Cu.M) | Concrete | Rate of Concrete | Plastering | Rate of Plastering | Peripheral Area (m) | | | | Benching | | | Benching | | Trimming | | | |



Sewerage System in Chanthaburi Town/Measurement Sheet Zone 4

No.	Name	Ground Level (m.MSL)	Invert Level (m.MSL)	Depth (m)	Pipe Size (mm)	Type of Pipe	Length (m)	Slope (%)	Remarks
MH-1	MH-1	12.500	11.000	1.500	300	RCP	25.000	0.50	
MH-2	MH-2	12.450	10.875	1.575	300	RCP	30.000	0.50	
MH-3	MH-3	12.400	10.725	1.675	300	RCP	28.000	0.50	
MH-4	MH-4	12.350	10.580	1.770	300	RCP	32.000	0.50	
MH-5	MH-5	12.300	10.420	1.880	300	RCP	30.000	0.50	
MH-6	MH-6	12.250	10.270	1.980	300	RCP	28.000	0.50	
MH-7	MH-7	12.200	10.130	2.070	300	RCP	30.000	0.50	
MH-8	MH-8	12.150	9.980	2.170	300	RCP	32.000	0.50	
MH-9	MH-9	12.100	9.820	2.280	300	RCP	30.000	0.50	
MH-10	MH-10	12.050	9.670	2.380	300	RCP	28.000	0.50	
MH-11	MH-11	12.000	9.530	2.470	300	RCP	30.000	0.50	
MH-12	MH-12	11.950	9.380	2.570	300	RCP	32.000	0.50	
MH-13	MH-13	11.900	9.220	2.680	300	RCP	30.000	0.50	
MH-14	MH-14	11.850	9.070	2.780	300	RCP	28.000	0.50	
MH-15	MH-15	11.800	8.930	2.870	300	RCP	30.000	0.50	
MH-16	MH-16	11.750	8.780	2.970	300	RCP	32.000	0.50	
MH-17	MH-17	11.700	8.620	3.080	300	RCP	30.000	0.50	
MH-18	MH-18	11.650	8.470	3.180	300	RCP	28.000	0.50	
MH-19	MH-19	11.600	8.330	3.270	300	RCP	30.000	0.50	
MH-20	MH-20	11.550	8.180	3.370	300	RCP	32.000	0.50	
MH-21	MH-21	11.500	8.020	3.480	300	RCP	30.000	0.50	
MH-22	MH-22	11.450	7.870	3.580	300	RCP	28.000	0.50	
MH-23	MH-23	11.400	7.730	3.670	300	RCP	30.000	0.50	
MH-24	MH-24	11.350	7.580	3.770	300	RCP	32.000	0.50	
MH-25	MH-25	11.300	7.420	3.880	300	RCP	30.000	0.50	
MH-26	MH-26	11.250	7.270	3.980	300	RCP	28.000	0.50	
MH-27	MH-27	11.200	7.130	4.070	300	RCP	30.000	0.50	
MH-28	MH-28	11.150	6.980	4.170	300	RCP	32.000	0.50	
MH-29	MH-29	11.100	6.820	4.280	300	RCP	30.000	0.50	
MH-30	MH-30	11.050	6.670	4.380	300	RCP	28.000	0.50	
MH-31	MH-31	11.000	6.530	4.470	300	RCP	30.000	0.50	
MH-32	MH-32	10.950	6.380	4.570	300	RCP	32.000	0.50	
MH-33	MH-33	10.900	6.220	4.680	300	RCP	30.000	0.50	
MH-34	MH-34	10.850	6.070	4.780	300	RCP	28.000	0.50	
MH-35	MH-35	10.800	5.930	4.870	300	RCP	30.000	0.50	
MH-36	MH-36	10.750	5.780	4.970	300	RCP	32.000	0.50	
MH-37	MH-37	10.700	5.620	5.080	300	RCP	30.000	0.50	
MH-38	MH-38	10.650	5.470	5.180	300	RCP	28.000	0.50	
MH-39	MH-39	10.600	5.330	5.270	300	RCP	30.000	0.50	
MH-40	MH-40	10.550	5.180	5.370	300	RCP	32.000	0.50	
MH-41	MH-41	10.500	5.020	5.480	300	RCP	30.000	0.50	
MH-42	MH-42	10.450	4.870	5.580	300	RCP	28.000	0.50	
MH-43	MH-43	10.400	4.730	5.670	300	RCP	30.000	0.50	
MH-44	MH-44	10.350	4.580	5.770	300	RCP	32.000	0.50	
MH-45	MH-45	10.300	4.420	5.880	300	RCP	30.000	0.50	
MH-46	MH-46	10.250	4.270	5.980	300	RCP	28.000	0.50	
MH-47	MH-47	10.200	4.130	6.070	300	RCP	30.000	0.50	
MH-48	MH-48	10.150	3.980	6.170	300	RCP	32.000	0.50	
MH-49	MH-49	10.100	3.820	6.280	300	RCP	30.000	0.50	
MH-50	MH-50	10.050	3.670	6.380	300	RCP	28.000	0.50	
MH-51	MH-51	10.000	3.530	6.470	300	RCP	30.000	0.50	
MH-52	MH-52	9.950	3.380	6.570	300	RCP	32.000	0.50	
MH-53	MH-53	9.900	3.220	6.680	300	RCP	30.000	0.50	
MH-54	MH-54	9.850	3.070	6.780	300	RCP	28.000	0.50	
MH-55	MH-55	9.800	2.930	6.870	300	RCP	30.000	0.50	
MH-56	MH-56	9.750	2.780	6.970	300	RCP	32.000	0.50	
MH-57	MH-57	9.700	2.620	7.080	300	RCP	30.000	0.50	
MH-58	MH-58	9.650	2.470	7.180	300	RCP	28.000	0.50	
MH-59	MH-59	9.600	2.330	7.270	300	RCP	30.000	0.50	
MH-60	MH-60	9.550	2.180	7.370	300	RCP	32.000	0.50	
MH-61	MH-61	9.500	2.020	7.480	300	RCP	30.000	0.50	
MH-62	MH-62	9.450	1.870	7.580	300	RCP	28.000	0.50	
MH-63	MH-63	9.400	1.730	7.670	300	RCP	30.000	0.50	
MH-64	MH-64	9.350	1.580	7.770	300	RCP	32.000	0.50	
MH-65	MH-65	9.300	1.420	7.880	300	RCP	30.000	0.50	
MH-66	MH-66	9.250	1.270	7.980	300	RCP	28.000	0.50	
MH-67	MH-67	9.200	1.130	8.070	300	RCP	30.000	0.50	
MH-68	MH-68	9.150	0.980	8.170	300	RCP	32.000	0.50	
MH-69	MH-69	9.100	0.820	8.280	300	RCP	30.000	0.50	
MH-70	MH-70	9.050	0.670	8.380	300	RCP	28.000	0.50	
MH-71	MH-71	9.000	0.530	8.470	300	RCP	30.000	0.50	
MH-72	MH-72	8.950	0.380	8.570	300	RCP	32.000	0.50	
MH-73	MH-73	8.900	0.220	8.680	300	RCP	30.000	0.50	
MH-74	MH-74	8.850	0.070	8.780	300	RCP	28.000	0.50	
MH-75	MH-75	8.800	-0.070	8.870	300	RCP	30.000	0.50	
MH-76	MH-76	8.750	-0.220	8.970	300	RCP	32.000	0.50	
MH-77	MH-77	8.700	-0.380	9.080	300	RCP	30.000	0.50	
MH-78	MH-78	8.650	-0.530	9.180	300	RCP	28.000	0.50	
MH-79	MH-79	8.600	-0.670	9.270	300	RCP	30.000	0.50	
MH-80	MH-80	8.550	-0.820	9.370	300	RCP	32.000	0.50	
MH-81	MH-81	8.500	-0.980	9.480	300	RCP	30.000	0.50	
MH-82	MH-82	8.450	-1.130	9.580	300	RCP	28.000	0.50	
MH-83	MH-83	8.400	-1.270	9.670	300	RCP	30.000	0.50	
MH-84	MH-84	8.350	-1.420	9.770	300	RCP	32.000	0.50	
MH-85	MH-85	8.300	-1.580	9.880	300	RCP	30.000	0.50	
MH-86	MH-86	8.250	-1.730	9.980	300	RCP	28.000	0.50	
MH-87	MH-87	8.200	-1.870	10.070	300	RCP	30.000	0.50	
MH-88	MH-88	8.150	-2.020	10.170	300	RCP	32.000	0.50	
MH-89	MH-89	8.100	-2.180	10.280	300	RCP	30.000	0.50	
MH-90	MH-90	8.050	-2.330	10.380	300	RCP	28.000	0.50	
MH-91	MH-91	8.000	-2.470	10.470	300	RCP	30.000	0.50	
MH-92	MH-92	7.950	-2.620	10.570	300	RCP	32.000	0.50	
MH-93	MH-93	7.900	-2.780	10.680	300	RCP	30.000	0.50	
MH-94	MH-94	7.850	-2.930	10.780	300	RCP	28.000	0.50	
MH-95	MH-95	7.800	-3.070	10.870	300	RCP	30.000	0.50	
MH-96	MH-96	7.750	-3.220	10.970	300	RCP	32.000	0.50	
MH-97	MH-97	7.700	-3.380	11.080	300	RCP	30.000	0.50	
MH-98	MH-98	7.650	-3.530	11.180	300	RCP	28.000	0.50	
MH-99	MH-99	7.600	-3.670	11.270	300	RCP	30.000	0.50	
MH-100	MH-100	7.550	-3.820	11.370	300	RCP	32.000	0.50	
MH-101	MH-101	7.500	-3.980	11.480	300	RCP	30.000	0.50	
MH-102	MH-102	7.450	-4.130	11.580	300	RCP	28.000	0.50	
MH-103	MH-103	7.400	-4.270	11.670	300	RCP	30.000	0.50	
MH-104	MH-104	7.350	-4.420	11.770	300	RCP	32.000	0.50	
MH-105	MH-105	7.300	-4.580	11.880	300	RCP	30.000	0.50	
MH-106	MH-106	7.250	-4.730	11.980	300	RCP	28.000	0.50	
MH-107	MH-107	7.200	-4.870	12.070	300	RCP	30.000	0.50	
MH-108	MH-108	7.150	-5.020	12.170	300	RCP	32.000	0.50	
MH-109	MH-109	7.100	-5.180	12.280	300	RCP	30.000	0.50	
MH-110	MH-110	7.050	-5.330	12.380	300	RCP	28.000	0.50	
MH-111	MH-111	7.000	-5.470	12.470	300	RCP	30.000	0.50	
MH-112	MH-112	6.950	-5.620	12.570	300	RCP	32.000	0.50	
MH-113	MH-113	6.900	-5.780	12.680	300	RCP	30.000	0.50	
MH-114	MH-114	6.850	-5.930	12.780	300	RCP	28.000	0.50	
MH-115	MH-115	6.800	-6.070	12.870	300	RCP	30.000	0.50	
MH-116	MH-116	6.750	-6.220	12.970	300	RCP	32.000	0.50	
MH-117	MH-117	6.700	-6.380	13.080	300	RCP	30.000	0.50	
MH-118	MH-118	6.650	-6.530	13.180	300	RCP	28.000	0.50	
MH-119	MH-119	6.600	-6.670	13.270	300	RCP	30.000	0.50	
MH-120	MH-120	6.550	-6.820	13.370	300	RCP	32.000	0.50	
MH-121	MH-121	6.500	-6.980	13.480	300	RCP	30.000	0.50	
MH-122	MH-122	6.450	-7.130	13.580	300	RCP	28.000	0.50	
MH-123	MH-123	6.400	-7.270	13.670	300	RCP	30.000	0.50	
MH-124	MH-124	6.350	-7.420	13.770	300	RCP	32.000	0.50	
MH-125	MH-125	6.300	-7.580	13.880	300	RCP	30.000	0.50	
MH-126	MH-126	6.250	-7.730	13.980	300	RCP	28.000	0.50	
MH-127	MH-127	6.200	-7.870	14.070	300	RCP	30.000	0.50	
MH-128	MH-128	6.150	-8.020	14.170	300	RCP	32.000	0.50	
MH-129	MH-129	6.100	-8.180	14.280	300	RCP	30.000	0.50	
MH-130	MH-130	6.050	-8.330	14.380	300	RCP	28.000	0.50	
MH-131	MH-131	6.000	-8.470	14.470	300	RCP	30.000	0.50	
MH-132	MH-132	5.950	-8.620	14.570	300	RCP	32.000	0.50	
MH-133	MH-133	5.900	-8.780	14.680	300	RCP	30.000	0.50	
MH-134	MH-134	5.850	-8.930	14.780	300	RCP	28.000	0.50	
MH-135	MH-135	5.800	-9.070	14.870	300	RCP	30.000	0.50	
MH-136	MH-136	5.750	-9.220	14.970	300	RCP	32.000	0.50	
MH-137	MH-137	5.700	-9.380	15.080	300	RCP	30.000	0.50	
MH-138	MH-138	5.650	-9.530	15.180	300	RCP	28.000	0.50	
MH-139	MH-139	5.600	-9.670	15.270	300	RCP	30.000	0.50	
MH-140	MH-140	5.550	-9.820	15.370	300	RCP	32.000	0.50	
MH-141	MH-141	5.500	-9.980	15.480	300	RCP	30.000	0.50	
MH-142	MH-142	5.450	-10.130	15.580	300	RCP	28.000	0.50	
MH-143	MH-143	5.400	-10.270	15.670	300	RCP	30.000	0.50	
MH-144	MH-144	5.350	-10.420	15.770	300	RCP	32.000	0.50	
MH-145	MH-145	5.300	-10.580	15.880	300	RCP	30.000	0.50	
MH-146	MH-146	5.250	-10.730	15.980	300	RCP	28.000	0.50	
MH-147	MH-147	5.200	-10.870	16.070	300	RCP	30.000	0.50	
MH-148	MH-148	5.150	-11.020	16.170	300	RCP	32.000	0.50	
MH-149	MH-149	5.100	-11.180	16.280	300	RCP	30.000	0.50	
MH-150	MH-150	5.050	-11.330	16.380	300	RCP	28.000	0.50	
MH-151	MH-151	5.000	-11.470	16.470	300	RCP	30.000	0.50	
MH-152	MH-152	4.950	-11.620	16.570	300	RCP	32.000	0.50	
MH-153	MH-153	4.900	-11.780	16.680	300	RCP	30.000	0.50	
MH-154	MH-154	4.850	-11.930	16.780	300	RCP	28.000	0.50	
MH-155	MH-155	4.800	-12.070	16.870	300	RCP	30.000	0.50	
MH-156	MH-156	4.750	-12.220	16.970	300	RCP	32.000	0.50	
MH-157	MH-157	4.700	-12.380	17.080	300	RCP	30.000	0.50	
MH-158	MH-158	4.650	-12.530	17.180	300	RCP	28.000	0.50	
MH-159	MH-159	4.600	-12.670	17.270	300	RCP	30.000	0.50	
MH-160	MH-160	4.550	-12.820	17.370	300	RCP	32.000	0.50	
MH-161	MH-161	4.500	-12.980	17.480	300	RCP	30.000	0.50	
MH-162	MH-162	4.450	-13.130	17.580	300	RCP	28.000	0.50	
MH-163	MH-163	4.400	-13.270	17.670	300	RCP	30.000	0.50	
MH-164	MH-164	4.350	-13.420	17.770	300	RCP	32.000	0.50	
MH-165	MH-165	4.300	-13.580	17.880	300	RCP	30.000	0.50	
MH-166	MH-166	4.250	-13.730	17.980	300	RCP	28.000	0.50	
MH-167	MH-167	4.200	-13.870	18.070	300	RCP	30.000	0.50	
MH-168	MH-168	4.150	-14.020	18.170	300	RCP	32.000	0.50	
MH-169	MH-169	4.100	-14.180	18.280	300	RCP	30.000	0.50	
MH-170	MH-170	4.050	-14.330	18.380	300	RCP	28.000	0.50	
MH-171	MH-171	4.000	-14.470	18.470	300	RCP	30.000	0.50	
MH-172	MH-172	3.950	-14.620	18.570	300	RCP	32.000	0.50	
MH-173	MH-173	3.900	-14.780	18.680	300	RCP	30.000	0.50	
MH-174	MH-174	3.850	-14.930	18.780	300	RCP	28.000	0.50	
MH-175	MH-175	3.800	-15.070	18.870	300	RCP	30.000	0.50	
MH-176	MH-176	3.750	-15.220	18.970	300	RCP	32.000	0.50	
MH-177	MH-177	3.700	-15.380	19.080	300	RCP	30.000	0.50	
MH-178	MH-178	3.650	-15.530	19.180	300	RCP	28.000	0.50	
MH-179	MH-179	3.600	-15.670	19.270	300	RCP	30.000	0.50	
MH-180	MH-180	3.550	-15.820	19.370	300	RCP	32.000	0.50	
MH-181	MH-181	3.500	-15.980	19.480	300	RCP	30.000	0.50	
MH-182	MH-182	3.450	-16.130	19.580	300	RCP	28.000	0.50	
MH-183	MH-183	3.400	-16.270	19.670	300	RCP	30.000	0.50	
MH-184	MH-184	3.350	-16.420	19.770	300	RCP	32.000	0.50	
MH-185	MH-185	3.300	-16.580	19.880	300	RCP	30.000	0.50	
MH-186	MH-186	3.250	-16.730	19.980	300	RCP	28.000	0.50	
MH-187	MH-187	3.200	-16.870	20.070	300	RCP	30.000	0.50	
MH-188	MH-188	3.150	-17.020	20.170	300	RCP	32.000	0.50	
MH-189	MH-189	3.100	-17.180	20.280	300	RCP	30.000	0.50	
MH-190	MH-190	3.050	-17.330	20.380	300	RCP	28.000	0.50	
MH-191	MH-191	3.000	-17.470	20.470	300	RCP	30.000	0.50	
MH-192	MH-192	2.950	-17.620	20.570	300	RCP	32.000	0.50	
MH-193	MH-193	2.900	-17.780	20.680	300	RCP	30.000	0.50	
MH-194	MH-194	2.850	-17.930	20.780	300	RCP	28.000	0.50	
MH-195	MH-195	2.800	-18.070	20.870	300	RCP	30.000	0.50	
MH-196	MH-196	2.750	-18.220	20.970	300	RCP	32.000	0.50	
MH-197	MH-197	2.700	-18.380	21.080	300	RCP	30.000	0.50	
MH-198	MH-198	2.650	-18.530	21.180	300	RCP	28.000	0.50	
MH-199	MH-199	2.600	-18.670	21.270	300	RCP	30.000	0.50	
MH-200	MH-200	2.550	-18.820	21.370	300	RCP	32.000	0.50	
MH-201	MH-201	2.500	-18.980	21.480	300	RCP	30.000	0.50	
MH-202	MH-202	2.450	-19.130	21.580	300	RCP	28.000	0.50	
MH-203	MH-203	2.400	-19.270	21.670	300	RCP	30.000	0.50	
MH-204	MH-204	2.350	-19.420	21.770	300	RCP	32.000	0.50	
MH-205	MH-205	2.300	-19.580	21.880	300	RCP	30.000	0.50	
MH-206	MH-206	2.250	-19.730	21.980	300	RCP	28.000	0.50	
MH-207	MH-207	2.200	-19.870	22.070	300	RCP	30.000	0.50	
MH-208	MH-208	2.150	-20.020	22.170	300	RCP	32.000	0.50	
MH-209	MH-209	2.100	-20.180	22.280	300	RCP	30.000	0.50	
MH-210	MH-210	2.050	-20.330	22.380	300	RCP	28.000	0.50	
MH-211	MH-211	2.000	-20.470	22.470	300	RCP	30.000	0.50	
MH-212	MH-212	1.950	-20.620	22.570	300	RCP	32.000	0.50	
MH-213	MH-213	1.900	-20.780	22.680	300	RCP	30.000	0.50	
MH-214	MH-214	1.850	-20.930	22.780	300	RCP	28.000	0.50	
MH-215	MH-215	1.800	-21.070	22.870	300	RCP	30.000	0.50	
MH-216	MH-216	1.750	-21.220	22.970	300	RCP	32.000	0.50	
MH-217	MH-217	1.700	-21.380	23.080	300	RCP	30.000	0.50	
MH-218	MH-218	1.650	-21.530	23.180	300	RCP	28.000	0.50	
MH-219	MH-219	1.600	-21.670	23.270	300	RCP	30.000	0.50	
MH-220	MH-220	1.550	-21.820	23.370	300	RCP	32.000	0.50	
MH-221	MH-221	1.500	-21.980	23.480	300	RCP	30.000	0.50	
MH-222	MH-222	1.450	-22.130	23.580	300	RCP	28.000	0.50	
MH-223	MH-223	1.400	-22.270	23.670	300	RCP	30.000	0.50	
MH-224	MH-224	1.350	-22.420	23.770	300	RCP	32.000	0.50	
MH-225	MH-225	1.300	-22.580	23.880	300	RCP	30.000	0.50	
MH-226	MH-226	1.250	-22.730	23.980	300	RCP	28.000	0.50	
MH-227	MH-227	1.200	-22.870	24.070	300	RCP	30.000	0.50	
MH-228	MH-228	1.150	-23.020	24.170	300	RCP	32.000	0.50	
MH-229	MH-229	1.100	-23.180	24.280	300	RCP	30.000	0.50	
MH-230	MH-230	1.050	-23.330	24.380	300	RCP	28.000	0.50	
MH-231	MH-231	1.000	-23.470	24.470	300	RCP	30.000	0.50	
MH-232	MH-232	0.950	-23.620	24.570	300	RCP	32.000	0.50	
MH-233	MH-233	0.900	-23.780	24.680	300	RCP	30.000	0.50	
MH-234	MH-234	0.850	-23.930	24.780	300	RCP	28.000	0.50	
MH-235	MH-235	0.800	-24.070	24.870	300	RCP	30.000	0.50	
MH-236	MH-236	0.750	-24.220	24.970	300	RCP	32.000	0.50	
MH-237	MH-237	0.700	-24.380	25.080	300	RCP	30.000	0.50	
MH-238	MH-238	0.650	-24.530	25.180	300	RCP	28.000	0.50	
MH-239	MH-239	0.600	-24.670	25.270	300	RCP	30.000	0.50	
MH-240	MH-240	0.550	-24.820	25.370	300	RCP	32.000	0.50	
MH-241	MH-241	0.500	-24.980	25.480	300	RCP	30.000	0.50	
MH-242	MH-242	0.450	-25.130	25.580	300	RCP	28.000	0.50	
MH-243	MH-243	0.400	-25.270	25.670	300	RCP	30.000	0.50	
MH-244	MH-244	0.350	-25.420	25.770	300	RCP	32.000	0.50	
MH-245	MH-245	0.300	-25.580	25.880	300	RCP	30.000	0.50	
MH-246	MH-246	0.250	-25.730	25.980	300	RCP	28.000	0.50	
MH-247	MH-247	0.200	-25.870	26.070	300	RCP	30.000	0.50	
MH-248	MH-248	0.150	-26.020	26.170	300	RCP	32.000	0.50	
MH-249	MH-249	0.100	-26.180	26.280	300	RCP	30.000	0.50	
MH-250	MH-250	0.050	-26.330	26.380	300	RCP	28.000	0.50	
MH-251	MH-251	0.000	-26.470	26.470	300	RCP	30.000	0.50	
MH-252	MH-252	-0.050	-26.620	26.570	300	RCP	32.000	0.50	
MH-253	MH-253	-0.100	-26.780	26.680	300	RCP	30.000	0.50	
MH-254	MH-254	-0.150	-26.930	26.780	300	RCP	28.000	0.50	
MH-255	MH-255	-0.200	-27.070	26.870	300	RCP	30.000	0.50	
MH-256	MH-256	-0.250	-27.220	26.970	300	RCP	32.000	0.50	
MH-257	MH-257	-0.300	-27.380	27.080	300	RCP	30.000	0.50	
MH-258	MH-258	-0.350	-27.530	27.180	300	RCP	28.000	0.50	
MH-259	MH-259	-0.400	-27.670	27.270	300	RCP	30.000	0.50	
MH-260	MH-260	-0.450	-27.820	27.370	300	RCP	32.000	0.50	
MH-261	MH-261	-0.500	-27.980	27.480	300	RCP	30.000	0.50	
MH-262	MH-262	-0.550	-28.130	27.580	300	RCP	28.000	0.50	
MH-263	MH-263	-0.600	-28.270	27.670	300	RCP	30.000	0.50	
MH-264	MH-264	-0.650	-28.420	27.770	300	RCP	32.000	0.50	
MH-265	MH-265	-0.700	-28.580	27.880	300	RCP	30.000	0.50	
MH-266	MH-266	-0.750	-28.730	27.980	300	RCP	28.000	0.50	
MH-267	MH-267	-0.800	-28.870	28.070	300	RCP	30.000	0.50	
MH-268	MH-268	-0.850	-29.020	28.170	300	RCP	32.000	0.50	
MH-269	MH-269	-0.900	-29.180	28.280	300	RCP	30.000	0.50	
MH-270	MH-270	-0.950	-29.330	28.380	300	RCP	28.000	0.50	
MH-271	MH-271	-1.000	-29.470	28.470	300	RCP	30.000	0.50	
MH-272	MH-272	-1.050	-29.620	28.570	300	RCP	32.000	0.50	
MH-273	MH-273	-1.100	-29.780	28.680	300	RCP	30.000	0.50	
MH-274	MH-274	-1.150	-29.930	28.780	300	RCP	28.000	0.50	
MH-275	MH-275	-1.200	-30.070	28.870	300	RCP	30.000	0.50	
MH-276	MH-276	-1.250	-30.220	28.970	300	RCP	32.000	0.50	
MH-277	MH-277	-1.300	-30.380	29.080	300	RCP	30.000	0.50	
MH-278	MH-278	-1.350	-30.530	29.180	300	RCP	28.000	0.50	
MH-279	MH-279	-1.400	-30.670	29.270	300	RCP	30.000	0.50	
MH-280	MH-280	-1.450	-30.820	29.370	300	RCP	32.000	0.50	
MH-281	MH-281	-1.500	-30.980	29.480	300	RCP	30.000	0.50	
MH-282	MH-282	-1.550	-31.130	29.580	300	RCP	28.000	0.50	
MH-283	MH-283	-1.600	-31.270	29.670	300	RCP	30.000	0.50	
MH-284	MH-284	-1.650	-31.420	29.770	300	RCP	32.000	0.50	
MH-285	MH-285	-1.700	-31.580	29.880	300	RCP	30.000	0.50	
MH-286	MH-286	-1.750	-31.730	29.980	300	RCP	28.000	0.50	
MH-287	MH-287	-1.800	-31.870	30.070	300	RCP	30.000	0.50	
MH-288	MH-288	-1.850	-32.020	30.170	300	RCP	32.000	0.50	
MH-289	MH-289	-1.900	-32.180	30.280	300	RCP	30.000	0.50	
MH-290	MH-290	-1.950	-32.330	30.380	300	RCP	28.000	0.50	
MH-291	MH-291	-2.000	-32.470	30.470	300	RCP	30.000	0.50	
MH-292	MH-292	-2.050	-32.620	30.570	300	RCP	32.000	0.50	
MH-293	MH-293	-2.100	-32.780	30.680	300	RCP	30.000	0.50	
MH-294	MH-294	-2.150	-32.930	30.780	300	RCP	28.000	0.50	
MH-295	MH-295	-2.200	-33.070	30.870	300	RCP	30.000	0.50	
MH-296	MH-296	-2.250	-33.220	30.970	300	RCP	32.000	0.50	
MH-297	MH-297	-2.300	-33.380	31.080	300	RCP	30.000	0.50	
MH-298	MH-298	-2.350	-33.530	31.180	300	RCP	28.000	0.50	
MH-299	MH-299	-2.400	-33.670	31.270	300	RCP	30.000	0.50	
MH-300	MH-300	-2.450	-33



Seascape Species in Chichibuzawa Tsuchibuzawa Quasi-Zone 1

| Species | Sea Lamprey | Eulachon | Bowfin | Sea Lamprey | Fatbody Cusk | Eelpout Cusk | Ogo Cusk | Sea Lamprey | Ocean Sturgeon

| MH Number | GIS Number | Ground | Pipe Thickness (mm) | GIS Thickness (mm) | Pipe Invert Level (m) | GIS Invert Level (m) | GIS L (m) | Calc L (m) | Dist. between MH (m) | Depth of Trench (m) | Pipe Dia (mm) | Type of Strata | Bank Height of trenching (m) | Top Excavation Width (m) | Additional Excavation Quantity for Sidewising arrangement (Cum) | | | Additional Excavation Quantity for Sidewising arrangement (Cum) | | | Trench Width (m) | Total Quantity of Earth Work (Cu.m) | | | Total Quantity of Rock Work (Cu.m) | | | Weighted Average Depth (m) | Weighted Average Pipe Dia (mm) | Weighted Average Pipe Thickness (mm)

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| MH Number | SW Number | Shaft Type | Pipe Thickness (mm) | Inlet Pipe Dia (mm) | Ground Level | Sewer Level | Diff. in Ground Level | Diff. in Sewer Level | Inlet Pipe Dia | Height of Inlet(H) in Mtrs | Drop Pipe Dia | Type of Socket | Base Height of Invert in | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Total Earth Work (Cum) | Total Quantity of Hard Work (Cu.M) | | | | Total Quantity of Plaster (Sq.M) | | | | Reinforced Area (sq.cm) | | | Reinforcement | Welding | Binding | Thickness (Sq.M) | | | | Concrete M | Plain Dia 200 mm upto 450 mm | | Plain Dia 450 mm upto 700 mm | | Plain Dia 700 mm upto 900 mm | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| MH Number | SW Number | Shaft Type | Pipe Thickness (Wall Thickness) | GL Reduced Level | SW Invert Level | Diff. GL - SW (m) | Diff. TL - SW (m) | Inner Dia of Manhole (m) | Height of Cone/Slab (m) | Prop. Depth of Manhole | Type of Benching | Base Height of Benching | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Trench Width | Total Quantity of Earth Work (Cu.M) | | | | Depth of Pipe Trench (m) | Depth of Pipe Trench (m) | Trench Length (m) | Depth of Pipe Trench (m) | Depth of Pipe Trench (m) | Depth of Pipe Trench

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| US Manhole | DS Manhole | Shaft | Pipe Thrusted (M) | Pipe Thrusted (M) Actual | Ground Level | Invert Level | Depth of Trench (m) | Avg Dept of Trench (m) | Type of Strata | Bank Height of Holding in | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Trench Width (m) | Total Quantity of Earth Work (Cu.m) | | | | Total Quantity of Rock Work (Cu.m) | | | | Weight of Pipe (kg) | Pipe Pedestal Area (Sq.m) | Pipe Pedestal Volume (Cu.m) | Pipe Pedestal Weight (kg) | Manhole Area (SQ.M) | | | | Benching (Cu.M) | | Thickness (Cu.M) | | | | Total Quantity of Concrete (Cu.m) | Plan Dia 200 mm min 400 mm | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| MH Number | SH Number | Shaft Type | Pipe Thickness (mm) | Pipe Material (Concrete/ RCC/ HDPE/ CI/ DI/ Steel) | Ground Level | Invert Level | Depth of Excavation (m) | Type of Strata | Base Length of trenching (m) | Top Excavation Width (m) | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Trench Width (m) | Total Quantity of Earth Work (Cu.m) | | | | Total Quantity of Earth Work (Cu.m) | | | | Depth of Pipe Laying (m) | Pipe Bed Thickness (m) | Pipe Bed Width (m) | Pipe Bed Area (m) | Pipe Bed Quantity (Cum) | Pipe Bed Quantity (Cum) | Manhole Area (m2) (Typ.MH/CH) | | | | Benching | | Thickness (Dia.+Thickness) | | | | Quantity of Pipe (m) | Pipe Dia 200 mm min -400 mm | | | | Pipe Dia 400 mm min -700 mm | | | | Pipe Dia 200 mm min -800 mm | | | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| S/N | MH Number | Shaft Type | Pipe Thickness (mm) | MH Cover Level | MH Invert Level | Diff. (+) Dis. (-) (m) | Diff. (+) Dis. (-) (m) | Invert Level of Terminal MH (m) | Height of MH (m) | Pavg (Total Depth) | Type of Strata | Bank Height of Holding (m) | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Trench Width (m) | Total Quantity of Earth Work (Cu.m) | | | | Depth of Pipe Bed (m) | Thickness of Pipe Bed (m) | Depth of Pipe Haunch (m) | Thickness of Pipe Haunch (m) | Depth of Pipe Crown (m) | Thickness of Pipe Crown (m) | Depth of Pipe Top (m) | Thickness of Pipe Top (m)

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| MH Number | SW Number | Shaft/ Terminal | Pipe Thickness (mm) | MH Cover Level | SW Invert Level | Drop Height in MH | Invert Level of Terminal MH | Depth of Trench | Avg. Depth of Trench | Type of Strata | Bank Height of Holding in | Additional Excavation Quantity for Widening arrangement (Cum) | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | Trench Width | Total Quantity of Earth Work (Cu.m) | | | Total Quantity of Earth Work (Cu.m) | | | Total Quantity of Earth Work (Cu.m) | |

Sewerage System in Chhindwara TownMeasurement Sheet Zone-1

| US Manhole | DS Manhole | Shaft | Pipe Thrusted (M) | Pipe Thrusted (M) in Culvert | Ground Level | Invert Level | Depth of Trench (M) | Avg Dept of Trench (M) | Type of Strata | Bank Height of Holding in | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Additional Excavation Quantity for Widening arrangement (Cum) | | | | Total Quantity of Earth Work (Cu.M) | | | | Total Quantity of Earth Work (Cu.M) | | | | Total Quantity of Earth Work (Cu.M) | | | | Geometrical Area (m2) | | | | Widening | | Shuttering | | Thickness (Sq.M) | | | | Total Quantity of Concrete in M3 | Plain Dia 200 mm upto 450 mm | | | | Plain Dia 450 mm upto 700 mm | | | | Plain Dia 250 mm upto 800 mm | | | |

	NP3	NP4	Total	Trenchiess (2.5%)	
200	69633	5730	75363	1884.075	1884.075
250	18	1125	1143	28.575	28.575
300	0	206	206	5.15	10
350		110	110	2.75	10
400		102	102	2.55	10
450		18	18	0.45	10
500	0	0	0	0	10
600	0	0	0	0	10
700	0	0	0	0	10
800	0	0	0	0	10
	69651	7291		1923.55	

	Length of BT Road	4781.2913	m	6.15660435
	Length of Concrete Road	18729.2154	m	24.1165747
0.380196146	Length of WBM Road	2869.5739	m	3.69499159
	Length of soil Road	51281.0948	m	66.0318293
	Total	77661.1754	m	100
	Road cutting and road restoration details			
	DIA OF PIPE	200	250	300
	Length of pipe	75363	1143	206
		0.98	0.01	0.00
	Length of BT Road	4683	71	13
	Length of Cement road	18345	278	50
	Length of Kattcha Road	2811.00	43	8
	ash quantity	1394.22	22.518	4.4
	CC QUANTITY	4182.66	67.554	13.2
	BT QUANTITY			
	Grading II: 100 mm thick (Cum)	355.908	5.751	1.144
	Grading III: 100 mm thick (Cum)	355.908	5.751	1.144
	Prime coat (Sqm)	3559.08	57.51	11.44
	Tack Coat (Sqm)	3559.08	57.51	11.44
	Bituminous Macadam (Cum)	142.3632	2.3004	0.4576
	Bituminous Penetration Macadam (Sqm)	3559.08	57.51	11.44
	20mm thick Open-Graded Premix Carpet (Sqm)	3559.08	57.51	11.44
	WMM			
	Construction of granular sub-base Cum	534.09	8.7075	1.76
	Mix Macadam (WMM) 150 mm thick (Cum)	320.454	5.2245	1.056
		CC	BT	WMM
	Depth	0.3	0.5	0.4
	Width of trench	0.76	0.81	0.88
	EXCAVATION	200	250	300
	0 TO 1.5			
	BT ROAD	1779.54	28.755	5.72
	CC ROAD	4182.66	67.554	13.2
	wbm road	2136.36	34.83	7.04
	Total	5962.2	96.309	18.92
	Pipe Dia 200 mm -400 mm			a 200 mm -700
	upto 1.225 m	upto 1.5 m	upto 1.65 m	upto 1.68 m
	870	1096	321	61

Manhole Dia (avg)	1.41	1.41	1.72	2.79
Pipe Dia	0.76	0.76	0.81	0.88
Pipe Depth (total)	1.225	1.5	1.65	1.68
Upto 1.5m	1.225	1.5	1.5	1.5

1.5 to 3 m	0	0	0.15	0.18
3 to 4.5m				
4.5 to 6m				
6 to 7.5				
7.5 to 9				
Pipe Excavation qnty. (m3)				
Upto 1.5m	1.31271	1.6074	2.0898	3.6828
1.5 to 3 m	0	0	0.20898	0.441936
3 to 4.5m	0	0	0	0
4.5 to 6m	0	0	0	0
6 to 7.5	0	0	0	0
7.5 to 9	0	0	0	0
Manhole nos.	870	1096	321	61
Total pipe Ex. Qnty. to deduct				
Upto 1.5m	1142.0577	1761.7104	670.8258	224.6508
1.5 to 3 m	0	0	67.08258	26.958096
3 to 4.5m	0	0	0	0
4.5 to 6m	0	0	0	0
6 to 7.5	0	0	0	0
7.5 to 9	0	0	0	0

Property Connections	0.446246143
Length in CC road	8357.840138
Length in BT road	2133.632802
Length in WMM road	1280.536286
Length in soil road	22883.99077
Road side chamber	
One side property	
Two side property	
No of proposed road side chamber	98
Total property	5776
Length of pvc pipe	34656
Excavation in CC Road	1028.014337
Excavation in Bt ROAD	437.3947245
Ezavation in WMM road	210.0079508
Excavation in all types of soil	15375.33499

ROAD RESTORATION FOR PROPERTY CONNECTION

ash quantity	342.6714456
CC	1028.014337
Granular Sub Base	131.2549693
Wet Mix Mecadam	78.75298156
WBM Grading II	52.50198771
WBM Grading III	52.50198771
Prime coat (Sqm)	874.7894489
Tack Coat (Sqm)	874.7894489

Bituminous Macadam (Cum)	34.99157796
Bituminous Penetration Macadam (Sqm)	874.7894489
20mm thick Open-Graded Premix Carpet (Sqm)	874.7894489

	REFILLING			
	Pipe diameter	200	250	300
		0.2	0.25	0.3
	Thickness	0.06	0.06	0.08
	Total outer diameter	0.26	0.31	0.38
		75363	1143	206
	Area of pipe	0.0530998	0.07548655	0.1134262
	Pipe quantity	4001.760227	86.28112665	23.3657972
	Property connection	0.11		
		0.4		
		0.51		
		34656		
		329.3896848		
			200	30
			250	30
			300	40

								0.25
		7650.8652	0.098516					0.25
								0.5
350	400	450	500	600	700	800	900	1000
110	102	18	0	0	0	0	0	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	6	1	0	0	0	0	0	0
27	25	4	0	0	0	0	0	0
4	4	1	0	0	0	0	0	0
2.7	2.625	0.44	0	0	0	0	0	0
8.1	7.875	1.32	0	0	0	0	0	0
0.7	0.63	0.11	0	0	0	0	0	0
0.7	0.63	0.11	0	0	0	0	0	0
7	6.3	1.1	0	0	0	0	0	0
7	6.3	1.1	0	0	0	0	0	0
0.28	0.252	0.044	0	0	0	0	0	0
7	6.3	1.1	0	0	0	0	0	0
7	6.3	1.1	0	0	0	0	0	0
1	1.05	0.275	0	0	0	0	0	0
0.6	0.63	0.165	0	0	0	0	0	0
1	1.05	1.1	1.15	1.27	1.37	1.49	1.6	1.73
350	400	450	500	600	700	800	900	1000
3.5	3.15	0.55	0	0	0	0	0	0
8.1	7.875	1.32	0	0	0	0	0	0
4	4.2	1.1	0	0	0	0	0	0
11.6	11.025	1.87	0	0	0	0	0	0
) mm	Pipe Dia 200 mm -800 mm							
upto 2.3 m	upto 2.65 m	upto 3 m	upto 3.5 m	upto 4 m	upto 4.25 m	upto 4.5 m	upto 5 m	upto 5.5 m
713	198	172	146	124	45	27	49	64
2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79
1	1.05	1.1	1.15	1.27	1.37	1.49	1.6	1.73
2.3	2.65	3	3.5	4	4.25	4.5	5	5.5
1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

0.8	1.15	1.5	1.5	1.5	1.5	1.5	1.5	1.5
			0.5	1	1.25	1.5	1.5	1.5
							0.5	1
4.185	4.39425	4.6035	4.81275	5.31495	5.73345	6.23565	6.696	7.24005
2.232	3.368925	4.6035	4.81275	5.31495	5.73345	6.23565	6.696	7.24005
0	0	0	1.60425	3.5433	4.777875	6.23565	6.696	7.24005
0	0	0	0	0	0	0	2.232	4.8267
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
713	198	172	146	124	45	27	49	64
2983.905	870.0615	791.802	702.6615	659.0538	258.00525	168.36255	328.104	463.3632
1591.416	667.04715	791.802	702.6615	659.0538	258.00525	168.36255	328.104	463.3632
0	0	0	234.2205	439.3692	215.00438	168.36255	328.104	463.3632
0	0	0	0	0	0	0	109.368	308.9088
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

350	400	450	500	600	700	800	900	1000
0.35	0.4	0.45	0.5	0.6	0.7	0.8	0.9	1
0.15	0.15	0.15	0.15	0.17	0.17	0.19	0.2	0.23
0.5	0.55	0.6	0.65	0.77	0.87	0.99	1.1	1.23
110	102	18	0	0	0	0	0	0
0.196375	0.2376138	0.28278	0.3318738	0.465723	0.594545	0.7698686	0.950455	1.188383
21.60125	24.236603	5.09004	0	0	0	0	0	0

					Total			
1100	1200	1400	1600	1800				
0	0	0	0	0	76942			
0.00	0.00	0.00	0.00	0.00	1			
0	0	0	0	0	4781			
0	0	0	0	0	18729			
0	0	0	0	0	2871			
0	0	0	0	0	1427			
0	0	0	0	0	4281			
0	0	0	0	0	364			
0	0	0	0	0	364			
0	0	0	0	0	3642			
0	0	0	0	0	3642			
0	0	0	0	0	146			
0	0	0	0	0	3642			
0	0	0	0	0	3642			
					0			
0	0	0	0	0	547			
0	0	0	0	0	328			
1.83								
1100	1200	1400	1600	1800				
0	0	0	0	0	1821	CUM		
0	0	0	0	0	4281	CUM		
0	0	0	0	0	2188	SQ M	875.012	CUM
0	0	0	0	0	6102			
					14391			

							1.73	
upto 6 m	upto 6.5 m	upto 7 m	upto 7.5 m	upto 8 m	upto 8.5 m	upto 9 m	1.83	
19	13	11	0	0	0	0		
2.79	2.79	2.79	2.79	2.79	2.79	2.79		
1.83	1.83	1.83	1.83	1.83	1.83	1.83		
6	6.5	7	7.5	8	8.5	9		
1.5	1.5	1.5	1.5	1.5	1.5	1.5		

1.5	1.5	1.5	1.5	1.5	1.5	1.5		
1.5	1.5	1.5	1.5	1.5	1.5	1.5		
1.5	1.5	1.5	1.55	1.5	1.5	1.5		
	0.5	1	1.45	1.5	1.5	1.5		
				0.5	1	1.5		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.65855	7.65855	7.65855	7.65855		
7.65855	7.65855	7.65855	7.913835	7.65855	7.65855	7.65855		
0	2.55285	5.1057	7.403265	7.65855	7.65855	7.65855		
0	0	0	0	2.55285	5.1057	7.65855		
19	13	11	0	0	0	0		
145.51245	99.56115	84.24405	0	0	0	0	11353.881	m3
145.51245	99.56115	84.24405	0	0	0	0	6053.1738	m3
145.51245	99.56115	84.24405	0	0	0	0	2177.7415	m3
145.51245	99.56115	84.24405	0	0	0	0	747.59445	m3
0	33.18705	56.1627	0	0	0	0	89.34975	m3
0	0	0	0	0	0	0	0	m3

1100	1200	1400	1600	1800				
1.1	1.2	1.4	1.6	1.8				
0.23	0.24	0.27	0.28	0.3				
1.33	1.44	1.67	1.88	2.1				
0	0	0	0	0	76942			
1.38947095	1.6288128	2.190681	2.7762712	3.464055	17			
0	0	0	0	0	4162			

Rate Analysis of High Alumina Cement Lining			
A	High Alumina Cement: for MH	For 25 mm thk, per m2	
1	Area (unit)	m2	1.0
2	Thickness	mm	25.0
3	Volume	m3	0.025
4	Ratio (volume) (C:S)	1:	3
5	Cement volume (per m2 lining)	m3	0.00625
6	Sand volume (per m2 lining)	m3	0.01875
7	Cement Unit weight (kg /m3)	kg/m3	1440
8	Sand Unit weight (kg /m3)	kg/m3	1840
9	Cement weight (kg)	kg	9.0
10	Sand weight (kg)	kg	34.5
11	Cement basic rate (per kg)	INR/kg	27.3
12	Sand basic rate (per kg)	INR/kg	0.087
13	Total INR (per m2)	INR/m2	248.71
14	Carriage (0%)	0.0	0.00
15	Labor (20%)	20.0	49.74
	Sub total		298.46
16	Contractor's profit	10.0	29.85
17	Overhead	5.0	14.92
	Total INR (per m2)	INR/m2	**343.22**

B	High Alumina Cement: for Pipes	For 12 mm thk, per m2	
1	Area (unit)	m2	1.0
2	Thickness	mm	12.0
3	Volume	m3	0.012
4	Ratio (volume) (C:S)	1:	3
5	Cement volume (per m2 lining)	m3	0.00300
6	Sand volume (per m2 lining)	m3	0.00900
7	Cement Unit weight (kg /m3)	kg/m3	1440
8	Sand Unit weight (kg /m3)	kg/m3	1840
9	Cement weight (kg)	kg	4.3
10	Sand weight (kg)	kg	16.6
11	Cement basic rate (per kg)	INR/kg	27.3
12	Sand basic rate (per kg)	INR/kg	0.1
13	Total INR (per m2)	INR/m2	119.38
14	Carriage (0%)	0.0	0.00
15	Labor (20%)	20.0	23.88
	Sub total		143.26
16	Contractor's profit	10.0	14.33
17	Overhead	5.0	7.16
	Total INR (per m2)	INR/m2	**164.75**

	Dia wise lining cost	For 12 mm thk, per running meter pipe	
	Pipe ID (mm)	Area (m2) per RM	Lining cost (INR)
1	200	0.63	103.51
2	250	0.79	129.39
3	300	0.94	155.27
4	350	1.10	181.15
5	400	1.26	207.03
6	450	1.41	232.91
7	500	1.57	258.78
8	550	1.73	284.66
9	600	1.88	310.54
10	650	2.04	336.42
11	700	2.20	362.30
12	750	2.36	388.18
13	800	2.51	414.06
14	900	2.83	465.81
15	1000	3.14	517.57
16	1100	3.46	569.33
17	1200	3.77	621.08
18	1300	4.08	672.84
19	1400	4.40	724.60
20	1500	4.71	776.35
21	1600	5.03	828.11
22	1700	5.34	879.87
23	1800	5.65	931.62

24	1900	5.97	983.38
25	2000	6.28	1035.14

Summary for Carriage of Material for Collection System

	South						
Item	**Brick MH**	**Road Side Chamber**	**Drop MH**	**Cement Concrete Pavement**	**Bedding & Road Restoration**	**High Alumina Cement**	**RCC MH**
Sand	5187.21	42	158	2664.15		0	0
Aggregate	5708.45	44	328	5415.18	25978		0
Bricks	17490.69	109.16					0

Total MT
80518.00
374737.3
175998.5

BRICK MANHOLE

Rate analysis for Excavation, External plaster and Foot rest

MANHOLE DATA					EXCAVATION				PCC (M10)	Benching (M15)	COLLAR (M15)	BRICKS (1:3)					Cement Plaster Internal 1:3	Cement Plaster External Surface	Foot rest	Rate for excavation - BSR-BCD-17-Item 2.8.1; Pg-69 & 2.27.1; Pg.-72	Rate for plaster - 12 mm thick (1:3) - BSR-BCD-17-Item 13.11.1; Pg-147	Providing orange colour safety foot rest - BSR-BCD-17-Item 19.16; Pg-202	Total Amount (Rs.)
Manhole Type	No. of Manhole	Diameter of Manhole mm	Inner Diameter of Manhole m	Depth of Manhole	Excavation Depth	Excavation Diameter of Manhole m	Excavation Qty, in Cum	Total Excavation Qty Cum	Each MH	Each MH	Each MH	Upper Portion	Bottom/Middle Portion	Lower Portion	Bottom Portion	Total							
A	870.00	910.00	0.91	1.230	1.48	1.76	3.60	3132.54	0.382	0.128	0.365	0.509	0.385			0.89	2.84	4.58	4.00	230.5	128.2	208	2249.05
	1096.00	910.00	0.91	1.50	1.75	1.76	4.26	4666.21	0.382	0.128	0.365	0.509	0.601			1.11	3.46	5.58	4.00	230.5	128.2	208	2529.34
	321.00	910.00	0.91	1.68	1.93	1.76	4.70	1507.22	0.382	0.128	0.365	0.509	0.746			1.25	3.88	6.26	5.00	230.5	128.2	208	2924.19
B	61.00	1220.00	1.22	1.68	2.01	2.07	6.76	412.63	0.686	0.269	0.365	1.457	0.102			1.56	4.70	7.07	5.00	230.5	128.2	208	3505.98
	0.00	1220.00	1.22	2.00	2.33	2.07	7.84	0.00	0.686	0.269	0.365	1.457	0.153			1.61	5.59	8.42	6.00	230.5	128.2	208	4134.93
	713.00	1220.00	1.22	2.30	2.63	2.07	8.85	6310.68	0.686	0.269	0.365	1.457	0.459			1.92	6.43	9.68	7.00	230.5	128.2	208	4737.57
C	198.00	1520.00	1.52	2.65	3.05	2.84	19.29	3819.26	1.617	0.507	0.365	1.787			2.391	4.18	9.79	15.13	8.00	230.5	128.2	208	8049.56
	172.00	1520.00	1.52	3.00	3.40	2.84	21.51	3699.09	1.617	0.507	0.365	1.787	0.295		3.126	5.21	11.46	18.04	9.00	230.5	128.2	208	9141.51
	146.00	1520.00	1.52	3.50	3.90	2.84	24.67	3602.36	1.617	0.507	0.365	1.787	0.984	0.418	3.126	6.32	13.85	22.19	11.00	230.5	128.2	208	10820.29
	124.00	1520.00	1.52	4.00	4.40	2.84	27.84	3452.29	1.617	0.507	0.365	1.787	0.984	1.809	3.126	7.71	16.24	26.35	13.00	230.5	128.2	208	12499.08
	45.00	1520.00	1.52	4.25	4.65	2.84	29.42	1324.11	1.617	0.507	0.365	1.787	0.984	2.505	3.126	8.40	17.43	28.42	14.00	230.5	128.2	208	13338.47
	27.00	1520.00	1.52	4.50	4.90	2.84	31.01	837.23	1.617	0.507	0.365	1.787	0.984	3.201	3.126	9.10	18.63	30.50	14.00	230.5	128.2	208	13969.86
	49.00	1520.00	1.52	5.00	5.40	2.84	34.18	1674.61	1.617	0.507	0.365	1.787	0.984	4.593	3.126	10.49	21.01	34.66	16.00	230.5	128.2	208	15648.64
	64.00	1520.00	1.52	5.50	5.90	2.84	37.34	2389.96	1.907	0.507	0.365	1.787	0.984	5.985	3.126	11.88	23.40	38.81	18.00	230.5	128.2	208	17327.43
	19.00	1520.00	1.52	6.00	6.40	2.84	40.51	769.70	1.907	0.507	0.365	1.787	0.984	7.377	3.126	13.27	25.79	42.97	19.00	230.5	128.2	208	18798.21
	13.00	1520.00	1.52	6.50	6.90	2.84	43.68	567.81	1.907	0.507	0.365	1.787	0.984	8.76837	3.126	14.67	28.18	47.12	21.00	230.5	128.2	208	20477.00
	11.00	1520.00	1.52	7.00	7.40	2.84	46.85	515.30	1.907	0.507	0.365	1.787	0.984	10.1602	3.126	16.06	30.57	51.28	23.00	230.5	128.2	208	22155.78
		1520.00	1.52	7.50	7.90	2.84	50.01		1.907	0.507	0.365	1.787	0.984	11.552	3.126	17.45	32.95	55.43	24.00	230.5	128.2	208	23626.56
		1520.00	1.52	8.00	8.40	2.84	53.18		1.907	0.507	0.365	1.787	0.984	12.9438	3.126	18.84	35.34	59.59	26.00	230.5	128.2	208	25305.35

RATE ANALYSIS FOR GRANULAR BEDDING

Sr. No.	Item Discription	Unit	Rate in Rs. (BSR-16)
1)	Cost of 20 mm aggregates	Cum	556.33
	Add Contractors Profit 10%		55.63
	Add Overhead Charges 10%		61.20
	BSR-BCD-17; Sr. No.-0295; Pg.-6/45 & BSR-BCD-14; Sr. No.-1.1; Pg.-77 & 79/ 118 & 120 ('@151.10/cum-loading & unloading & '@ 7.40-Haulage t.km (Unit wt. 2900 tonne.cum	Total	673.16
2)	Labour for laying Jointing	10%	740.48
		Say Rs.	**740.00**

Rate Analysis for Road Side Chamber					
Sr. No.	**Description Of Item**	**Unit**	**Quantity**	**Rate in Rs.**	**Amount in Rs.**
1	**Excavation :**				
	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	cum	2.12	360.70	**765.69**
	BSR-BCD-18-Item 2.8.1; Pg-72				
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering-all work up to plinth level.				
	M - 10	cum	0.32	3387.10	**1090.86**
	M - 15	cum	0.01	3953.40	**23.58**
	M - 20	cum	0.08	4380.40	**350.92**
	BSR-BCD-17; Sr. No.-4.1.5,4.1.3 and 4.1.2; Pg-79				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	cum	1.02	116.50	**118.99**
	BSR-BCD-18-Item 2.26; Pg-75				
4	Brick work with bricks of class designation 100A in foundations and plinth in :				
	Cement Mortar 1:4 (1Cement : 4 Coarse Sand)	cum	0.64	5048.20	**3211.53**
	BSR - BCD-18- Item- 6.1.12/1, P-93				
5	20 mm cement plaster 1:3 (1 cement : 3 coarsed sand) finished with a floating coat of neat cement.				
	BSR-BCD- 18; Item-13.13.1, Pg-167	Sq m	8.06	218.60	**1761.52**
6	**Disposal of Excavated Earth**				
	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	1.10	262.50	**289.11**
	Rate analysis				
7	**SFRC Frame Cover**				
	Providing & fixing of Circular shape 450 mm dia SFRC manhole cover with frame - MD - 10	No.	1.00	942.20	**942.20**
	BSR - BCD-18- Item- 19.19.1.3, P-245				
8	**Miscelleneous Items :**				
	Repairing the damaged water supply lines, telephone cables, electrical cables & other cables, taking required permissions if required from private or government agencies, etc. as required in order to complete the execution of the sewerage scheme in all respect.	L.S.	1.00	1000.00	**1000.00**
	TOTAL =				**9554.39**
	Rate per Road Side Chamber =				**9554.00**

Rate Analysis for Repairing water Supply Lines, Cabels et
(UTILITY SHIFTING)

Sr. No.	Item Discription	No.	Qty.	Unit
1	**REPAIRING THE DOF WATER SUPPLY PIPE LINES, ELECTRICAL CABLE UTILITY LINES DURING THE EXCAVATION & LAYING OF DRAINAGE PIPE ETC.**			
	Total No. of properties in 1.00 Km length in city Area Consider property connection at 30 mtr distance	1000/30		No.
	i) Consider 10% comercial properties in 1.00 km	33 x 10%		No.
	ii) Consider 90% Recidencial properties in 1.00 km	33 x 90%		No.
1.1	**COST OF MATERIAL**			
	i) 20 mm dia. G.I. pipe (For Commercial)	4	2.5	Rmt
	ii) 15 mm dia. G.I. pipe (For Residential)	29	2.5	Rmt
	iii) 20 mm dia. G. I. Coupler	4	1	Nos.
	iv) 15 mm dia. G. I. Coupler	29	1	Nos.
	v) 20 mm dia. G. I. Union	4	1	Nos.
	vi) 15 mm dia. G. I. Union	29	1	Nos.
	Total cost of Material			
	vii) Add 2 % Misc. Material charges			
1.2	**COST OF LABOUR**			
	i) Plumber			No
	ii) Helper			No
	Total cost of Labour			
1.3	**COST OF CABLE**			
	Consider 100 mtr cable replacement for 1.00 Km			LS
	Total cost of Cable			

	TOTAL			

c.

Total Qty.	Rate in Rs.	Amount in Rs.
33.00		
4.00		
29.00		
10.00	92.14	921.40
72.50	71.67	5,196.08
4.00	81.90	327.60
29.00	62.36	1,808.44
4.00	46.54	186.16
29.00	27.92	809.68
		9,249.36
		184.99
1.00	323.00	323.00
1.00	254.00	254.00
		577.00
		500.00
		500.00

		10,511.34
	Say Rs.	**10,511.00**

Rate Analysis for Disposal

Sr. No.	Description	Unit	Quantity	Rate in Rs.	Amount in Rs.
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1	20	**20**
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	Cum.km	8	7.83	**62.61**

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	Cum	1	82.61	**82.61**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

Duty of pumping plants

Sl No.	Pumping Station	Duty Type	Flow lps	Head m	Total Pumps	Working
1	IPS A-1	Peak - 3 DWF	57	23	1	1
		Average - 2 DWF	38	23	1	1
		Non peak - 1 DWF	19	23	1	1
2	IPS A-2	Peak / Average	34	18	4	2
		Half Average	15	10	2	1
3	IPS A-3	Peak / Average	31	15	6	4
		Half Average	31	12	2	1
4	IPS A-4	Peak / Average	28	12	6	2
		Half Average	28	12	2	1
5	IPS A-5	Peak / Average	30	15	6	2
		Half Average	30	13	2	1
6	MPS A-6	Peak / Average	98	21	6	2
		Half Average	98	17	2	1
7	IPS A-7	Peak - 3 DWF	9	10	1	1
		Average - 2 DWF	6	10	1	1
		Non peak - 1 DWF	3	9	1	1

Design of Electric Equi				
Item	**Relationship**	**Unit**	**IPS A-1**	
			Peak Flow Pumps	**Non peak Flow Pumps**
No. of Working Pumps			2	1
Pump Discharge		Cum/Hr	205.20	136.80
Pump Discharge		Cum/sec	**0.06**	**0.04**
Pump Discharge		Lps	**57.00**	**38.00**
Total head		M	**23.00**	**23.00**
Efficiency Considered		%	75	75
Sp. Gravity			1.05	1.05
B.H.P. of Motor	(Dis. x Total Head x Sp. Gravity)/(75 x Efficiency of pump)	HP	24.47	16.31
Add for margin		%	10	10
		HP	2.45	1.63
B.H.P of Motor		HP	26.92	17.95
K.W. rating of Motor of each pump	HP × 0.746	KW	**20.08**	**13.39**
KW input to the motor considering efficiency as 90%		KW	**20.28**	**13.52**
OTHER LOADS				
Screen Operation		KW	**3.00**	
Crane		kW	**3.00**	
Dewatering Pumps		kW	**5.00**	
Light, Fans, Exhaust fans and others		kW	**5.00**	
Instrumentation, SCADA etc		kW	**5.00**	
Total Other load			**21.00**	
Transformer Capacity				
Total Running Load		KW	54.1	
Provision for Starting load of 2nd Peak pump		KW	10.1	
Load of other items		KW	21.0	
Total Load		KW	85.2	
Total Load Considering PF as 0.8		KVA	106.5	
Adding Margin for Transformer losses and derating @ 10%		KVA	117.2	
Provide Tansformer		KVA	**63.0**	
Full load Currentof Transformer		A	**87.6**	
Cable Sizes for Motors				
Motor Rating		KW	20.28	13.52
Full load current		A	**35.3**	**23.5**
LTCable (XLPE Armoured))		Sqmm		
Cable Sizes for Transformer to LT Panel		Sqmm	**2x500 XLPE**	
HT Cable Size		Sqmm	**300**	
Incoming LT for transformer of		KVA		
In coming ACB		A		
Out going MCCB for Motor		A		

Capacitor		KVAr	90
DG Set		KVA	400

pment for Gaya Eastern Sewage Pumping Stations									
IPS A-2		**IPS A-3**		**IPS A-4**		**IPS A-5**		**MPS**
Peak Flow Pumps	**Non peak Flow Pumps**	**Peak Flow Pumps**	**Non peak Flow Pumps**	**Peak Flow Pumps**	**Non peak Flow Pumps**	**Peak Flow Pumps**	**Non peak Flow Pumps**	**Peak Flow Pumps**
2	1	2	1	2	1	2	1	2
122.40	54.00	111.60	111.60	100.80	100.80	108.00	108.00	352.80
0.03	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.10**
34.00	**15.00**	**31.00**	**31.00**	**28.00**	**28.00**	**30.00**	**30.00**	**98.00**
18.00	**10.00**	**15.00**	**12.00**	**12.00**	**12.00**	**15.00**	**13.00**	**21.00**
75	75	75	75	75	75	75	75	75
1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
11.42	2.80	8.68	6.94	6.27	6.27	8.40	7.28	38.42
10	10	10	10	10	10	10	10	10
1.14	0.28	0.87	0.69	0.63	0.63	0.84	0.73	3.84
12.57	3.08	9.55	7.64	6.90	6.90	9.24	8.01	42.26
9.37	**2.30**	**7.12**	**5.70**	**5.15**	**5.15**	**6.89**	**5.97**	**31.52**
9.47	**2.32**	**7.19**	**5.76**	**5.20**	**5.20**	**6.96**	**6.03**	**31.84**
3.00		**3.00**		**3.00**		**3.00**		**3.00**
3.00		**3.00**		**3.00**		**3.00**		**3.00**
5.00		**5.00**		**5.00**		**5.00**		**5.00**
5.00		**5.00**		**5.00**		**5.00**		**5.00**
5.00		**5.00**		**5.00**		**5.00**		**5.00**
21.00		**21.00**		**21.00**		**21.00**		**21.00**

S A-6	IPS A-7	
Non peak Flow Pumps	**Peak Flow Pumps**	**Non peak Flow Pumps**
1	2	1
352.80	32.40	21.60
0.10	**0.01**	**0.01**
98.00	**9.00**	**6.00**
17.00	**10.00**	**10.00**
75	75	75
1.05	1.05	1.05
31.10	1.68	1.12
10	10	10
3.11	0.17	0.11
34.21	1.85	1.23
25.52	**1.38**	**0.92**
25.78	**1.39**	**0.93**
	3.00	
	3.00	
	5.00	
	5.00	
	5.00	
	21.00	

Capacitor Design Data sheet for PF Improvement Gaya Eastern

KW input	KW……	215.5
Power Supply	KV	0.415
Power factor	lagging…….	0.85
Desired power factor	lagging	0.98
Multiplying Factor		[tan ($\cos^{-1}$ Ø1) - tan ($\cos^{-1}$ Ø2) 0.417
Required KVAR		KW_{BKW} x Multiplying Factor

SEWERAGE SYSTEM OF GAYA EASTERN PART QUANTITY S

Item	Unit	IPS A-1	IPS A-2	IPS A-3	MPS A-6
DP Structure	no	1	1	1	1
HT VCB panel	no	1	1	1	1
HT Cable					
120 Sqmm	m	30	30	30	
300 sqmm					30
11/0.415 Transformer					
63KVA	no				
100KVA	no	1	1	1	
250KVA	n				1
1000KVA	no				
Cubical for LT panels	Sqm	30	30	30	30
Incoming from Transformer					
MCCB 250A with relays	no	2	2	2	
ACB 800A with relays	no				2
ACB 2500A with relays	no				
Outgoing for pumps and other equipment					
MCCB 50A for pumps	no	4	9	9	
ACB 2000A with relays for STP	no				
MCCB 150A APFC	no	1	1	1	1
MCCB 125A	no				9
MCCB 50A for other services	no	6	6	6	6
Starters for Pumps					
ASD Automatic Star Delta 30kW	no				6
ASD Automatic Star Delta 25kW	no				2
ASD Automatic Star Delta 20kW	no	1			
ASD Automatic Star Delta 10kW	no	1	6		
ASD Automatic Star Delta 7.5kW	no	1	2	8	
DOL 2kW	no				
Battery and Charger	no	1	1	1	1
Power factor Correction Relay	no	1	1	1	1
Capacitor	KVAr	9	16	12	53
LT Cable					
500 Sqmm					30
400 sqmm					
120 Sqmm	m	30	30	30	
35Sqmm	m				60
25 Sqmm					20
16 Sqmm	m	10			
10 Sqmm	m	10	60		
6 Sqmm	m	10	20	80	
Earthing					

Plate	Set	6		6		6		6	
pipe	Set	4		4		4		4	
DG Set									
50 KVA	Set								
62.5 KVA	Set		1						
75 KVA	Set				1		1		
200 KVA	Set								1
1010 KVA	Set								

SHEET

IPS A-4	IPS A-5	IPS A-7
1	1	1
1	1	3
30	30	
		60
1		
	1	
		2
30	30	120
2	2	
		4
9	9	4
		2
1	1	1
6	6	6
8	8	
		3
1	1	1
1	1	1
9	12	1
		240
30	30	
80	80	30

6 6 6
4 4 4

1

1

1

SEWERAGE SYSTEM FOR GAYA EASTERN PART COST ESTIMATE FOR ELECTRICAL WORK FOR IPS A-1					
Sr. No.	**Description**	**Unit**	**Qty.**	**Rate in Rs.**	**Amount in Rs.**
	Switch gear				
1	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii)TT Block (iv) 6mm Bakelite sheet on all sides.	LS	1	30338.98	30338.98
2	Supply, Installation, testing and commissioning of 11 KV Double Pole structure With Air Break SWITCH having following specifications : (a) DP : Double pole structure made of two nos. 9 meter long PCC poles (400 Kg) & 7 nos. MS Channel each of size 100 mmx50mmx2500mm complete with earthing of the structure as per REC standards in all respect with nuts, springs washers, clamps as required. (b) GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3 phase, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 Nos pin insulator ,GI pipe of suitable length for operation.c) DO: 3 Nos. Horizontal/Vertical mounted 33KV Horn Gap fuse set / Drop Out fuse set, 33KV barrel fuses mounted on 6 Nos. Post insulators. (c) DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators (d) LA:3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv oh linewith rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required. (e) JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3'	Set	1	99498.78	99498.78
3	H.T. PANEL: AS INCOMER FEEDER Supply, Installation, Testing and Commissiong of indoor type floor mounted metal clad, 11 KV Incomer VCB panel up to 630 A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec. Make of HT Panel, Vaccum Interrupter and VCB should be of same make. 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 12 KV on incomer, Ammeter, analog type, selector switches for ammeters,Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ratio with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter.	Set	1	551755.02	551755.02

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
4	H.T. PANEL: AS OUTGOING FEEDER Supply, Installation, Testing and Commission of indoor type floor mounted metal clad, 11 KV Outgoing VCB panel UPTO 630A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec.Make of Panel, Vaccum Interrupter and VCB should be of same make.11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 11 KV , Ammeter, analog type, selector switches for ammeters, Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ration with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter Outgoing upto 630 A VCB	Set	1	395425.08	395425.08
5	Providing & Laying XLPE insulated IS:7098/II/85 of approved make H.T.cable for working voltage 11 K.V.Un-Earthed with Stranded Compacted Circular Aluminium Conductor, Conductor Screened with Extruded Semi-conducting compound, XLPE Insulated, Insulation Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.120 Sqmm	m	30	2075.62	62268.6
6	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of indoor 120Sqmm	No	2	6406.22	12812.44
7	Supply, Installation, Testing and commissioning of copper wound ISI marked Transformer 11/0.433 KV, Three Phase, 50 Hz, DYN 11,ONAN type , Standard accessories like, conservator, Silicagel breather, radiator, fins, HT & LT cable end boxes or Bus Duct flange, Lifting lugs, Bi-directional Plain/ Flanged Rollers,Earthing terminal,Air relaese plug.Off load tap changer (+5% to -10% in steps of 2.5%), winding / Top oil temperature rise of 45°C/40°C, ISI marked drain valves, Dial type temperature gauge, first fill oil, Epoxy based paint etc having max. total losses as per energy efficiency level - 2 at basic Insulation level conforming to IS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part-I : 2014 BEE star level - I as per Govt. of India, Ministry of power notification Dated 16th Dec., 2016. Transformers described as above and as per the following continuous rating 100KVA	Set	1	355870.3	355870.3

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
	LT Panels				
8	SITC of walll/free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated / epoxy / PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).	Sqm	30	2124	63720
9	Supplying and fixing of Aluminum bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.(9m)	Kg	20	464.92	9298.4
10	Incoming: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 250 Amp , 35KA adjustable O/L & adjustable S/C setting	set	2	29548.38	59096.76
	Supply and fixing of following accessories for ACB				
	Shunt Trip Release	Nos	2	2862.68	5725.36
	Under Voltage Release	Nos	2	4212.6	8425.2
	Earth Fault Release	Nos	2	2273.86	4547.72
	Mechanical Interlocking	Nos	1	9076.56	9076.56
11	**Outgoing -MCCB Feeder for Peak Pumps** SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,50 Amps	Nos	10	11986.44	119864.4
	Shunt Trip Release	Nos	10	2364.72	23647.2
	Under Voltage Release	Nos	10	2566.5	25665
	Earth Fault Release	Nos	10	6756.68	67566.8
12	P&F 240/415 V MCB of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required.TPN 6-32 A	Nos	10	1110.38	11103.8
13	**Outgoing - MCCB Feeder for APFC Panel, Non peak pumps, Spare and other accessories**: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 160/150/125 Amp , 35KA adjustable O/L & adjustable S/C setting	Nos	2	17971.4	35942.8
	Under Voltage Release	Nos	2	2566.5	5133

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
	Starters				
14	S & F of Star delta Starter with MCB,Main and Aux Contactor,O/L Relay, L/R Selector Switch,3 Indicating lamps,Start-Stop Push Button ,Control MCB with panel with all accessories with following rating				
	20kW	Nos	1	26385.98	26385.98
	10kW	Nos	1	13182.96	13182.96
	7.5kW	Nos	1	12243.68	12243.68
	Battery and Charger				
15	SITC of battery bank of min 150 AH capacity comprising SMF/VRLA batteries , MS / Teakwood battery stand , interconnect wiring etc as required complete in all respect of rating: 48V	Nos	1	167365.3	167365.3
16	SITC of FCBC (Float cum boost charger)suitable for 415V +/-10%, 50 Hz , 1-ø / 3 -ø Input & 24/ 48 /110 V DC OutputNatural Cooled, free standing in Sheet Steel enclosure,SCR controlled , regulation +/-1% , Efficiency > 75% on FLAC/ DC Instruments, Selector Switch, Built in DC Distribution Board (6 No MCB), indication , control as required of20 A + 20 A rating:	Nos	1	93339.18	93339.18
	Power Factor Improvement				
17	self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR. including making connections with suitable capacity conductors/ cables testing as required.Heavy Duty3- phase	KVAr	9	354	3186
18	SITC of microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp secondary current and following way, self analysing auto c/k setting according to targeted power factor setting, the relay shall have minimum three digit display unit for display of real power factor, targeted power factor, lag/lead capacitor switching status, alarm output for under current, over current, insufficient compensation, indication of switching on units, auto/manual status, and shall have over load protection, no volt release etc. as required.	Nos	1	21499.6	21499.6
19	Providing, Installation, Testing and Commissioning of ULTRASONIC LEVEL TRANSMITTER for Water Application : Principle : Time of Flight / Sensor MOC PP / Process Connection 1 1/2 inch BSP or 2 inch BSP Threaded type / Power Supply: 24 V DC / Output: 4- 20mA / Display: Integral display for programming and Display Reading / IP 66 8m	Nos	1	116880.18	116880.18

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
	LT Cable				
20	Providing & Laying XLPE insulated / P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.				
	3.5 Core,120 Sqmm (Armoured)	m	30	710.36	21310.8
	3.5/4 Core,16 Sqmm (Armoured)	m	10	225.38	2253.8
	3.5/4 Core, 10 Sqmm (Armoured)	m	10	204.14	2041.4
	3.5/4 Core, 6 Sqmm (Armoured)	m	10	178.18	1781.8
21	Providing and laying XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 1255 including excavation of 30 CmX75 Cm size trench 25 Cm thick under layer of sand and second class bricks covering, backfilling & compaction				
	5 core 2.5 sqmm copper control cables	m	30	146.32	4389.6
	3 core 2.5 sq mm copper control cables	m	30	270.22	8106.6
22	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.				
	3.5 Core,120 Sqmm (Armoured)	nos	4	1181.18	4724.72
	3.5/4 Core,16 Sqmm (Armoured)	nos	4	298.54	1194.16
	3.5/4 Core, 10 Sqmm (Armoured)	nos	4	206.5	826
	3.5/4 Core, 6 Sqmm (Armoured)	nos	10	180.54	1805.4
23	Supply, Fabricating & installing following sizes of perforated cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with suspenders and including painting as required. Hot dipped galvanised.				
	100mm x 50mm x 1.6mm	m	20	312.7	6254
	150mm x 50mm x 1.6mm	m	20	392.94	7858.8
	450mm x 50mm x 2.0mm	m	10	1023.06	10230.6
	600mm x 50mm x 2.0mm	m	10	1292.1	12921
24	S & Laying following size B class G.I. Pipe with accessories for laying earth conductor/strip and cable in ground/surface/recess as required				
	40mm	m	25	364.62	9115.5
	50mm	m	25	463.74	11593.5
	100mm	m	25	708	17700
	Earthing				
25	Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.	Set	6	6490	38940

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs.
26	Pipe Earthing as per IS:3043 with perforated 3.0 Mtr. Long, 40 mm dia. ' B ' class G.I. Pipe including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300 mm and embodying the pipe complete with alternate layers salt and coke/ charcoal, testing of earth resistance as required.	Set	4	3540	14160
27	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.				
	25x5 mm Coppper strip	m	30	994.74	29842.2
	6SWG GI Wire	m	100	15.34	1534
	25X 6 mm GI Strip	m	50	109.74	5487
28	SF of rubber matting with one side corrugated as per IS specificationv 15652/2006- 20mm thick	sqm	9	4269.24	38423.16
29	Providing and fixing with bracket/ supports etc wall/floor mounted fire extinguishers as per details below: ISI marked 5 kg capacity Dry Powder fire extinguisher with high pressure discharge hose, squeeze gripe nozzle 120 gms carbon dioxide cartridge, gun metal cap with initial charge of dry power. Both extinguisher and dry power to be ISI marked.	nos	5	1869.12	9345.6
30	SITC of DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP Alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled.Alternator shall be self regulated with standard Alternator Protection(Over voltage, over speed & under voltage). Engine shall have residential silencer, up to 10 M exhaust piping , electronic /Mechanical governor, Manual & electric Start, Batteries, Fuel tank (with Stand) & piping, control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel, AVM and with Weatherproof, powder coated Accoustic enclosure for DG set for sound attenuation fabricated from 1.6 mm CRCA sheet steel (structure) with side wall fabricated from 1.6 mm CRCA sheet and filled with foam as per CPCB norms latest amendments & IS 8183 .The doors are fabricated from 1.6 mm CRCA sheet packed with accoustic material, floor of MS chequrred plate 5.0 mmthick, All doors/ opening are sealed with neoprene/ EPDN gaskets. The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 °C. All controls for operation of DG set are from outside the enclosure with DG control panel having microprocessor based genset monitoring and control system mccb Ammeter, voltmeter, Pf meter, frequency meter, KWH meter, Ind. Lamps etc. mounted inside enclosure , visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level is less than 75 db (A) at a distance of 1 Mtrs. duly certified by authorized agency. Complete in all respect of following capacity : Radiator cooled and turbo charged 62.5KVA	no	1	822134.32	822134.32
31	SITC of AUTO MAINS FAILURE (AMF) Panel fabricated from CRCA sheet steel 2mmThick , Powder coated finish , Engine START & STOP commands,control RELAYS, selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter , Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for DG sets PLC Based	no	1	125983.88	125983.88
32	S I T C of 11KV ON LOAD oil immersed 630 A,350 MVA Metal Clad LOAD BREAK Switch complete in all respect With oil , fuses etc as required	no	1	150813.44	150813.44
33	Unit Estimate for Lighting	no	1	155463.33	155463.33
	Total Rs				**3927099.69**
	Total Rs Lakh				**39.27**
	The cost of the motor for the pumping plant shall be provided in the Pumping Plant estimate.				

SEWERAGE SYSTEM FOR GAYA EASTERN PART COST ESTIMATE FOR ELECTRICAL WORK FOR IPS A-2					
Sr. No.	**Description**	**Unit**	**Qty.**	**Rate in Rs**	**Amount In Rs**
	Switchgear				
1	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii)TT Block (iv) 6mm Bakelite sheet on all sides.	LS	1	30338.98	30338.98
2	Supply, Installation, testing and commissioning of 11 KV Double Pole structure With Air Break SWITCH having following specifications : (a) DP : Double pole structure made of two nos. 9 meter long PCC poles (400 Kg) & 7 nos. MS Channel each of size 100 mmx50mmx2500mm complete with earthing of the structure as per REC standards in all respect with nuts, springs washers, clamps as required. (b) GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3 phase, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 Nos pin insulator ,GI pipe of suitable length for operation.c) DO: 3 Nos. Horizontal/Vertical mounted 33KV Horn Gap fuse set / Drop Out fuse set, 33KV barrel fuses mounted on 6 Nos. Post insulators. (c) DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators (d) LA:3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv oh linewith rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required. (e) JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3’	Set	1	99498.78	99498.78
3	H.T. PANEL: AS INCOMER FEEDER Supply, Installation, Testing and Commissiong of indoor type floor mounted metal clad, 11 KV Incomer VCB panel up to 630 A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec. Make of HT Panel, Vaccum Interrupter and VCB should be of same make. 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 12 KV on incomer, Ammeter, analog type, selector switches for ammeters,Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ratio with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter.	Set	1	551755.02	551755.02

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
4	H.T. PANEL: AS OUTGOING FEEDER Supply, Installation, Testing and Commission of indoor type floor mounted metal clad, 11 KV Outgoing VCB panel UPTO 630A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec.Make of Panel, Vaccum Interrupter and VCB should be of same make.11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 11 KV , Ammeter, analog type, selector switches for ammeters, Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ration with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter Outgoing upto 630 A VCB	Set	1	395425.08	395425.08
5	Providing & Laying XLPE insulated IS:7098/II/85 of approved make H.T.cable for working voltage 11 K.V.Un-Earthed with Stranded Compacted Circular Aluminium Conductor, Conductor Screened with Extruded Semi-conducting compound, XLPE Insulated, Insulation Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.120 Sqmm	m	30	2075.62	62268.6
6	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of indoor 120Sqmm	No	2	6406.22	12812.44
7	Supply, Installation, Testing and commissioning of copper wound ISI marked Transformer 11/0.433 KV, Three Phase, 50 Hz, DYN 11,ONAN type , Standard accessories like, conservator, Silicagel breather, radiator, fins, HT & LT cable end boxes or Bus Duct flange, Lifting lugs, Bi-directional Plain/ Flanged Rollers,Earthing terminal,Air relaese plug.Off load tap changer (+5% to -10% in steps of 2.5%), winding / Top oil temperature rise of 45°C/40°C, ISI marked drain valves, Dial type temperature gauge, first fill oil, Epoxy based paint etc having max. total losses as per energy efficiency level - 2 at basic Insulation level conforming to IS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part-I : 2014 BEE star level - I as per Govt. of India, Ministry of power notification Dated 16th Dec., 2016. Transformers described as above and as per the following continuous rating 100KVA	Set	1	355870.3	355870.3

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	LT Panels				
8	SITC of walll/free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated / epoxy / PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).	Sqm	30	2124	63720
9	Supplying and fixing of Aluminum bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.	Kg	20	464.92	9298.4
10	Incoming: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 250 Amp , 35KA adjustable O/L & adjustable S/C setting	set	2	29548.38	59096.76
	Supply and fixing of following accessories for ACB				
	Shunt Trip Release	Nos	2	2862.68	5725.36
	Under Voltage Release	Nos	2	4212.6	8425.2
	Earth Fault Release	Nos	2	2273.86	4547.72
	Mechanical Interlocking	Nos	1	9076.56	9076.56
11	**Outgoing -MCCB Feeder for Peak Pumps** SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,50 Amps	Nos	15	11986.44	179796.6
	Shunt Trip Release	Nos	10	2364.72	23647.2
	Under Voltage Release	Nos	10	2566.5	25665
	Earth Fault Release	Nos	10	6756.68	67566.8
12	P&F 240/415 V MCB of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required.TPN 6-32 A	Nos	10	1110.38	11103.8

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
13	**Outgoing - MCCB Feeder for APFC Panel, Non peak pumps, Spare and other accessories**: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 160/150/125 Amp , 35KA adjustable O/L & adjustable S/C setting	Nos	2	17971.4	35942.8
	Under Voltage Release	Nos	2	2566.5	5133
	Starters				
14	S & F of Star delta Starter with MCB,Main and Aux Contactor,O/L Relay, L/R Selector Switch,3 Indicating lamps,Start-Stop Push Button ,Control MCB with panel with all accessories with following rating				
	10kW	Nos	6	13182.96	79097.76
	7.5kW	Nos	2	12243.68	24487.36
	Battery and Charger				
15	SITC of battery bank of min 150 AH capacity comprising SMF/VRLA batteries , MS / Teakwood battery stand , interconnect wiring etc as required complete in all respect of rating: 48V	Nos	1	167365.3	167365.3
16	SITC of FCBC (Float cum boost charger)suitable for 415V +/-10%, 50 Hz , 1-ø / 3 -ø Input & 24/ 48 /110 V DC OutputNatural Cooled, free standing in Sheet Steel enclosure,SCR controlled , regulation +/-1% , Efficiency > 75% on FLAC/ DC Instruments, Selector Switch, Built in DC Distribution Board (6 No MCB), indication , control as required of20 A + 20 A rating:	Nos	1	93339.18	93339.18
	Power Factor Improvement				
17	self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR. including making connections with suitable capacity conductors/ cables testing as required.Heavy Duty3- phase	KVAr	16	354	5664
18	SITC of microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp secondary current and following way, self analysing auto c/k setting according to targeted power factor setting, the relay shall have minimum three digit display unit for display of real power factor, targeted power factor, lag/lead capacitor switching status, alarm output for under current, over current, insufficient compensation, indication of switching on units, auto/manual status, and shall have over load protection, no volt release etc. as required.	Nos	1	21499.6	21499.6
19	Providing, Installation, Testing and Commissioning of ULTRASONIC LEVEL TRANSMITTER for Water Application : Principle : Time of Flight / Sensor MOC PP / Process Connection 1 1/2 inch BSP or 2 inch BSP Threaded type / Power Supply: 24 V DC / Output: 4- 20mA / Display: Integral display for programming and Display Reading / IP 66 8m	Nos	1	116880.18	116880.18

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	LT Cable				
20	Providing & Laying XLPE insulated / P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.				
	3.5 Core,120 Sqmm (Armoured)	m	30	710.36	21310.8
	3.5/4 Core, 10 Sqmm (Armoured)	m	60	204.14	12248.4
	3.5/4 Core, 6 Sqmm (Armoured)	m	80	178.18	14254.4
21	Providing and laying XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 1255 including excavation of 30 CmX75 Cm size trench 25 Cm thick under layer of sand and second class bricks covering, backfilling & compaction				
	5 core 2.5 sqmm copper control cables	m	30	146.32	4389.6
	3 core 2.5 sq mm copper control cables	m	30	270.22	8106.6
22	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.				
	3.5 Core,120 Sqmm (Armoured)	nos	4	1181.18	4724.72
	3.5/4 Core,16 Sqmm (Armoured)	nos	12	298.54	3582.48
	3.5/4 Core, 10 Sqmm (Armoured)	nos	4	206.5	826
	3.5/4 Core, 6 Sqmm (Armoured)	nos	10	180.54	1805.4
23	Supply, Fabricating & installing following sizes of perforated cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with suspenders and including painting as required. Hot dipped galvanised.				
	100mm x 50mm x 1.6mm	m	20	312.7	6254
	150mm x 50mm x 1.6mm	m	20	392.94	7858.8
	450mm x 50mm x 2.0mm	m	10	1023.06	10230.6
	600mm x 50mm x 2.0mm	m	10	1292.1	12921
24	S & Laying following size B class G.I. Pipe with accessories for laying earth conductor/strip and cable in ground/surface/recess as required				
	40mm	m	25	364.62	9115.5
	50mm	m	25	463.74	11593.5
	100mm	m	25	708	17700
	Earthing				
25	Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.	Set	6	6490	38940
26	Pipe Earthing as per IS:3043 with perforated 3.0 Mtr. Long, 40 mm dia. ' B ' class G.I. Pipe including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300 mm and embodying the pipe complete with alternate layers salt and coke/ charcoal, testing of earth resistance as required.	Set	4	3540	14160
27	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.				
	25x5 mm Coppper strip	m	30	994.74	29842.2
	6SWG GI Wire	m	100	15.34	1534
	25X 6 mm GI Strip	m	50	109.74	5487

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
28	SF of rubber matting with one side corrugated as per IS specificationv 15652/2006- 20mm thick	sqm	9	4269.24	38423.16
29	Providing and fixing with bracket/ supports etc wall/floor mounted fire extinguishers as per details below: ISI marked 5 kg capacity Dry Powder fire extinguisher with high pressure discharge hose, squeeze gripe nozzle 120 gms carbon dioxide cartridge, gun metal cap with initial charge of dry power. Both extinguisher and dry power to be ISI marked.	nos	5	1869.12	9345.6
30	SITC of DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP Alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled.Alternator shall be self regulated with standard Alternator Protection(Over voltage, over speed & under voltage). Engine shall have residential silencer, up to 10 M exhaust piping , electronic /Mechanical governor, Manual & electric Start, Batteries, Fuel tank (with Stand) & piping, control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel, AVM and with Weatherproof, powder coated Accoustic enclosure for DG set for sound attenuation fabricated from 1.6 mm CRCA sheet steel (structure) with side wall fabricated from 1.6 mm CRCA sheet and filled with foam as per CPCB norms latest amendments & IS 8183 .The doors are fabricated from 1.6 mm CRCA sheet packed with accoustic material, floor of MS chequrred plate 5.0 mmthick, All doors/ opening are sealed with neoprene/ EPDN gaskets. The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 °C. All controls for operation of DG set are from outside the enclosure with DG control panel having microprocessor based genset monitoring and control system mccb Ammeter, voltmeter, Pf meter, frequency meter, KWH meter, Ind. Lamps etc. mounted inside enclosure , visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level is less than 75 db (A) at a distance of 1 Mtrs. duly certified by authorized agency. Complete in all respect of following capacity : Radiator cooled and turbo charged 75KVA	no	1	897970.56	897970.56
31	SITC of AUTO MAINS FAILURE (AMF) Panel fabricated from CRCA sheet steel 2mmThick , Powder coated finish , Engine START & STOP commands,control RELAYS, selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter , Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for DG sets PLC Based	no	1	186124.94	186124.94
32	S I T C of 11KV ON LOAD oil immersed 630 A,350 MVA Metal Clad LOAD BREAK Switch complete in all respect With oil , fuses etc as required	no	1	150813.44	150813.44
33	Unit Estimate for Lighting	no	1	155463.33	155463.33
	Total Rs				**4200073.81**
	Total Rs Lakh				**42.00**
	The cost of the motor for the pumping plant shall be provided in the Pumping Plant estimate.				

SEWERAGE SYSTEM FOR GAYA EASTERN PART COST ESTIMATE FOR ELECTRICAL WORK FOR IPS A-3					
Sr. No.	**Description**	**Unit**	**Qty.**	**Rate in Rs**	**Amount In Rs**
	Switchgear				
1	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii)TT Block (iv) 6mm Bakelite sheet on all sides.	LS	1	30338.98	30338.98
2	Supply, Installation, testing and commissioning of 11 KV Double Pole structure With Air Break SWITCH having following specifications : (a) DP : Double pole structure made of two nos. 9 meter long PCC poles (400 Kg) & 7 nos. MS Channel each of size 100 mmx50mmx2500mm complete with earthing of the structure as per REC standards in all respect with nuts, springs washers, clamps as required. (b) GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3 phase, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 Nos pin insulator ,GI pipe of suitable length for operation.c) DO: 3 Nos. Horizontal/Vertical mounted 33KV Horn Gap fuse set / Drop Out fuse set, 33KV barrel fuses mounted on 6 Nos. Post insulators. (c) DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators (d) LA:3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv oh linewith rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required. (e) JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3’	Set	1	99498.78	99498.78
3	H.T. PANEL: AS INCOMER FEEDER Supply, Installation, Testing and Commissiong of indoor type floor mounted metal clad, 11 KV Incomer VCB panel up to 630 A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec. Make of HT Panel, Vaccum Interrupter and VCB should be of same make. 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 12 KV on incomer, Ammeter, analog type, selector switches for ammeters,Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ratio with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter.	Set	1	551755.02	551755.02

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
4	H.T. PANEL: AS OUTGOING FEEDER Supply, Installation, Testing and Commission of indoor type floor mounted metal clad, 11 KV Outgoing VCB panel UPTO 630A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec.Make of Panel, Vaccum Interrupter and VCB should be of same make.11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 11 KV , Ammeter, analog type, selector switches for ammeters, Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ration with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter Outgoing upto 630 A VCB	Set	1	395425.08	395425.08
5	Providing & Laying XLPE insulated IS:7098/II/85 of approved make H.T.cable for working voltage 11 K.V.Un-Earthed with Stranded Compacted Circular Aluminium Conductor, Conductor Screened with Extruded Semi-conducting compound, XLPE Insulated, Insulation Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.120 Sqmm	m	30	2075.62	62268.6
6	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of indoor 120Sqmm	No	2	6406.22	12812.44
7	Supply, Installation, Testing and commissioning of copper wound ISI marked Transformer 11/0.433 KV, Three Phase, 50 Hz, DYN 11,ONAN type , Standard accessories like, conservator, Silicagel breather, radiator, fins, HT & LT cable end boxes or Bus Duct flange, Lifting lugs, Bi-directional Plain/ Flanged Rollers,Earthing terminal,Air relaese plug.Off load tap changer (+5% to -10% in steps of 2.5%), winding / Top oil temperature rise of 45°C/40°C, ISI marked drain valves, Dial type temperature gauge, first fill oil, Epoxy based paint etc having max. total losses as per energy efficiency level - 2 at basic Insulation level conforming to IS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part-I : 2014 BEE star level - I as per Govt. of India, Ministry of power notification Dated 16th Dec., 2016. Transformers described as above and as per the following continuous rating 100KVA	Set	1	355870.3	355870.3
	LT Panels				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
8	SITC of walll/free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated / epoxy / PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).	Sqm	30	2124	63720
9	Supplying and fixing of Aluminum bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.	Kg	20	464.92	9298.4
10	Incoming: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 250 Amp , 35KA adjustable O/L & adjustable S/C setting	set	2	29548.38	59096.76
	Supply and fixing of following accessories for ACB				
	Shunt Trip Release	Nos	2	2862.68	5725.36
	Under Voltage Release	Nos	2	4212.6	8425.2
	Earth Fault Release	Nos	2	2273.86	4547.72
	Mechanical Interlocking	Nos	1	9076.56	9076.56
11	**Outgoing -MCCB Feeder for Peak Pumps** SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,50 Amps	Nos	15	11986.44	179796.6
	Shunt Trip Release	Nos	10	2364.72	23647.2
	Under Voltage Release	Nos	10	2566.5	25665
	Earth Fault Release	Nos	10	6756.68	67566.8
12	P&F 240/415 V MCB of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required.TPN 6-32 A	Nos	10	1110.38	11103.8

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
13	**Outgoing - MCCB Feeder for APFC Panel, Non peak pumps, Spare and other accessories**: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. **160/150/125 Amp ,** 35KA adjustable O/L & adjustable S/C setting	Nos	2	17971.4	35942.8
	Under Voltage Release	Nos	2	2566.5	5133
	Starters				
14	S & F of Star delta Starter with MCB,Main and Aux Contactor,O/L Relay, L/R Selector Switch,3 Indicating lamps,Start-Stop Push Button ,Control MCB with panel with all accessories with following rating				
	7.5kW	Nos	8	12243.68	97949.44
	Battery and Charger				
15	SITC of battery bank of min 150 AH capacity comprising SMF/VRLA batteries , MS / Teakwood battery stand , interconnect wiring etc as required complete in all respect of rating: 48V	Nos	1	167365.3	167365.3
16	SITC of FCBC (Float cum boost charger)suitable for 415V +/-10%, 50 Hz , 1-ø / 3 -ø Input & 24/ 48 /110 V DC OutputNatural Cooled, free standing in Sheet Steel enclosure,SCR controlled , regulation +/-1% , Efficiency > 75% on FLAC/ DC Instruments, Selector Switch, Built in DC Distribution Board (6 No MCB), indication , control as required of20 A + 20 A rating:	Nos	1	93339.18	93339.18
	Power Factor Improvement				
17	self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR. including making connections with suitable capacity conductors/ cables testing as required.Heavy Duty3- phase	KVAr	12	354	4248
18	SITC of microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp secondary current and following way, self analysing auto c/k setting according to targeted power factor setting, the relay shall have minimum three digit display unit for display of real power factor, targeted power factor, lag/lead capacitor switching status, alarm output for under current, over current, insufficient compensation, indication of switching on units, auto/manual status, and shall have over load protection, no volt release etc. as required.	Nos	1	21499.6	21499.6
19	Providing, Installation, Testing and Commissioning of ULTRASONIC LEVEL TRANSMITTER for Water Application : Principle : Time of Flight / Sensor MOC PP / Process Connection 1 1/2 inch BSP or 2 inch BSP Threaded type / Power Supply: 24 V DC / Output: 4- 20mA / Display: Integral display for programming and Display Reading / IP 66 8m	Nos	1	116880.18	116880.18
	LT Cable				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
20	Providing & Laying XLPE insulated / P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.				
	3.5 Core,120 Sqmm (Armoured)	m	30	710.36	21310.8
	3.5/4 Core, 6 Sqmm (Armoured)	m	80	178.18	14254.4
21	Providing and laying XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 1255 including excavation of 30 CmX75 Cm size trench 25 Cm thick under layer of sand and second class bricks covering, backfilling & compaction				
	5 core 2.5 sqmm copper control cables	m	30	146.32	4389.6
	3 core 2.5 sq mm copper control cables	m	30	270.22	8106.6
22	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.				
	3.5 Core,120 Sqmm (Armoured)	nos	4	1181.18	4724.72
	3.5/4 Core, 6 Sqmm (Armoured)	nos	10	180.54	1805.4
23	Supply, Fabricating & installing following sizes of perforated cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with suspenders and including painting as required. Hot dipped galvanised.				
	100mm x 50mm x 1.6mm	m	20	312.7	6254
	150mm x 50mm x 1.6mm	m	20	392.94	7858.8
	450mm x 50mm x 2.0mm	m	10	1023.06	10230.6
	600mm x 50mm x 2.0mm	m	10	1292.1	12921
24	S & Laying following size B class G.I. Pipe with accessories for laying earth conductor/strip and cable in ground/surface/recess as required				
	40mm	m	25	364.62	9115.5
	50mm	m	25	463.74	11593.5
	100mm	m	25	708	17700
	Earthing				
25	Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.	Set	6	6490	38940
26	Pipe Earthing as per IS:3043 with perforated 3.0 Mtr. Long, 40 mm dia. ' B ' class G.I. Pipe including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300 mm and embodying the pipe complete with alternate layers salt and coke/ charcoal, testing of earth resistance as required.	Set	4	3540	14160
27	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.				
	25x5 mm Coppper strip	m	30	994.74	29842.2

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	6SWG GI Wire	m	100	15.34	1534
	25X 6 mm GI Strip	m	50	109.74	5487
28	SF of rubber matting with one side corrugated as per IS specificationv 15652/2006- 20mm thick	sqm	9	4269.24	38423.16
29	Providing and fixing with bracket/ supports etc wall/floor mounted fire extinguishers as per details below: ISI marked 5 kg capacity Dry Powder fire extinguisher with high pressure discharge hose, squeeze gripe nozzle 120 gms carbon dioxide cartridge, gun metal cap with initial charge of dry power. Both extinguisher and dry power to be ISI marked.	nos	5	1869.12	9345.6
30	SITC of DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP Alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled.Alternator shall be self regulated with standard Alternator Protection(Over voltage, over speed & under voltage). Engine shall have residential silencer, up to 10 M exhaust piping , electronic /Mechanical governor, Manual & electric Start, Batteries, Fuel tank (with Stand) & piping, control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel, AVM and with Weatherproof, powder coated Accoustic enclosure for DG set for sound attenuation fabricated from 1.6 mm CRCA sheet steel (structure) with side wall fabricated from 1.6 mm CRCA sheet and filled with foam as per CPCB norms latest amendments & IS 8183 .The doors are fabricated from 1.6 mm CRCA sheet packed with accoustic material, floor of MS chequrred plate 5.0 mmthick, All doors/ opening are sealed with neoprene/ EPDN gaskets. The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 °C. All controls for operation of DG set are from outside the enclosure with DG control panel having microprocessor based genset monitoring and control system mccb Ammeter, voltmeter, Pf meter, frequency meter, KWH meter, Ind. Lamps etc. mounted inside enclosure , visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level is less than 75 db (A) at a distance of 1 Mtrs. duly certified by authorized agency. Complete in all respect of following capacity : Radiator cooled and turbo charged 75KVA	no	1	897970.56	897970.56
31	SITC of AUTO MAINS FAILURE (AMF) Panel fabricated from CRCA sheet steel 2mmThick , Powder coated finish , Engine START & STOP commands,control RELAYS, selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter , Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for DG sets PLC Based	no	1	186124.94	186124.94
32	S I T C of 11KV ON LOAD oil immersed 630 A,350 MVA Metal Clad LOAD BREAK Switch complete in all respect With oil , fuses etc as required	no	1	150813.44	150813.44
33	Unit Estimate for Lighting	no	1	155463.33	155463.33
30	**Total Rs**				**4176365.25**
	Total Rs Lakh				**41.76**
	The cost of the motor for the pumping plant shall be provided in the Pumping Plant estimate.				

SEWERAGE SYSTEM FOR GAYA EASTERN PART COST ESTIMATE FOR ELECTRICAL WORK FOR IPS A- 4					
Sr. No.	**Description**	**Unit**	**Qty.**	**Rate in Rs**	**Amount In Rs**
	Switchgear				
1	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii)TT Block (iv) 6mm Bakelite sheet on all sides.	LS	1	30338.98	30338.98
2	Supply, Installation, testing and commissioning of 11 KV Double Pole structure With Air Break SWITCH having following specifications : (a) DP : Double pole structure made of two nos. 9 meter long PCC poles (400 Kg) & 7 nos. MS Channel each of size 100 mmx50mmx2500mm complete with earthing of the structure as per REC standards in all respect with nuts, springs washers, clamps as required. (b) GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3 phase, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 Nos pin insulator ,GI pipe of suitable length for operation.c) DO: 3 Nos. Horizontal/Vertical mounted 33KV Horn Gap fuse set / Drop Out fuse set, 33KV barrel fuses mounted on 6 Nos. Post insulators. (c) DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators (d) LA:3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv oh linewith rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required. (e) JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3’	Set	1	99498.78	99498.78
3	H.T. PANEL: AS INCOMER FEEDER Supply, Installation, Testing and Commissiong of indoor type floor mounted metal clad, 11 KV Incomer VCB panel up to 630 A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec. Make of HT Panel, Vaccum Interrupter and VCB should be of same make. 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 12 KV on incomer, Ammeter, analog type, selector switches for ammeters,Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ratio with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter.	Set	1	551755.02	551755.02

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
4	H.T. PANEL: AS OUTGOING FEEDER Supply, Installation, Testing and Commission of indoor type floor mounted metal clad, 11 KV Outgoing VCB panel UPTO 630A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec.Make of Panel, Vaccum Interrupter and VCB should be of same make.11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 11 KV , Ammeter, analog type, selector switches for ammeters, Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ration with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter Outgoing upto 630 A VCB	Set	1	395425.08	395425.08
5	Providing & Laying XLPE insulated IS:7098/II/85 of approved make H.T.cable for working voltage 11 K.V.Un-Earthed with Stranded Compacted Circular Aluminium Conductor, Conductor Screened with Extruded Semi-conducting compound, XLPE Insulated, Insulation Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.120 Sqmm	m	30	2075.62	62268.6
6	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of indoor 120Sqmm	No	2	6406.22	12812.44
7	Supply, Installation, Testing and commissioning of copper wound ISI marked Transformer 11/0.433 KV, Three Phase, 50 Hz, DYN 11,ONAN type , Standard accessories like, conservator, Silicagel breather, radiator, fins, HT & LT cable end boxes or Bus Duct flange, Lifting lugs, Bi-directional Plain/ Flanged Rollers,Earthing terminal,Air relaese plug.Off load tap changer (+5% to -10% in steps of 2.5%), winding / Top oil temperature rise of 45°C/40°C, ISI marked drain valves, Dial type temperature gauge, first fill oil, Epoxy based paint etc having max. total losses as per energy efficiency level - 2 at basic Insulation level conforming to IS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part-I : 2014 BEE star level - I as per Govt. of India, Ministry of power notification Dated 16th Dec., 2016. Transformers described as above and as per the following continuous rating 100KVA	Set	1	355870.3	355870.3
	LT Panels				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
8	SITC of walll/free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated / epoxy / PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).	Sqm	30	2124	63720
9	Supplying and fixing of Aluminum bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.	Kg	20	464.92	9298.4
10	Incoming: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 250 Amp , 35KA adjustable O/L & adjustable S/C setting	set	2	29548.38	59096.76
	Supply and fixing of following accessories for ACB				
	Shunt Trip Release	Nos	2	2862.68	5725.36
	Under Voltage Release	Nos	2	4212.6	8425.2
	Earth Fault Release	Nos	2	2273.86	4547.72
	Mechanical Interlocking	Nos	1	9076.56	9076.56
11	**Outgoing -MCCB Feeder for Peak Pumps** SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,50 Amps	Nos	15	11986.44	179796.6
	Shunt Trip Release	Nos	10	2364.72	23647.2
	Under Voltage Release	Nos	10	2566.5	25665
	Earth Fault Release	Nos	10	6756.68	67566.8
12	P&F 240/415 V MCB of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required.TPN 6-32 A	Nos	10	1110.38	11103.8

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
13	**Outgoing - MCCB Feeder for APFC Panel, Non peak pumps, Spare and other accessories**: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 160/150/125 Amp , 35KA adjustable O/L & adjustable S/C setting	Nos	2	17971.4	35942.8
	Under Voltage Release	Nos	2	2566.5	5133
	Starters				
14	S & F of Star delta Starter with MCB,Main and Aux Contactor,O/L Relay, L/R Selector Switch,3 Indicating lamps,Start-Stop Push Button ,Control MCB with panel with all accessories with following rating				
	7.5kW	Nos	8	12243.68	97949.44
	Battery and Charger				
15	SITC of battery bank of min 150 AH capacity comprising SMF/VRLA batteries , MS / Teakwood battery stand , interconnect wiring etc as required complete in all respect of rating: 48V	Nos	1	167365.3	167365.3
16	SITC of FCBC (Float cum boost charger)suitable for 415V +/-10%, 50 Hz , 1-ø / 3 -ø Input & 24/ 48 /110 V DC OutputNatural Cooled, free standing in Sheet Steel enclosure,SCR controlled , regulation +/-1% , Efficiency > 75% on FLAC/ DC Instruments, Selector Switch, Built in DC Distribution Board (6 No MCB), indication , control as required of20 A + 20 A rating:	Nos	1	93339.18	93339.18
	Power Factor Improvement				
17	self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR. including making connections with suitable capacity conductors/ cables testing as required.Heavy Duty3- phase	KVAr	9	354	3186
18	SITC of microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp secondary current and following way, self analysing auto c/k setting according to targeted power factor setting, the relay shall have minimum three digit display unit for display of real power factor, targeted power factor, lag/lead capacitor switching status, alarm output for under current, over current, insufficient compensation, indication of switching on units, auto/manual status, and shall have over load protection, no volt release etc. as required.	Nos	1	21499.6	21499.6
19	Providing, Installation, Testing and Commissioning of ULTRASONIC LEVEL TRANSMITTER for Water Application : Principle : Time of Flight / Sensor MOC PP / Process Connection 1 1/2 inch BSP or 2 inch BSP Threaded type / Power Supply: 24 V DC / Output: 4- 20mA / Display: Integral display for programming and Display Reading / IP 66 8m	Nos	1	116880.18	116880.18
	LT Cable				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
20	Providing & Laying XLPE insulated / P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.				
	3.5 Core,120 Sqmm (Armoured)	m	30	710.36	21310.8
	3.5/4 Core, 6 Sqmm (Armoured)	m	80	178.18	14254.4
21	Providing and laying XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 1255 including excavation of 30 CmX75 Cm size trench 25 Cm thick under layer of sand and second class bricks covering, backfilling & compaction				
	5 core 2.5 sqmm copper control cables	m	30	146.32	4389.6
	3 core 2.5 sq mm copper control cables	m	30	270.22	8106.6
22	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.				
	3.5 Core,120 Sqmm (Armoured)	nos	4	1181.18	4724.72
	3.5/4 Core, 6 Sqmm (Armoured)	nos	16	180.54	2888.64
23	Supply, Fabricating & installing following sizes of perforated cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with suspenders and including painting as required. Hot dipped galvanised.				
	100mm x 50mm x 1.6mm	m	20	312.7	6254
	150mm x 50mm x 1.6mm	m	20	392.94	7858.8
	450mm x 50mm x 2.0mm	m	10	1023.06	10230.6
	600mm x 50mm x 2.0mm	m	10	1292.1	12921
24	S & Laying following size B class G.I. Pipe with accessories for laying earth conductor/strip and cable in ground/surface/recess as required				
	40mm	m	25	364.62	9115.5
	50mm	m	25	463.74	11593.5
	100mm	m	25	708	17700
	Earthing				
25	Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.	Set	6	6490	38940
26	Pipe Earthing as per IS:3043 with perforated 3.0 Mtr. Long, 40 mm dia. ' B ' class G.I. Pipe including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300 mm and embodying the pipe complete with alternate layers salt and coke/ charcoal, testing of earth resistance as required.	Set	4	3540	14160
27	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.				
	25x5 mm Coppper strip	m	30	994.74	29842.2

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	6SWG GI Wire	m	100	15.34	1534
	25X 6 mm GI Strip	m	50	109.74	5487
28	SF of rubber matting with one side corrugated as per IS specificationv 15652/2006- 20mm thick	sqm	9	4269.24	38423.16
29	Providing and fixing with bracket/ supports etc wall/floor mounted fire extinguishers as per details below: ISI marked 5 kg capacity Dry Powder fire extinguisher with high pressure discharge hose, squeeze gripe nozzle 120 gms carbon dioxide cartridge, gun metal cap with initial charge of dry power. Both extinguisher and dry power to be ISI marked.	nos	5	1869.12	9345.6
30	SITC of DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP Alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled.Alternator shall be self regulated with standard Alternator Protection(Over voltage, over speed & under voltage). Engine shall have residential silencer, up to 10 M exhaust piping , electronic /Mechanical governor, Manual & electric Start, Batteries, Fuel tank (with Stand) & piping, control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel, AVM and with Weatherproof, powder coated Accoustic enclosure for DG set for sound attenuation fabricated from 1.6 mm CRCA sheet steel (structure) with side wall fabricated from 1.6 mm CRCA sheet and filled with foam as per CPCB norms latest amendments & IS 8183 .The doors are fabricated from 1.6 mm CRCA sheet packed with accoustic material, floor of MS chequrred plate 5.0 mmthick, All doors/ opening are sealed with neoprene/ EPDN gaskets. The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 °C. All controls for operation of DG set are from outside the enclosure with DG control panel having microprocessor based genset monitoring and control system mccb Ammeter, voltmeter, Pf meter, frequency meter, KWH meter, Ind. Lamps etc. mounted inside enclosure , visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level is less than 75 db (A) at a distance of 1 Mtrs. duly certified by authorized agency. Complete in all respect of following capacity : Radiator cooled and turbo charged 50KVA	no	1	777020.56	777020.56
31	SITC of AUTO MAINS FAILURE (AMF) Panel fabricated from CRCA sheet steel 2mmThick , Powder coated finish , Engine START & STOP commands,control RELAYS, selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter , Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for DG sets PLC Based	no	1	125983.88	125983.88
32	S I T C of 11KV ON LOAD oil immersed 630 A,350 MVA Metal Clad LOAD BREAK Switch complete in all respect With oil , fuses etc as required	no	1	150813.44	150813.44
33	Unit Estimate for Lighting	no	1	155463.33	155463.33
	Total Rs				**3995295.43**
	Total Rs Lakh				**39.95**
	The cost of the motor for the pumping plant shall be provided in the Pumping Plant estimate.				

SEWERAGE SYSTEM FOR GAYA EASTERN PART COST ESTIMATE FOR ELECTRICAL WORK FOR IPS A- 5					
Sr. No.	**Description**	**Unit**	**Qty.**	**Rate in Rs**	**Amount In Rs**
	Switchgear				
1	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii)TT Block (iv) 6mm Bakelite sheet on all sides.	LS	1	30338.98	30338.98
2	Supply, Installation, testing and commissioning of 11 KV Double Pole structure With Air Break SWITCH having following specifications : (a) DP : Double pole structure made of two nos. 9 meter long PCC poles (400 Kg) & 7 nos. MS Channel each of size 100 mmx50mmx2500mm complete with earthing of the structure as per REC standards in all respect with nuts, springs washers, clamps as required. (b) GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3 phase, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 Nos pin insulator ,GI pipe of suitable length for operation.c) DO: 3 Nos. Horizontal/Vertical mounted 33KV Horn Gap fuse set / Drop Out fuse set, 33KV barrel fuses mounted on 6 Nos. Post insulators. (c) DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators (d) LA:3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv oh linewith rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required. (e) JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3’	Set	1	99498.78	99498.78
3	H.T. PANEL: AS INCOMER FEEDER Supply, Installation, Testing and Commissiong of indoor type floor mounted metal clad, 11 KV Incomer VCB panel up to 630 A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec. Make of HT Panel, Vaccum Interrupter and VCB should be of same make. 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 12 KV on incomer, Ammeter, analog type, selector switches for ammeters,Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ratio with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter.	Set	1	551755.02	551755.02

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
4	H.T. PANEL: AS OUTGOING FEEDER Supply, Installation, Testing and Commission of indoor type floor mounted metal clad, 11 KV Outgoing VCB panel UPTO 630A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec.Make of Panel, Vaccum Interrupter and VCB should be of same make.11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 11 KV , Ammeter, analog type, selector switches for ammeters, Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ration with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter Outgoing upto 630 A VCB	Set	1	395425.08	395425.08
5	Providing & Laying XLPE insulated IS:7098/II/85 of approved make H.T.cable for working voltage 11 K.V.Un-Earthed with Stranded Compacted Circular Aluminium Conductor, Conductor Screened with Extruded Semi-conducting compound, XLPE Insulated, Insulation Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.120 Sqmm	m	30	2075.62	62268.6
6	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of indoor 120Sqmm	No	2	6406.22	12812.44
7	Supply, Installation, Testing and commissioning of copper wound ISI marked Transformer 11/0.433 KV, Three Phase, 50 Hz, DYN 11,ONAN type , Standard accessories like, conservator, Silicagel breather, radiator, fins, HT & LT cable end boxes or Bus Duct flange, Lifting lugs, Bi-directional Plain/ Flanged Rollers,Earthing terminal,Air relaese plug.Off load tap changer (+5% to -10% in steps of 2.5%), winding / Top oil temperature rise of 45°C/40°C, ISI marked drain valves, Dial type temperature gauge, first fill oil, Epoxy based paint etc having max. total losses as per energy efficiency level - 2 at basic Insulation level conforming to IS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part-I : 2014 BEE star level - I as per Govt. of India, Ministry of power notification Dated 16th Dec., 2016. Transformers described as above and as per the following continuous rating 63KVA	Set	1	305031.18	305031.18
	LT Panels				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
8	SITC of walll/free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated / epoxy / PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).	Sqm	30	2124	63720
9	Supplying and fixing of Aluminum bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.	Kg	20	464.92	9298.4
10	Incoming: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 250 Amp , 35KA adjustable O/L & adjustable S/C setting	set	2	29548.38	59096.76
	Supply and fixing of following accessories for ACB				
	Shunt Trip Release	Nos	2	2862.68	5725.36
	Under Voltage Release	Nos	2	4212.6	8425.2
	Earth Fault Release	Nos	2	2273.86	4547.72
	Mechanical Interlocking	Nos	1	9076.56	9076.56
11	**Outgoing -MCCB Feeder for Peak Pumps** SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,50 Amps	Nos	15	11986.44	179796.6
	Shunt Trip Release	Nos	10	2364.72	23647.2
	Under Voltage Release	Nos	10	2566.5	25665
	Earth Fault Release	Nos	10	6756.68	67566.8
12	P&F 240/415 V MCB of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required.TPN 6-32 A	Nos	10	1110.38	11103.8

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	Outgoing - MCCB Feeder for APFC Panel, Non peak pumps, Spare and other accessories: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 160/150/125 Amp , 35KA adjustable O/L & adjustable S/C setting	Nos	2	17971.4	35942.8
13	Under Voltage Release	Nos	2	2566.5	5133
	Starters				
	S & F of Star delta Starter with MCB,Main and Aux Contactor,O/L Relay, L/R Selector Switch,3 Indicating lamps,Start-Stop Push Button ,Control MCB with panel with all accessories with following rating				
14	7.5kW	Nos	8	12243.68	97949.44
	Battery and Charger				
	SITC of battery bank of min 150 AH capacity comprising SMF/VRLA batteries , MS / Teakwood battery stand , interconnect wiring etc as required complete in all respect of rating: 48V	Nos	1	167365.3	167365.3
15	SITC of FCBC (Float cum boost charger)suitable for 415V +/-10%, 50 Hz , 1-ø / 3 -ø Input & 24/ 48 /110 V DC OutputNatural Cooled, free standing in Sheet Steel enclosure,SCR controlled , regulation +/-1% , Efficiency > 75% on FLAC/ DC Instruments, Selector Switch, Built in DC Distribution Board (6 No MCB), indication , control as required of20 A + 20 A rating:	Nos	1	93339.18	93339.18
16	**Power Factor Improvement**				
	self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR. including making connections with suitable capacity conductors/ cables testing as required.Heavy Duty3- phase	KVAr	12	354	4248
17	SITC of microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp secondary current and following way, self analysing auto c/k setting according to targeted power factor setting, the relay shall have minimum three digit display unit for display of real power factor, targeted power factor, lag/lead capacitor switching status, alarm output for under current, over current, insufficient compensation, indication of switching on units, auto/manual status, and shall have over load protection, no volt release etc. as required.	Nos	1	21499.6	21499.6
18					
	Providing, Installation, Testing and Commissioning of ULTRASONIC LEVEL TRANSMITTER for Water Application : Principle : Time of Flight / Sensor MOC PP / Process Connection 1 1/2 inch BSP or 2 inch BSP Threaded type / Power Supply: 24 V DC / Output: 4- 20mA / Display: Integral display for programming and Display Reading / IP 66 8m	Nos	1	116880.18	116880.18
19					
	LT Cable				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	Providing & Laying XLPE insulated / P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.				
20	3.5 Core,120 Sqmm (Armoured)	m	30	710.36	21310.8
	3.5/4 Core, 6 Sqmm (Armoured)	m	80	178.18	14254.4
	Providing and laying XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 1255 including excavation of 30 CmX75 Cm size trench 25 Cm thick under layer of sand and second class bricks covering, backfilling & compaction				
21	5 core 2.5 sqmm copper control cables	m	30	146.32	4389.6
	3 core 2.5 sq mm copper control cables	m	30	270.22	8106.6
	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.				
22	3.5 Core,120 Sqmm (Armoured)	nos	4	1181.18	4724.72
	3.5/4 Core, 6 Sqmm (Armoured)	nos	16	180.54	2888.64
	Supply, Fabricating & installing following sizes of perforated cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with suspenders and including painting as required. Hot dipped galvanised.				
23	100mm x 50mm x 1.6mm	m	20	312.7	6254
	150mm x 50mm x 1.6mm	m	20	392.94	7858.8
	450mm x 50mm x 2.0mm	m	10	1023.06	10230.6
	600mm x 50mm x 2.0mm	m	10	1292.1	12921
	S & Laying following size B class G.I. Pipe with accessories for laying earth conductor/strip and cable in ground/surface/recess as required				
24	40mm	m	25	364.62	9115.5
	50mm	m	25	463.74	11593.5
	100mm	m	25	708	17700
	Earthing				
	Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.	Set	6	6490	38940
25	Pipe Earthing as per IS:3043 with perforated 3.0 Mtr. Long, 40 mm dia. ' B ' class G.I. Pipe including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300 mm and embodying the pipe complete with alternate layers salt and coke/ charcoal, testing of earth resistance as required.	Set	4	3540	14160
26	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.				
27	25x5 mm Coppper strip	m	30	994.74	29842.2

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	6SWG GI Wire	m	100	15.34	1534
	25X 6 mm GI Strip	m	50	109.74	5487
28	SF of rubber matting with one side corrugated as per IS specificationv 15652/2006- 20mm thick	sqm	9	4269.24	38423.16
29	Providing and fixing with bracket/ supports etc wall/floor mounted fire extinguishers as per details below: ISI marked 5 kg capacity Dry Powder fire extinguisher with high pressure discharge hose, squeeze gripe nozzle 120 gms carbon dioxide cartridge, gun metal cap with initial charge of dry power. Both extinguisher and dry power to be ISI marked.	nos	5	1869.12	9345.6
30	SITC of DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP Alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled.Alternator shall be self regulated with standard Alternator Protection(Over voltage, over speed & under voltage). Engine shall have residential silencer, up to 10 M exhaust piping , electronic /Mechanical governor, Manual & electric Start, Batteries, Fuel tank (with Stand) & piping, control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel, AVM and with Weatherproof, powder coated Accoustic enclosure for DG set for sound attenuation fabricated from 1.6 mm CRCA sheet steel (structure) with side wall fabricated from 1.6 mm CRCA sheet and filled with foam as per CPCB norms latest amendments & IS 8183 .The doors are fabricated from 1.6 mm CRCA sheet packed with accoustic material, floor of MS chequrred plate 5.0 mmthick, All doors/ opening are sealed with neoprene/ EPDN gaskets. The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 °C. All controls for operation of DG set are from outside the enclosure with DG control panel having microprocessor based genset monitoring and control system mccb Ammeter, voltmeter, Pf meter, frequency meter, KWH meter, Ind. Lamps etc. mounted inside enclosure , visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level is less than 75 db (A) at a distance of 1 Mtrs. duly certified by authorized agency. Complete in all respect of following capacity : Radiator cooled and turbo charged 75KVA	no	1	897970.56	897970.56
31	SITC of AUTO MAINS FAILURE (AMF) Panel fabricated from CRCA sheet steel 2mmThick , Powder coated finish , Engine START & STOP commands,control RELAYS, selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter , Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for DG sets PLC Based	no	1	125983.88	125983.88
32	S I T C of 11KV ON LOAD oil immersed 630 A,350 MVA Metal Clad LOAD BREAK Switch complete in all respect With oil , fuses etc as required	no	1	150813.44	150813.44
33	Unit Estimate for Lighting	no	1	155463.33	155463.33
	Total Rs				**4066468.31**
	Total Rs Lakh				**40.66**
	The cost of the motor for the pumping plant shall be provided in the Pumping Plant estimate.				

SEWERAGE SYSTEM FOR GAYA EASTERN PART COST ESTIMATE FOR ELECTRICAL WORK FOR MPS A-6					
Sr. No.	**Description**	**Unit**	**Qty.**	**Rate in Rs**	**Amount In Rs**
	Switchgear				
1	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii)TT Block (iv) 6mm Bakelite sheet on all sides.	LS	1	30338.98	30338.98
2	Supply, Installation, testing and commissioning of 11 KV Double Pole structure With Air Break SWITCH having following specifications : (a) DP : Double pole structure made of two nos. 9 meter long PCC poles (400 Kg) & 7 nos. MS Channel each of size 100 mmx50mmx2500mm complete with earthing of the structure as per REC standards in all respect with nuts, springs washers, clamps as required. (b) GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3 phase, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 Nos pin insulator ,GI pipe of suitable length for operation.c) DO: 3 Nos. Horizontal/Vertical mounted 33KV Horn Gap fuse set / Drop Out fuse set, 33KV barrel fuses mounted on 6 Nos. Post insulators. (c) DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators (d) LA:3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv oh linewith rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required. (e) JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3’	Set	1	99498.78	99498.78
3	H.T. PANEL: AS INCOMER FEEDER Supply, Installation, Testing and Commissiong of indoor type floor mounted metal clad, 11 KV Incomer VCB panel up to 630 A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec. Make of HT Panel, Vaccum Interrupter and VCB should be of same make. 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 12 KV on incomer, Ammeter, analog type, selector switches for ammeters,Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ratio with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter.	Set	1	551755.02	551755.02

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
4	H.T. PANEL: AS OUTGOING FEEDER Supply, Installation, Testing and Commission of indoor type floor mounted metal clad, 11 KV Outgoing VCB panel UPTO 630A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec.Make of Panel, Vaccum Interrupter and VCB should be of same make.11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 11 KV , Ammeter, analog type, selector switches for ammeters, Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ration with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter Outgoing upto 630 A VCB	Set	1	395425.08	395425.08
5	Providing & Laying XLPE insulated IS:7098/II/85 of approved make H.T.cable for working voltage 11 K.V.Un-Earthed with Stranded Compacted Circular Aluminium Conductor, Conductor Screened with Extruded Semi-conducting compound, XLPE Insulated, Insulation Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.300 Sqmm	m	30	2216.04	66481.2
6	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of indoor 120Sqmm	No	2	6833.38	13666.76
7	Supply, Installation, Testing and commissioning of copper wound ISI marked Transformer 11/0.433 KV, Three Phase, 50 Hz, DYN 11,ONAN type , Standard accessories like, conservator, Silicagel breather, radiator, fins, HT & LT cable end boxes or Bus Duct flange, Lifting lugs, Bi-directional Plain/ Flanged Rollers,Earthing terminal,Air relaese plug.Off load tap changer (+5% to -10% in steps of 2.5%), winding / Top oil temperature rise of 45°C/40°C, ISI marked drain valves, Dial type temperature gauge, first fill oil, Epoxy based paint etc having max. total losses as per energy efficiency level - 2 at basic Insulation level conforming to IS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part-I : 2014 BEE star level - I as per Govt. of India, Ministry of power notification Dated 16th Dec., 2016. Transformers described as above and as per the following continuous rating **250 KVA**	Set	1	652429.08	652429.08
	LT Panels				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
8	SITC of walll/free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated / epoxy / PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).	Sqm	30	2124	63720
9	Supplying and fixing of Aluminum bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.	Kg	20	464.92	9298.4
10	Incoming: SITC of fixed / Draw out type 4 pole Air Circuit Breaker conforming to IS 13947/IEC 60947 P-2 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable short-circuit, earth fault and over load MICRO-PROCESSOR release with LCD display,bargraph and separate LED indication for each type of fault, at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism type, ACB shall have separate indication for service, test, isolation, maintenance position including making connections etc. as required. 800A	set	2	207779.12	415558.24
	Supply and fixing of following accessories for ACB				
	Shunt Trip Release	Nos	2	2862.68	5725.36
	Under Voltage Release	Nos	2	4212.6	8425.2
	Earth Fault Release	Nos	2	2273.86	4547.72
	Mechanical Interlocking	Nos	1	9076.56	9076.56
11	**Outgoing -MCCB Feeder for Peak Pumps** SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,125 Amps	Nos	9	17971.4	161742.6
	Shunt Trip Release	Nos	10	2364.72	23647.2
	Under Voltage Release	Nos	10	2566.5	25665
	Earth Fault Release	Nos	10	6756.68	67566.8
12	SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,50 Amps	Nos	6	11986.44	71918.64

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
13	P&F 240/415 V MCB of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required.TPN 6-32 A	Nos	10	1110.38	11103.8
14	**Outgoing - MCCB Feeder for APFC Panel, Spare and other accessories**: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. **160/150/125 Amp ,** 35KA adjustable O/L & adjustable S/C setting	Nos	2	17971.4	35942.8
	Under Voltage Release	Nos	2	2566.5	5133
	Starters				
15	S & F of Star delta Starter with MCB,Main and Aux Contactor,O/L Relay, L/R Selector Switch,3 Indicating lamps,Start-Stop Push Button ,Control MCB with panel with all accessories with following rating				
	30 kW	Nos	6	26385.98	158315.88
	25kW	Nos	2	26385.98	52771.96
	Battery and Charger				
16	SITC of battery bank of min 150 AH capacity comprising SMF/VRLA batteries , MS / Teakwood battery stand , interconnect wiring etc as required complete in all respect of rating: 48V	Nos	1	167365.3	167365.3
17	SITC of FCBC (Float cum boost charger)suitable for 415V +/-10%, 50 Hz , 1-ø / 3 -ø Input & 24/ 48 /110 V DC OutputNatural Cooled, free standing in Sheet Steel enclosure,SCR controlled , regulation +/-1% , Efficiency > 75% on FLAC/ DC Instruments, Selector Switch, Built in DC Distribution Board (6 No MCB), indication , control as required of20 A + 20 A rating:	Nos	1	93339.18	93339.18
	Power Factor Improvement				
18	self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR. including making connections with suitable capacity conductors/ cables testing as required.Heavy Duty3- phase	KVAr	53	354	18762
19	SITC of microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp secondary current and following way, self analysing auto c/k setting according to targeted power factor setting, the relay shall have minimum three digit display unit for display of real power factor, targeted power factor, lag/lead capacitor switching status, alarm output for under current, over current, insufficient compensation, indication of switching on units, auto/manual status, and shall have over load protection, no volt release etc. as required.	Nos	1	21499.6	21499.6

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
20	Providing, Installation, Testing and Commissioning of ULTRASONIC LEVEL TRANSMITTER for Water Application : Principle : Time of Flight / Sensor MOC PP / Process Connection 1 1/2 inch BSP or 2 inch BSP Threaded type / Power Supply: 24 V DC / Output: 4- 20mA / Display: Integral display for programming and Display Reading / IP 66 8m	Nos	1	116880.18	116880.18
	LT Cable				
21	Providing & Laying XLPE insulated / P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.				
	500 Sqmm (Armoured)	m	30	2113.38	63401.4
	3.5 Core,35 Sqmm (Armoured)	m	60	309.16	18549.6
	3.5/4 Core, 25Sqmm (Armoured)	m	20	267.86	5357.2
22	Providing and laying XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 1255 including excavation of 30 CmX75 Cm size trench 25 Cm thick under layer of sand and second class bricks covering, backfilling & compaction				
	5 core 2.5 sqmm copper control cables	m	30	146.32	4389.6
	3 core 2.5 sq mm copper control cables	m	30	270.22	8106.6
23	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.				
	500 Sqmm (Armoured)	nos	2	3586.02	7172.04
	3.5 Core,35 Sqmm (Armoured)	nos	12	418.9	5026.8
	3.5/4 Core, 25Sqmm (Armoured)	nos	4	324.5	1298
24	Supply, Fabricating & installing following sizes of perforated cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with suspenders and including painting as required. Hot dipped galvanised.				
	100mm x 50mm x 1.6mm	m	20	312.7	6254
	150mm x 50mm x 1.6mm	m	20	392.94	7858.8
	450mm x 50mm x 2.0mm	m	10	1023.06	10230.6
	600mm x 50mm x 2.0mm	m	10	1292.1	12921
	S & Laying following size B class G.I. Pipe with accessories for laying earth conductor/strip and cable in ground/surface/recess as required				
	40mm	m	25	364.62	9115.5
	50mm	m	25	463.74	11593.5
	100mm	m	25	708	17700
	Earthing				
25	Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.	Set	6	6490	38940

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
26	Pipe Earthing as per IS:3043 with perforated 3.0 Mtr. Long, 40 mm dia. ' B ' class G.I. Pipe including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300 mm and embodying the pipe complete with alternate layers salt and coke/ charcoal, testing of earth resistance as required.	Set	4	3540	14160
27	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.				
	25x5 mm Coppper strip	m	30	994.74	29842.2
	6SWG GI Wire	m	100	15.34	1534
	25X 6 mm GI Strip	m	50	109.74	5487
28	SF of rubber matting with one side corrugated as per IS specificationv 15652/2006- 20mm thick	sqm	9	4269.24	38423.16
29	Providing and fixing with bracket/ supports etc wall/floor mounted fire extinguishers as per details below: ISI marked 5 kg capacity Dry Powder fire extinguisher with high pressure discharge hose, squeeze gripe nozzle 120 gms carbon dioxide cartridge, gun metal cap with initial charge of dry power. Both extinguisher and dry power to be ISI marked.	nos	5	1869.12	9345.6
30	SITC of DG Set complete with 1500 RPM Diesel Engine of suitable BHP & AC Brush less SPDP Alternator mounted on a common base Frame & coupled through a flexible coupling or close coupled.Alternator shall be self regulated with standard Alternator Protection(Over voltage, over speed & under voltage). Engine shall have residential silencer, up to 10 M exhaust piping , electronic /Mechanical governor, Manual & electric Start, Batteries, Fuel tank (with Stand) & piping, control panel (16 G) with MCCB (4P; 25 KA), Ammeter, Voltmeter, Frequency Meter, Energy Meter & Hour Meter, Engine instruments panel, AVM and with Weatherproof, powder coated Accoustic enclosure for DG set for sound attenuation fabricated from 1.6 mm CRCA sheet steel (structure) with side wall fabricated from 1.6 mm CRCA sheet and filled with foam as per CPCB norms latest amendments & IS 8183 .The doors are fabricated from 1.6 mm CRCA sheet packed with accoustic material, floor of MS chequrred plate 5.0 mmthick, All doors/ opening are sealed with neoprene/ EPDN gaskets. The enclosure has built in fuel tank, residential silencer (isolated from main DG chamber) with protection and tripping of DG set against temperature of more than 50 °C. All controls for operation of DG set are from outside the enclosure with DG control panel having microprocessor based genset monitoring and control system mccb Ammeter, voltmeter, Pf meter, frequency meter, KWH meter, Ind. Lamps etc. mounted inside enclosure , visible and accessible from outside. The enclosure should be suitable for following capacity DG sets and alternator. Noise level is less than 75 db (A) at a distance of 1 Mtrs. duly certified by authorized agency. Complete in all respect of following capacity : Radiator cooled and turbo charged 75KVA	no	1	897970.56	897970.56
31	SITC of AUTO MAINS FAILURE (AMF) Panel fabricated from CRCA sheet steel 2mmThick , Powder coated finish , Engine START & STOP commands,control RELAYS, selector switches for Ammeter & Voltmeter, Ammeter & Voltmeter , Control & Power Contactors, Timers, Electronic Hooter ,Visual & Alarm indication for faults, UPS, operator interface panel complete in all respect suitable for DG sets PLC Based	no	1	186124.94	186124.94
32	S I T C of 11KV ON LOAD oil immersed 630 A,350 MVA Metal Clad LOAD BREAK Switch complete in all respect With oil , fuses etc as required	no	1	150813.44	150813.44
33	Unit Estimate for Lighting	no	1	155463.33	155463.33

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	Total Rs				**5074679.19**
	Total Rs Lakh				**50.75**
	The cost of the motor for the pumping plant shall be provided in the Pumping Plant estimate.				

SEWERAGE SYSTEM FOR GAYA EASTERN PART COST ESTIMATE FOR ELECTRICAL WORK FOR IPS A- 7					
Sr. No.	**Description**	**Unit**	**Qty.**	**Rate in Rs**	**Amount In Rs**
	Switchgear				
1	Supply, Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following: (i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii)TT Block (iv) 6mm Bakelite sheet on all sides.	LS	1	30338.98	30338.98
2	Supply, Installation, testing and commissioning of 11 KV Double Pole structure With Air Break SWITCH having following specifications : (a) DP : Double pole structure made of two nos. 9 meter long PCC poles (400 Kg) & 7 nos. MS Channel each of size 100 mmx50mmx2500mm complete with earthing of the structure as per REC standards in all respect with nuts, springs washers, clamps as required. (b) GO:Off load type gang operated 3-pole vertical flute type switch suitable for 11KV ; 400A ,3 phase, central post rotating double break isolator complete with MS hardware , copper moving & fixed contact ,assembly of 9 Nos pin insulator ,GI pipe of suitable length for operation.c) DO: 3 Nos. Horizontal/Vertical mounted 33KV Horn Gap fuse set / Drop Out fuse set, 33KV barrel fuses mounted on 6 Nos. Post insulators. (c) DO: 3nos Vertical / Horizontal mounted 11kv horn gap fuse set /drop out 11kv barrel fuses mounted on 6no pin insulators (d) LA:3 piece non linear resistor type. lighting arrestor of approved make suitable for 3 wire, 11kv oh linewith rated voltage of 9kv rms & nominal discharge current rating of 5 ka & complete with galvanized clamping arrangement GI bolts, nuts, washer etc as required. (e) JUMPERS: 3 no 11kv acsr conductors mounted on pin type insularors as required. GENERAL:The go shall be operated by hand operated liver properly earthed with provision for locking mounted at 3’	Set	1	99498.78	99498.78
3	H.T. PANEL: AS INCOMER FEEDER Supply, Installation, Testing and Commissiong of indoor type floor mounted metal clad, 11 KV Incomer VCB panel up to 630 A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec. Make of HT Panel, Vaccum Interrupter and VCB should be of same make. 11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 12 KV on incomer, Ammeter, analog type, selector switches for ammeters,Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ratio with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter.	Set	1	551755.02	551755.02
4	H.T. PANEL: AS OUTGOING FEEDER Supply, Installation, Testing and Commission of indoor type floor mounted metal clad, 11 KV Outgoing VCB panel UPTO 630A equipped with following switchgears and accessories designed & tested as per latest standard i.e. IEC 62271-200, suitable for STC 25KA/3 and IAC A-FLR for 25kA/1sec.Make of Panel, Vaccum Interrupter and VCB should be of same make.11 KV / 110 Volts PT Class 0.5 accuracy and 100 VA burden with 1No. Voltmeter (0-12 KV), analog type, selector switch for voltmeter and protection fuses/MCB for HT metering upto 11 KV , Ammeter, analog type, selector switches for ammeters, Microprocessor based numerical relay with O/L, E/F and S/C protection, Set of dual core dual ratio 3CTs of suitable ration with sec 1 of 15 VA burden and accuracy Class – 0.5 for metering and class 5P10 for protection, Multifunction Meter Outgoing upto 630 A VCB	Set	2	395425.08	790850.16

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
5	Providing & Laying XLPE insulated IS:7098/II/85 of approved make H.T.cable for working voltage 11 K.V.Un-Earthed with Stranded Compacted Circular Aluminium Conductor, Conductor Screened with Extruded Semi-conducting compound, XLPE Insulated, Insulation Screened with extruded semi-conducting compound in combination with Copper Tape, cores laid up, inner sheath of Thermoplastic tape, galvanised flat steel strip armoured and overall Extruded PVC Type ST- 2 Outer Sheathed cable direct in ground including excavation of 30cmx100cm size trench, 25cm layer of river sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection testing etc.as required of size.300 Sqmm	m	60	2216.04	132962.4
6	Providing & making heat shrinkable type indoor/outdoor/straight through terminations/joint kit of approved make suitable for XLPE insulated 11 KV cable, with required components, prepration of cable ends,testing etc. as required of indoor 120Sqmm	No	2	6833.38	13666.76
7	Supply, Installation, Testing and commissioning of copper wound ISI marked Transformer 11/0.433 KV, Three Phase, 50 Hz, DYN 11,ONAN type , Standard accessories like, conservator, Silicagel breather, radiator, fins, HT & LT cable end boxes or Bus Duct flange, Lifting lugs, Bi-directional Plain/ Flanged Rollers,Earthing, terminal,Air relaese plug.Off load tap changer (+5% to -10% in steps of 2.5%), winding / Top oil temperature rise of 45°C/40°C, ISI marked drain valves, Dial type temperature gauge, first fill oil, Epoxy based paint etc having max. total losses as per energy efficiency level - 2 at basic Insulation level conforming to IS 2026 (Part- I to Part - II), latest ammended and IS 1180 Part-I : 2014 BEE star level - I as per Govt. of India, Ministry of power notification Dated 16th Dec., 2016. Transformers described as above and as per the following continuous rating **1000 KVA**	Set	2	1864082.58	3728165.16
	LT Panels				
8	SITC of walll/free standing floor mounted dust and vermin proof compartmentalised cubical panel made out of CRCA sheet, required hardware, duly painted by two coats of zinc/red oxide primer followed by Powder coated / epoxy / PU painted with phosphatisation in grey or required shade after rinsing. The panel having PU/Neoprene rubber gasket of not less than 3mm thickness, separate detachable, gland plate M.S. base channel, hinged door with locking arrangement for equipment/switchgear. Thickness of sheet shall not be less than 1.6mm up to 600mm length/width of any compartment and be of 2.0mm above 600mm. Load bearing structure shall be of 2.0mm thick sheet supported by base M.S. channel if required. Side walls and cable alley compartments having bolted type doors with detachable extension type structure (only outer area on all sides shall be measured and panel to be fabricated from CPRI approved fabricator).	Sqm	120	2124	254880
9	Supplying and fixing of Aluminum bus bar by means of SMC / DMC type insulator, high tensile nuts and bolts spring washers in existing panel including bending , cutting in required shape and size and colour coding with heat shrinkable PVC sleeves.	Kg	40	464.92	18596.8
10	Incoming: SITC of fixed / Draw out type 4 pole Air Circuit Breaker conforming to IS 13947/IEC 60947 P-2 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable short-circuit, earth fault and over load MICRO-PROCESSOR release with LCD display,bargraph and separate LED indication for each type of fault, at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism type, ACB shall have separate indication for service, test, isolation, maintenance position including making connections etc. as required. 2500A	set	4	355235.46	1420941.84
	Supply and fixing of following accessories for ACB				
	Shunt Trip Release	Nos	6	2862.68	17176.08
	Under Voltage Release	Nos	6	4212.6	25275.6
	Earth Fault Release	Nos	6	2273.86	13643.16
	Mechanical Interlocking	Nos	1	9076.56	9076.56

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
11	Out going for STP- SITC of fixed / Draw out type 4 pole Air Circuit Breaker conforming to IS 13947/IEC 60947 P-2 in existing LT panel suitable for LT installation 440 V, 50 Hz and having adjustable short-circuit, earth fault and over load MICRO-PROCESSOR release with LCD display,bargraph and separate LED indication for each type of fault, at least 4NO & 4NC auxiliary contacts safety shutter and fault position acknowledgement mechanism type, ACB shall have separate indication for service, test, isolation, maintenance position including making connections etc. as required. 2000A	set	2	309643.8	619287.6
12	**Outgoing -MCCB Feeder for Peak Pumps** SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push(test) to trip , including making connections with lugs /spreaders etc. as required Microprocessor based,50 Amps	Nos	10	11986.44	119864.4
	Shunt Trip Release	Nos	4	2364.72	9458.88
	Under Voltage Release	Nos	4	2566.5	10266
	Earth Fault Release	Nos	4	6756.68	27026.72
13	P&F 240/415 V MCB of breaking capacity not less than 10 KA (B/ C/ D tripping characteristic) ISI marked IS 8828(1996)]/ conforming to IEC 60898 in existing board/sheets including making connections with lugs, testing etc. as required.TPN 6-32 A	Nos	10	1110.38	11103.8
14	**Outgoing - MCCB Feeder for APFC Panel, Non peak pumps, Spare and other accessories**: SITC of quick make and quick break 4 POLE current limiting MCCB having following current rating, short circuit breaking capacity at 440/415 V, 50 Hz; O/L & S/C settings and conforming to IS 13947-2 / IEC 60947- 2 with front face and centralised adjustable, line load interchangeability, having positive isolation capability, provision for UVR , shunt trip ,earth fault trip, push (test) to trip , including making connections with lugs / spreaders etc. as required. 160/150/125 Amp , 35KA adjustable O/L & adjustable S/C setting	Nos	2	17971.4	35942.8
	Under Voltage Release	Nos	2	2566.5	5133
	Starters				
15	Upto 3.7 KW DOL Starter Feeder with MCB,Main and Aux Contactor,O/L Relay,L/R Selector Switch,3 Indicating lamps,Start-Stop Push Button ,Control MCB Size : 600 (W) x 400 (H) x 600 (D				
	2kW	Nos	3	23909.16	71727.48
	Battery and Charger				
16	SITC of battery bank of min 150 AH capacity comprising SMF/VRLA batteries , MS / Teakwood battery stand , interconnect wiring etc as required complete in all respect of rating: 48V	Nos	1	167365.3	167365.3
17	SITC of FCBC (Float cum boost charger)suitable for 415V +/-10%, 50 Hz , 1-ø / 3 -ø Input & 24/ 48 /110 V DC OutputNatural Cooled, free standing in Sheet Steel enclosure,SCR controlled , regulation +/-1% , Efficiency > 75% on FLAC/ DC Instruments, Selector Switch, Built in DC Distribution Board (6 No MCB), indication , control as required of20 A + 20 A rating:	Nos	1	93339.18	93339.18
	Power Factor Improvement				
18	self healing MPP/MP type shunt capacitor (banks) conforming to IS:13340-41 / IEC :831-1&2 in existing panel or parallel with load terminals , the capacitor shall be fitted with discharge resistors, pressure sensitive disconnector (PSD) and shall have dissipation factor less than 0.0025 at 50 Hz and total wattage loss less than 0.5 Watt per KVAR. including making connections with suitable capacity conductors/ cables testing as required.Heavy Duty3- phase	KVAr	1	354	354

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
19	Providing, Installation, Testing and Commissioning of ULTRASONIC LEVEL TRANSMITTER for Water Application : Principle : Time of Flight / Sensor MOC PP / Process Connection 1 1/2 inch BSP or 2 inch BSP Threaded type / Power Supply: 24 V DC / Output: 4- 20mA / Display: Integral display for programming and Display Reading / IP 66 8m	Nos	1	116880.18	116880.18
	LT Cable				
20	Providing & Laying XLPE insulated / P.V.C. sheathed cable of 1.1 KV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, second Class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size.				
	3.5 Core,400 Sqmm (Armoured)	m	240	1915.14	459633.6
	3.5/4 Core, 6 Sqmm (Armoured)	m	30	178.18	5345.4
21	Providing and laying XLPE/PVC insulated & PVC sheathed armoured control cables of 1.1 KV grade with copper conductor as per IS 1255 including excavation of 30 CmX75 Cm size trench 25 Cm thick under layer of sand and second class bricks covering, backfilling & compaction				
	5 core 2.5 sqmm copper control cables	m	30	146.32	4389.6
	3 core 2.5 sq mm copper control cables	m	30	270.22	8106.6
22	Supplying and making one end termination with heavy duty single compression brass gland SIBG type, aluminium lugs duly crimped with crimping tool, PVC tape etc for following size of Armoured PVC insulated & PVC sheathed/ XLPE aluminium conductor cable of 1100 volt grade as required of size.				
	3.5 Core,400 Sqmm (Armoured)	nos	16	3112.84	49805.44
	3.5/4 Core, 6 Sqmm (Armoured)	nos	6	180.54	1083.24
23	Supply, Fabricating & installing following sizes of perforated cable trays including horizontal and vertical bends, reducers tees,cross members and other accessories as required and duly suspended from the ceiling with suspenders and including painting as required. Hot dipped galvanised.				
	100mm x 50mm x 1.6mm	m	20	312.7	6254
	150mm x 50mm x 1.6mm	m	20	392.94	7858.8
	450mm x 50mm x 2.0mm	m	10	1023.06	10230.6
	600mm x 50mm x 2.0mm	m	50	1292.1	64605
24	S & Laying following size B class G.I. Pipe with accessories for laying earth conductor/strip and cable in ground/surface/recess as required				
	40mm	m	25	364.62	9115.5
	50mm	m	25	463.74	11593.5
	100mm	m	25	708	17700
	Earthing				
25	Plate Earthing as per IS:3043 with copper Earth plate of size 600mm x 600mm x 3.0mm by embodying 3 to 4 mtr. below the ground level with 20 mm dia. G.I. 'B' class watering Pipe including all accessories like nut, bolts, reducer, nipple ,wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size300mm x 300mm complete with alternate layers of salt and coke/charcoal, testing of earth resistance as required.	Set	6	6490	38940
26	Pipe Earthing as per IS:3043 with perforated 3.0 Mtr. Long, 40 mm dia. ' B ' class G.I. Pipe including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and C.C. finished chamber covered with hinged type with locking arrangement C.I. Cover, C.I. Frame of size 300mm x 300 mm and embodying the pipe complete with alternate layers salt and coke/ charcoal, testing of earth resistance as required.	Set	4	3540	14160
27	S & Laying following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.				

Sr. No.	Description	Unit	Qty.	Rate in Rs	Amount In Rs
	25x5 mm Coppper strip	m	30	994.74	29842.2
	6SWG GI Wire	m	100	15.34	1534
	25X 6 mm GI Strip	m	50	109.74	5487
28	SF of rubber matting with one side corrugated as per IS specificationv 15652/2006- 20mm thick	sqm	18	4269.24	76846.32
29	Providing and fixing with bracket/ supports etc wall/floor mounted fire extinguishers as per details below: ISI marked 5 kg capacity Dry Powder fire extinguisher with high pressure discharge hose, squeeze gripe nozzle 120 gms carbon dioxide cartridge, gun metal cap with initial charge of dry power. Both extinguisher and dry power to be ISI marked.	nos	5	1869.12	9345.6
30	Unit Estimate for Lighting	no	1	155463.33	155463.33
	Total Rs				**9381916.37**
	Total Rs Lakh				**93.82**
	The cost of the motor for the pumping plant shall be provided in the Pumping Plant estimate.				

COST ESTIMATE FOR ELECTRICAL WORK OF SEWERAGE SYSTEM, GAYA EASTERN PART

Sr. No.	Description	Reference SOR / MR	Unit	Basic Rate		Enhancement in rates / Discount %	Enhanced rates %	Excise Duty @ 0%	Rate with Excise Duty	GST @18%	Forwarding Charges including Loading / unloading, transient Insurance etc.@ 5%	Sub Total	Erection, Testing and commissioning @ 7%	Contractors Profit @15% on n+o	Total Rate
				SOR	Non SOR		h=e+g		k= g+e or f			n=k+l+m			q=n+o+p
a	b	c	d	e	f	g	i	j	k	l	m	n	o	p	r
1	HT Metering Cubicle	RUIDP 2017, 66.1	set	25711		0	25711	0	25711	4627.98	0	30338.98	0	0	**30338.98**
2	11KV Double pole	RUIDP 2017, 66.3	set	84321		0	84321	0	84321	15177.78	0	99498.78	0	0	**99498.78**
3	H.T. PANEL: AS INCOMER FEEDER	RUIDP 2017 -66.12.1	set	467589		0	467589	0	467589	84166.02	0	551755.02	0	0	**551755.02**
4	H.T. PANEL: AS Outgoing FEEDER	RUIDP 2017- 66.12.3	Set	335106		0	335106	0	335106	60319.08	0	395425.08	0	0	**395425.08**
5	HT 11KV Cable 300 Sqmm	RUIDP 2017- 51.9.2	m	1878		0	1878	0	1878	338.04	0	2216.04	0	0	**2216.04**
6	HT 11KV Cable 120 Sqmm	RUIDP 2017- 53.1.9	m	1759		0	1759	0	1759	316.62	0	2075.62	0	0	**2075.62**
7	Cable Termination Indoor 30	RUIDP 2017- 52.2.1.4	No	5791		0	5791	0	5791	1042.38	0	6833.38	0	0	**6833.38**
8	Cable Termination Indoor 12	RUIDP 2017- 52.2.1.3	No	5429		0	5429	0	5429	977.22	0	6406.22	0	0	**6406.22**
	Transformer														
9	63KVA	RUIDP 2017- 66.10.2.3	No	258501		0	258501	0	258501	46530.18	0	305031.18	0	0	**305031.18**
10	100KVA	RUIDP 2017- 66.10.2.4	No	301585		0	301585	0	301585	54285.3	0	355870.3	0	0	**355870.3**
	250KVA	RUIDP 2017- 66.10.2.7	No	552906		0	552906	0	552906	99523.08	0	652429.08	0	0	**652429.08**
11	1000KVA	RUIDP 2017- 66.10.2.13	No	1579731		0	1579731	0	1579731	284351.58	0	1864082.58	0	0	**1864082.58**
12	Fabrication of cubical	RUIDP 2017- 48.1	Sqm	1800		0	1800	0	1800	324	0	2124	0	0	**2124**
13	Aluminium Bus Bar	RUIDP 2017- 48.1	kg	394		0	394	0	394	70.92	0	464.92	0	0	**464.92**
14	MCCB 250A	RUIDP 2017- 49.7.2.4	no	25041		0	25041	0	25041	4507.38	0	29548.38	0	0	**29548.38**
15	ACB 800A	RUIDP 2017- 49.2.3.1	no	176084		0	176084	0	176084	31695.12	0	207779.12	0	0	**207779.12**
16	ACB Incomer 2500	RUIDP 2017- 49.2.3.6	no	301047		0	301047	0	301047	54188.46	0	355235.46	0	0	**355235.46**
17	ACB 2000A STP	RUIDP 2017- 49.2.3.5		262410		0	262410	0	262410	47233.8	0	309643.8	0	0	**309643.8**
18	Shunt Trip Release	RUIDP 2017- 49.5.1	no	2426		0	2426	0	2426	436.68	0	2862.68	0	0	**2862.68**
19	Under Voltage Release	RUIDP 2017- 49.5.2	no	3570		0	3570	0	3570	642.6	0	4212.6	0	0	**4212.6**
20	Earth Fault Release	RUIDP 2017- 49.5.3	no	1927		0	1927	0	1927	346.86	0	2273.86	0	0	**2273.86**
21	Mechanical interlocing kit	RUIDP 2017- 49.5.4	no	7692		0	7692	0	7692	1384.56	0	9076.56	0	0	**9076.56**
22	MCCB outgoing 125/150/160	RUIDP 2017- 49.7.2.2	no	15230		0	15230	0	15230	2741.4	0	17971.4	0	0	**17971.4**
23	MCCB outgoing 50/100	RUIDP 2017- 49.7.2.1	no	10158		0	10158	0	10158	1828.44	0	11986.44	0	0	**11986.44**
24	Shunt Trip Release	RUIDP 2017- 49.8.1	no	2004		0	2004	0	2004	360.72	0	2364.72	0	0	**2364.72**
25	Under Voltage Release	RUIDP 2017- 49.8.2	no	2175		0	2175	0	2175	391.5	0	2566.5	0	0	**2566.5**
26	Earth Fault Release	RUIDP 2017- 49.8.3	no	5726		0	5726	0	5726	1030.68	0	6756.68	0	0	**6756.68**
27	MCB TPN 6-23A	RUIDP-2017 -46.1.5.1	no	941		0	941	0	941	169.38	0	1110.38	0	0	**1110.38**
28	DOL 2kW	RUIDP 2017- 69.1	no	20262		0	20262	0	20262	3647.16	0	23909.16	0	0	**23909.16**
29	Star Deleta Starter 7.5kW	RUIDP 2017- 69.3.1	no	10376		0	10376	0	10376	1867.68	0	12243.68	0	0	**12243.68**
30	Star Deleta Starter 10kW	RUIDP 2017- 69.3.2	no	11172		0	11172	0	11172	2010.96	0	13182.96	0	0	**13182.96**
31	Star Deleta Starter 20kW	RUIDP 2017- 69.3.5	no	22361		0	22361	0	22361	4024.98	0	26385.98	0	0	**26385.98**

Sr. No.	Description	Reference SOR / MR	Unit	Basic Rate		Enhancement in rates / Discount %	Enhanced rates %	Excise Duty @ 0%	Rate with Excise Duty	GST @18%	Forwarding Charges including Loading / unloading, transient Insurance etc.@ 5%	Sub Total	Erection, Testing and commissioning @ 7%	Contractors Profit @15% on n+o	Total Rate
				SOR	Non SOR		h=e+g		k= g+e or f			n=k+l+m			q=n+o+p
a	b	c	d	e	f	g	i	j	k	l	m	n	o	p	r
32	Star Deleta Starter 25kW	RUIDP 2017- 69.3.5	no	22361		0	22361	0	22361	4024.98	0	26385.98	0	0	**26385.98**
33	Star Deleta Starter 30kW	RUIDP 2017- 69.3.6	no	22361		0	22361	0	22361	4024.98	0	26385.98	0	0	**26385.98**
34	Battery Bank	RUIDP 2017-66.16	No	141835		0	141835	0	141835	25530.3	0	167365.3	0	0	**167365.3**
35	Battery Charger	RUIDP2017 - 67.3.3	No	79101		0	79101	0	79101	14238.18	0	93339.18	0	0	**93339.18**
36	Capacitor Bank	RUIDP 2017- 48.12.2	KVAr	300		0	300	0	300	54	0	354	0	0	**354**
37	APFC	RUIDP 2017-48.13	No	18220		0	18220	0	18220	3279.6	0	21499.6	0	0	**21499.6**
38	Level Transmitter Ultrasonic Type	RUIDP 2017-68.18	No	99051		0	99051	0	99051	17829.18	0	116880.18	0	0	**116880.18**
39	LT Cable 500 Sqmm	RUIDP 2017-51.1.17.3	m	1791		0	1791	0	1791	322.38	0	2113.38	0	0	**2113.38**
40	LT Cable 400 Sqmm	RUIDP 2017-51.1.16.4	m	1623		0	1623	0	1623	292.14	0	1915.14	0	0	**1915.14**
41	LT Cable 120 Sqmm	RUIDP 2017-51.1.11.4	m	602		0	602	0	602	108.36	0	710.36	0	0	**710.36**
42	LT Cable 35 Sqmm	RUIDP 2017-51.1.7.4	m	262		0	262	0	262	47.16	0	309.16	0	0	**309.16**
43	LT Cable 25 Sqmm	RUIDP 2017-51.1.6.3	m	227		0	227	0	227	40.86	0	267.86	0	0	**267.86**
44	LT Cable 16 Sqmm	RUIDP 2017-51.1.5.3	m	191		0	191	0	191	34.38	0	225.38	0	0	**225.38**
45	LT Cable 10 Sqmm	RUIDP 2017-51.1.4.3	m	173		0	173	0	173	31.14	0	204.14	0	0	**204.14**
46	LT Cable 6 Sqmm	RUIDP 2017-51.1.3.3	m	151		0	151	0	151	27.18	0	178.18	0	0	**178.18**
47	5 Core Copper 2.5 Sqmm	RUIDP 2017-51.3.1	m	124		0	124	0	124	22.32	0	146.32	0	0	**146.32**
48	3 Core Copper 2.5 Sqmm	RUIDP 2017-513..4	m	229		0	229	0	229	41.22	0	270.22	0	0	**270.22**
	Jointing / Termination														
49	LT Cable 500 Sqmm	RUIDP 2017-52.6.36	no	3039		0	3039	0	3039	547.02	0	3586.02	0	0	**3586.02**
50	LT Cable 400 Sqmm	RUIDP 2017-52.6.35	no	2638		0	2638	0	2638	474.84	0	3112.84	0	0	**3112.84**
51	LT Cable 120 Sqmm	RUIDP 2017-52.6.30	no	1001		0	1001	0	1001	180.18	0	1181.18	0	0	**1181.18**
52	LT Cable 35 Sqmm	RUIDP 2017-52.6.26	no	355		0	355	0	355	63.9	0	418.9	0	0	**418.9**
53	LT Cable 25 Sqmm	RUIDP 2017-52.6.25	no	275		0	275	0	275	49.5	0	324.5	0	0	**324.5**
54	LT Cable 16 Sqmm	RUIDP 2017-52.6.42	no	253		0	253	0	253	45.54	0	298.54	0	0	**298.54**
55	LT Cable 10 Sqmm	RUIDP 2017-52.6.41	no	175		0	175	0	175	31.5	0	206.5	0	0	**206.5**
56	LT Cable 6 Sqmm	RUIDP 2017-52.6.40	no	153		0	153	0	153	27.54	0	180.54	0	0	**180.54**
57	5 Core Copper 2.5 Sqmm	Market	no		10		10	0	10	1.8	0	11.8	0	0	**11.8**
58	3 Core Copper 2.5 Sqmm	Market	no		10		10	0	10	1.8	0	11.8	0	0	**11.8**
	Cable Trays														
59	100mm x 50mm x 1.6mm	RUIDP 2017-52.4.2.1	m	265		0	265	0	265	47.7	0	312.7	0	0	**312.7**
60	150mm x 50mm x 1.6mm	RUIDP 2017-52.4.2.2	m	333		0	333	0	333	59.94	0	392.94	0	0	**392.94**
61	450mm x 50mm x 2.0mm	RUIDP 2017-52.4.2.6	m	867		0	867	0	867	156.06	0	1023.06	0	0	**1023.06**
62	600mm x 50mm x 2.0mm	RUIDP 2017-52.4.2.7	m	1095		0	1095	0	1095	197.1	0	1292.1	0	0	**1292.1**
63	GI Pipe 40mm	RUIDP 2017-55.4.5	m	309		0	309	0	309	55.62	0	364.62	0	0	**364.62**
64	GI Pipe 50mm	RUIDP 2017-55.4.6	m	393		0	393	0	393	70.74	0	463.74	0	0	**463.74**
65	GI Pipe 100mm	RUIDP 2017-52.4.Int	m	600		0	600	0	600	108	0	708	0	0	**708**
66	Plate Earthing	RUIDP 2017-54.3	set	5500		0	5500	0	5500	990	0	6490	0	0	**6490**
67	Pipe Earthing	RUIDP 2017-54.1	set	3000		0	3000	0	3000	540	0	3540	0	0	**3540**

Sr. No.	Description	Reference SOR / MR	Unit	Basic Rate		Enhancement in rates / Discount %	Enhanced rates %	Excise Duty @ 0%	Rate with Excise Duty	GST @18%	Forwarding Charges including Loading / unloading, transient Insurance etc.@ 5%	Sub Total	Erection, Testing and commissioning @ 7%	Contractors Profit @15% on n+o	Total Rate
				SOR	Non SOR		h=e+g		k= g+e or f			n=k+l+m			q=n+o+p
a	b	c	d	e	f	g	i	j	k	l	m	n	o	p	r
68	Copper strip 25x5 mm	RUIDP 2017-54.4.9	m	843		0	843	0	843	151.74	0	994.74	0	0	**994.74**
69	GI Wire 6SWG	RUIDP 2017-54.4.4	m	13		0	13	0	13	2.34	0	15.34	0	0	**15.34**
70	GI Strip 25x6mm	RUIDP 2017-54.4.14	m	93		0	93	0	93	16.74	0	109.74	0	0	**109.74**
71	Rubber Matting 20mm thick	RUIDP SOR 48.11.2	Sqm	3618		0	3618	0	3618	651.24	0	4269.24	0	0	**4269.24**
72	Fire Extinguisher	RUIDP SOR 67.39.3	no	1584		0	1584	0	1584	285.12	0	1869.12	0	0	**1869.12**
	DG Sets														
73	50KVA	RUIDP 2017 66.18.1.4	no	658492		0	658492	0	658492	118528.56	0	777020.56	0	0	**777020.56**
74	62.5KVA	RUIDP 2017 66.18.1.5	no	696724		0	696724	0	696724	125410.32	0	822134.32	0	0	**822134.32**
75	75KVA	RUIDP 2017 66.18.2.7	no	760992		0	760992	0	760992	136978.56	0	897970.56	0	0	**897970.56**
76	200KVA	RUIDP 2017 66.18.2.14	no	1605141		0	1605141	0	1605141	288925.38	0	1894066.38	0	0	**1894066.38**
77	1010KVA	RUIDP 2017 66.18.2.29	no	9674104		0	9674104	0	9674104	1741338.7	0	11415442.7	0	0	**11415442.72**
78	AMF														
79	50/62.5	RUIDP 2017 66.19.1.2	no	106766		0	106766	0	106766	19217.88	0	125983.88	0	0	**125983.88**
80	80	RUIDP 2017 66.19.1.3	no	157733		0	157733	0	157733	28391.94	0	186124.94	0	0	**186124.94**
81	200	RUIDP 2017 66.19.1.4	no	210415		0	210415	0	210415	37874.7	0	248289.7	0	0	**248289.7**
82	1000	Market	no		400000	0	400000	0	400000	72000	20000	492000	34440	78966	**605406**
83	Switch	RUIDP 2017 66.21	no	127808		0	127808	0	127808	23005.44	0	150813.44	0	0	**150813.44**

Unit Estimate for IPS Electrification Gaya Eastern Part

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs
1	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FR PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit with modular switch , modular plate, suitable size G.I. box etc as required.				
	Light Point/Fan Points - Group B	no.	12	730.40	8764.8
2	Wiring of 3 pin 5 amp. light plug point with 1.5 sq. mm FR PVC insulated unsheathed flexible copper conductor 1.1 kV grade and 1.5 sq.mm FR PVC insulated unsheathed flexible copper earth conductor 1.1 kV grade(IS:694) of approved make in surface / recessed ISI marked medium duty PVC conduit & it's accessories, 18 SWG M.S. box with earth terminal, screwless cage connectors for neutral looping in switch board & false ceiling point, 6 A switch, 6 A socket, 3.0 mm thick phenolic laminated sheet, zinc plated / brass screws, cup washers, making connections, testing etc. as required..	no.	5	454.52	2272.6
3	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/ recess including cutting the wall and making good the same in case of recessed conduit as required.	m	50	97.57	4878.5
4	**Circuit Wiring** - Wiring for circuit wiring with PVC insulated cable FR with copper multi strand conductor ISI marked in Surface rigid P.V.C. conduit (MMS) of ISI marked suitable size including painting etc. as required as per specification				
	4x2.5 Sq.mm.+1x1.5	m	30	137.50	4125
5	Supplying and fixing metal/ PVC box of following sizes (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including painting etc as required.	no.	3	142.34	427.02
6	Wiring of 6 pin 15 amp. Light power point with 4.0 sq. mm PVC insulated unsheathed solid / stranded copper conductor 1.1 kV grade of approved make in surface / recessed ISI marked steel conduit & it's accessories, 18 SWG M.S. box with earth terminal, screw less cage connectors for neutral looping in switch board , 15 A switch, 15 A socket, 3.0 mm thick phenolic laminated sheet, zinc plated / brass screws, cup washers, bushes, check nut- On Separate Board - Medium Point	no.	3	925.21	2775.63
8	Providing and fixing following capacity TP&N disconnector fuse switch unit inside the existing panel board with ISI marked HRC fuses including drilling holes in cubicle panel, making connections etc. as required.	no.	3	2572.02	7716.06
9	Providing and fixing H.T. danger notice plate of 250 mm X 200 mm, made of mild steel at least 2 mm thick, vitreous enameled white on both sides, and with inscription in single red colour on front side as required.	no.	4	268.18	1072.72
10	P & F ISI marked (IS :3854) 6 amp. flush type switch including cutting hole in tile and making connection testing etc. as required.	no.	4	22.55	90.20
11	P & F ISI marked (IS :1293) 3 pin 6 amp. flush type socket including cutting hole in tile and making connection testing etc. as required.	no.	4	35.86	143.44
12	Surface mounted 15/18 watt LED downlighter complete with all accessories and replaceable electronic driver.	no.	4	1133.33	4533.32

Sr. No.	Description	Unit	Qty.	Rate in Rs.	Amount in Rs
13	BULK HEAD -P & F of IP65 IK10 rated LED bulk head type ligh fixturemade from CRCA sheet steel housing suitable for mounting LED tube system (integral driver), Powen consumption of 10-15W , 500-600 lumens system lumen efficiecy 70 lm/ watt output suitable for1x100 W GLS/ 9W CFL bulk head fixtures, life time of 50000 burning hours with 70% initial lumen maintained. CCT 3000° K, 4000° K and 6000° K. Fixture shall be in compliance with CE & KEMA standards.	no.	3	1539.89	4619.67
14.1	Supply and erection of Decorative Cast Iron pole as per approved design of following length with base plate on the cement concrete foundation of M-15 grade (1:1.5:3) with the help of anchor bolts of grade 6.8 (IS 1367 P III). The pole shall be made of Cast Iron as per IS 210:1993, precision machining and filling job to achieve good finish and a fine coat of primer on each element before assembling. After assembling of each element one coat of primer and two coats of P.U. paint are applied. Approved coloured UV resist coating of mat/ glossy/ metallic finish followed after air drying of pole. The pole shall have a weatherproof flush door and locking arrangements, two/ one arm bracket of length of 430/380mm complete in all respect. 3M	no.	3	28793.93	86381.79
14.2	S& F of all in one solar LED street light fixture with Integrated high efficient Monocrystalline panel with Lithium (LiFePO4) Ferro Phosphate battery with BIS approved make .luminaire should be secondary optic lenses for better distribution with delivered efficacy of > 100 Lumen perwatt.Bidder shall have in house R&D Laboratory which is recognised by ministry of Science & Technology department, Govt. Of India/ NABL. Bidder shall have inhousepole &luminairem anufacturing facility.Luminaire can be supplied with Hybrid switch along with indicator to understand the source of power(either from solar or AC supply).shall have certificate tested from MNRE approved Lab.Guarantee for total system is two years .Note: All the above should be integrated and should be 1 system. Compact Solar LED Street Light - 20W(MONO) 18V/ 12.8V9Ah/12W	no.	1	27662.58	27662.58
	Total				**155463.33**

Analysis of Rates (For Lighting) of Sewerage System Gaya Eastern Part

Sr. No.	Item	Capacity / Size	Basic Cost `	Cost Enhencement in %	Enhenced Rates ` (a+a*b%)	Packing & forwarding 2% of (c) `	GST rate %	GST	Transport & insurance 3.75% of (c) `	Unit subtotal (c+d+f+g) `	Contractors profit @ 10% of (h) `	Installation / Laying charges (%) of (h)	Total cost (h+i+j) `	Reference
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	
1	Light / Fan point	Group B	602.00	0.00	602.00	0.00	18.00	62.00	0.00	664.00	66.40	0.00	**730.40**	Bihar-NE-02 2018-1.3.2
2	Plug Point	Medium	374.00	0.00	374.00	0.00	18.00	39.20	0.00	413.20	41.32	0.00	**454.52**	RUIDP 2017 43.3.3
3	PVC Conduit	25mm	79.00	0.00	79.00	0.00	18.00	9.70	0.00	88.70	8.87	0.00	**97.57**	Bihar-NE-02 2018-1.21.2
4	Circuit wiring	4x2.5 sqmm+1x1.5	112.00	0.00	112.00	0.00	18.00	13.00	0.00	125.00	12.50	0.00	**137.50**	Bihar-NE-02 2018-1.12.8
5	Metallic /PVC Box	150x0150x60	116.00	0.00	116.00	0.00	18.00	13.40	0.00	129.40	12.94	0.00	**142.34**	Bihar-NE-02 2018-1.22.4
6	Power wiring		763.00	0.00	763.00	0.00	18.00	78.10	0.00	841.10	84.11	0.00	**925.21**	RUIDP 2017 43.5.2
7	Switch Fuse unit 32 A	TP&N	2124.00	0.00	2124.00	0.00	18.00	214.20	0.00	2338.20	233.82	0.00	**2572.02**	Bihar-NE-02 2018-2.3.2
8	MCB 32 A	SPN	511.00	0.00	511.00	0.00	18.00	91.98	0.00	602.98	60.30	0.00	**663.28**	Bihar-NE-02 2018-2.12.2
9	Enclosure for MCB		437.00	0.00	437.00	0.00	18.00	45.50	0.00	482.50	48.25	0.00	**530.75**	RUIDP 2017 49.7.2.1
10	Danger Board	Large	220.00	0.00	220.00	0.00	18.00	23.80	0.00	243.80	24.38	0.00	**268.18**	Bihar-NE-02 2018-2.2.1
11	Switch	6A	17.00	0.00	17.00	0.00	18.00	3.50	0.00	20.50	2.05	0.00	**22.55**	RUIDP 2017 47.1
12	Socket	6A	28.00	0.00	28.00	0.00	18.00	4.60	0.00	32.60	3.26	0.00	**35.86**	RUIDP 2017 49.7.2.1
13	LED	18w	935.00	0.00	935.00	0.00	18.00	95.30	0.00	1030.30	103.03	0.00	**1133.33**	Bihar-NE-02 2018-2041
14	Bulk Head LED	9/10W	1271.00	0.00	1271.00	0.00	18.00	128.90	0.00	1399.90	139.99	0.00	**1539.89**	RUIDP 2017 49.7.2.1
15	CI Pole	3M	23795.00	0.00	23795.00	0.00	18.00	2381.30	0.00	26176.30	2617.63	0.00	**28793.93**	RUIDP 2017 58.28.3
16	Solar Street Light	12 W	22860.00	0.00	22860.00	0.00	18.00	2287.80	0.00	25147.80	2514.78	0.00	**27662.58**	RUIDP 2017 58.37.1

Table: Operation and Maintenance Charges for Collection System

Cost in Rs.Lakh

Sr. No.	Description	Total cost	Maintenanance charges (0.5% of total cost)
	O and M Charges for Collection System for		
1	South Zone	3581.22	17.91
2	Central Zone	2541.40	12.71
3	North Zone	3361.31	16.81
	Total	**9483.93**	
	Annual expected expenditure (Rs. In Lakh)		**47.42**

Operation and Maintenance Cost - PS

Table 1: Manpower Cost in INR Lakhs **(Cost in Lakh INR)**

PS	Avg. Flow (MLD) 2033	Position	No.	Salary (Rs. /Month)	Watchman	Salary (Rs. /Month)	Total Cost (Rs.) monthly	Total Cost yearly
IPS A1	1.65	Operators	3	12,000	2	8,000	52000	6.24
IPS A2	2.49	Operators	3	12,000	2	8,000	52000	6.24
IPS A3	4.45	Operators	3	12,000	2	8,000	52000	6.24
IPS A4	4.05	Operators	3	12,000	2	8,000	52000	6.24
IPS A5	4.84	Operators	3	12,000	2	8,000	52000	6.24
MPS A6	16.65	Operators	3	12,000	2	8,000	52000	6.24
IPS A7	0.27	Operators	0	12,000	-	8,000	0	0.00
							Total	**37.44**

Table 2: Maintenance Cost in INR Lakhs

Sr. No.	PS		Breakup of Capital Cost				Maint. Cost for civil	Maint. Cost for Mech,	Maint. cost, Yearly
		Capital Cost	Civil	Mech.	Elect.	I&C			
							1.5%	3.0%	
1	IPS A1	194.76	93.42	23.58	39.27	38.49	1.40	3.04	4.44
2	IPS A2	212.06	100.66	28.07	42.00	41.33	1.51	3.34	4.85
3	IPS A3	248.17	118.83	39.32	41.76	48.25	1.78	3.88	5.66
4	IPS A4	229.67	111.18	30.29	39.95	48.25	1.67	3.55	5.22
5	IPS A5	237.44	118.05	30.48	40.66	48.25	1.77	3.58	5.35
6	MPS A6	365.59	164.80	97.48	50.75	52.56	2.47	6.02	8.50
7	IPS A7	172.70	24.99	16.48	93.82	37.41	0.37	4.43	4.81
	Total	**1660.39**	**731.93**	**265.71**	**348.22**	**314.53**	**10.98**	**27.85**	**38.83**

Table 3: Power requirement in Kwh per year

PS	Avg. Flow 2033 MLD	Ave. power (kWH/ Yr)	Power Unit Cost (Rs./Kwh)
IPS A1	1.65	49296	8.00
IPS A2	2.49	58980	8.00
IPS A3	4.45	97428	8.00
IPS A4	4.05	66192	8.00
IPS A5	4.84	110844	8.00
MPS A6	16.65	520584	8.00
IPS A7	0.27	5856	8.00

Table 4: Yearwise Manpower Cost in INR Lakhs

Sr. No.	PS	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	IPS A1	6.24	6.24	6.24	6.24	6.24	6.24	6.24
2	IPS A2	6.24	6.24	6.24	6.24	6.24	6.24	6.24
3	IPS A3	6.24	6.24	6.24	6.24	6.24	6.24	6.24
4	IPS A4	6.24	6.24	6.24	6.24	6.24	6.24	6.24
5	IPS A5	6.24	6.24	6.24	6.24	6.24	6.24	6.24
6	MPS A6	6.24	6.24	6.24	6.24	6.24	6.24	6.24
7	IPS A7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**37.44**	**37.44**	**37.44**	**37.44**	**37.44**	**37.44**	**37.44**

Table 5: Yearwise Maintenance Cost in INR Lakhs

Sr. No.	PS	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	IPS A1	4.44	4.44	4.44	4.44	4.44	4.44	4.44
2	IPS A2	4.85	4.85	4.85	4.85	4.85	4.85	4.85
3	IPS A3	5.66	5.66	5.66	5.66	5.66	5.66	5.66
4	IPS A4	5.22	5.22	5.22	5.22	5.22	5.22	5.22
5	IPS A5	5.35	5.35	5.35	5.35	5.35	5.35	5.35
6	MPS A6	8.50	8.50	8.50	8.50	8.50	8.50	8.50
7	IPS A7	4.81	4.81	4.81	4.81	4.81	4.81	4.81
	Total	**38.83**	**38.83**	**38.83**	**38.83**	**38.83**	**38.83**	**38.83**

Table 6: Yearwise Power Cost in INR Lakhs

Sr. No.	PS	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027	
1	IPS A1	2.37	2.56	2.56	2.77	2.77	2.96	2.96	
2	IPS A2	2.82	3.07	3.07	3.30	3.30	3.54	3.54	
3	IPS A3	4.68	5.06	5.06	5.46	5.46	5.85	5.85	
4	IPS A4	3.18	3.44	3.44	3.71	3.71	3.97	3.97	
5	IPS A5	5.31	5.77	5.77	6.21	6.21	6.65	6.65	
6	MPS A6	24.99	27.06	27.06	29.17	29.17	31.24	31.24	
7	IPS A7	0.28	0.31	0.31	0.33	0.33	0.35	0.35	
	Total	**43.63**	**47.27**	**47.27**	**50.95**	**50.95**	**54.56**	**54.56**	**349.19**

Table 7: Yearwise Manpower cost+ Maintenance cost+Power cost in INR Lakhs

Sr. No.	PS	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	IPS A1	13.05	13.24	13.24	13.45	13.45	13.64	13.64
2	IPS A2	13.91	14.16	14.16	14.39	14.39	14.63	14.63
3	IPS A3	16.58	16.96	16.96	17.36	17.36	17.75	17.75
4	IPS A4	14.64	14.90	14.90	15.17	15.17	15.43	15.43
5	IPS A5	16.90	17.36	17.36	17.80	17.80	18.24	18.24
6	MPS A6	39.73	41.80	41.80	43.91	43.91	45.98	45.98
7	IPS A7	5.09	5.12	5.12	5.14	5.14	5.16	5.16
	Total for 7 Years	**119.90**	**123.54**	**123.54**	**127.22**	**127.22**	**130.83**	**130.83**

Operation and Maintenance Charges for Pumping Main, Collection Chamber and Two way surge tank

Cost in Rs.Lakh

Sr. No.	Description	Total cost	Maintenanance charges (0.5% of total cost)
1	O and M Charges for PM, Collection Chamber and Two way surge tank	623.12	3.12
	Annual expected expenditure (Rs. In Lakh)		**3.12**

Table: Operation and Maintenance Cost STP

Table 1: Manpower Cost

Sl.	Personnel	Nos.	Salary Rs./month	Total Cost Rs./month
1	Plant Manager	1	30,000	30,000
2	Chemist	1	15,000	15,000
3	Plant Operators	4	12,000	48,000
4	Fitter	1	12,000	12,000
5	Electrician	1	12,000	12,000
6	Labour	4	8,000	32,000
7	Security Guard	4	8,000	32,000
8	Gardener	1	6,000	6,000
	Total Expenditure/month			1,87,000
	Total Cost per year (INR in Lakh)			**22.44**

Table 2: Maintenance Cost per year in Rs Lakhs

S. No.	STP 10.5 MLD	Capital Cost	Maintenance cost	
1	Civil Cost	620.00	1.5%	9.3
2	Mechanical, Electrical and Instrumentation	413.37	3.0%	12.4
3	Total	1033.37		**21.7**

Table 3: Power Cost

S. No.	Capacity (MLD)	Total Units in a day (Kwh)	Power Charges (Rs./Kwh)	Power Cost, Yearly (INR in Lakhs)
1	10.5	5972	8	**174.37**

Table 4: Chemical Consumption

S. No.	Capacity (MLD)	Alum Required Average (kg/d)	Chlorine Required Avg (kg/d)	Poly Electrolyte Required Average (kg/d)	Caustic Flakes (NaOH) Average (kg/d)	Total cost /year in lakhs
1	10.5	0	0	53	0	**3.87**
2	10.5		6.5			**9.49**
					Total	**13.36**

Table 5: Transportation and Disposal of Sludge Cost

S. No.	Capacity (MLD)	Dewatered Sludge (cum/d)	Total Sludge to be transported and disposed (cum/d)in a year	Total Lead (km)	Lead charges upto 8 km in Rs/cum	Total lead charges in Rs.Lakhs
1	10.5	13.70	5001	8	500.00	25.00

Table 6: Total O & M Cost of STP yearwise

Sr. No	Year	**Year 2021**	**Year 2022**	**Year 2023**	**Year 2024**	**Year 2025**	**Year 2026**	**Year 2027**
1	Manpower	22.44	22.44	22.44	22.44	22.44	22.44	22.44
2	Power Cost	174.37	174.37	174.37	174.37	174.37	174.37	174.37
3	Maintenance	21.70	21.70	21.70	21.70	21.70	21.70	21.70
4	Chemical and Sludge Disposal	38.36	38.36	38.36	38.36	38.36	38.36	38.36
	Total	**256.87**	**256.87**	**256.87**	**256.87**	**256.87**	**256.87**	**256.87**

I Operation and Maintenance Cost (in Rs. Lakhs): With Power

Sr. No.	O&M Cost in Lakh Rs.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
A.	**Collection System**							**Amount in Lakhs**
	South Zone	17.91	17.91	17.91	17.91	17.91	17.91	17.91
	Central Zone	12.71	12.71	12.71	12.71	12.71	12.71	12.71
	North Zone	16.81	16.81	16.81	16.81	16.81	16.81	16.81
	Sub total of 'A'	**47.42**	**47.42**	**47.42**	**47.42**	**47.42**	**47.42**	**47.42**
B1.	**Pumping Station**	119.90	123.54	123.54	127.22	127.22	130.83	130.83
	Sub total of 'B1	**119.90**	**123.54**	**123.54**	**127.22**	**127.22**	**130.83**	**130.83**
B2.	**Pumping Main,Collection Chamber, Two way surge tank**	3.12	3.12	3.12	3.12	3.12	3.12	3.12
	Sub total of 'B2'	**3.12**	**3.12**	**3.12**	**3.12**	**3.12**	**3.12**	**3.12**
C.	**STP (Chlorine+Polyelectrolyte+sludge disposal+ Manpower+ Electricity)**	256.87	256.87	256.87	256.87	256.87	256.87	256.87
	Sub total of 'C'	**256.87**	**256.87**	**256.87**	**256.87**	**256.87**	**256.87**	**256.87**
	Total O&M Cost (Total 'A to C')	**427.31**	**430.95**	**430.95**	**434.63**	**434.63**	**438.24**	**438.24**

II Phasing of the capital cost

D. Phasing of the work interms of percentage

Sr.	Components	Year 2018	Year 2019	Year 2020
1	Collection System	25%	45%	30%
2	Pumping Station	20%	55%	25%
3	Pumping Main,Collection Chamber, Two way surge tank		35%	65%
4	STP	20%	45%	35%
5	Sewer Cleaning Equipment			100%

E. Phasing of the work interms of Cost in Rs. Lakhs

Sr.	Components	Year 2018	Year 2019	Year 2020
1	**Collection System**			
	Central Zone	635.35	1143.63	762.42
	North Zone	840.33	1512.59	1008.39
	South Zone	895.30	1611.55	1074.36
	Sub total	**2370.98**	**4267.77**	**2845.18**
2	**Pumping Station**	**332.08**	**913.21**	**415.10**
3	**Pumping Main,Collection Chamber, Two way surge tank**		**218.09**	**405.03**
4	**STP**	**206.67**	**465.02**	**361.68**
5	**Sewer Cleaning Equipment**			**121.20**
	Sub Total	**2909.73**	**5864.09**	**4148.19**
	Total Capital Cost in lakhs		**12922.01**	

Operation and Maintenance Cost (in Rs. Lakhs): Without Power

Sr. No	O&M Cost in Lakh Rs.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
A.	Collection System							
	Central Zone	12.71	12.71	12.71	12.71	12.71	12.71	12.71
	North Zone	16.81	16.81	16.81	16.81	16.81	16.81	16.81
	South Zone	17.91	17.91	17.91	17.91	17.91	17.91	17.91
	Sub total of 'A'	**47.42**	**47.42**	**47.42**	**47.42**	**47.42**	**47.42**	**47.42**
B1.	Pumping Station	76.27	76.27	76.27	76.27	76.27	76.27	76.27
	Sub total of 'B1'	**76.27**	**76.27**	**76.27**	**76.27**	**76.27**	**76.27**	**76.27**
B2.	Pumping Main,Collection Chamber, Two way surge tank	3.12	3.12	3.12	3.12	3.12	3.12	3.12
	Sub total of 'B2'	**3.12**	**3.12**	**3.12**	**3.12**	**3.12**	**3.12**	**3.12**
C.	STP (Chlorine+Polyelectrolyte+sludge disposal+ Manpower+ Electricity)	82.50	82.50	82.50	82.50	82.50	82.50	82.50
	Sub total of 'C'	**82.50**	**82.50**	**82.50**	**82.50**	**82.50**	**82.50**	**82.50**
	Total 'A to C'	**209.31**	**209.31**	**209.31**	**209.31**	**209.31**	**209.31**	**209.31**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Estimate - Mechanical Works for IPS A1

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	**Submersible Sewage pump**				
a	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 205.2 cum/hr. (57 LPS) at the total head of 23 m (Head Range: 20 m-26 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz's, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For 3 DWF)**	No	1	341100	341100
	RUIDP -2017-18.1.25 page 95				
b	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 136.8 cum/hr (38 LPS) at the total head of 23 m (Head Range: 20 m-26 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For 2 DWF)**	no	1	308600	308600
	RUIDP -2017-18.1.19 page 95				
C	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 68.4 cum/hr (19 LPS) at the total head of 23 m (Head Range: 20 m-26 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For 1 DWF)**	no	1	224000	224000
	RUIDP -2017-18.1.13 page 95				
2	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
a	Size:200 mm for 3 DWF	No	1	5650	5650
b	Size:150 mm for 2 DWF	No	1	3750	3750
c	Size:100 mm for 1 DWF	No	1	2350	2350
d	Size: 250 mm for pumping main	No	2	7900	15800
	RUIDP 2017 19. 40.5,4,6 page 136				
3	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
a	Size:200 mm for 3 DWF	No	1	40100	40100
b	Size:150 mm for 2 DWF	No	1	17900	17900
c	Size:100 mm for 1 DWF	No	1	10900	10900
d	Size: 250 mm for pumping main	No	1	49900	49900
	RUIDP 2017 19.34.4,5,6 page 132				
4	**Sluice Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:200 mm for 3 DWF	No	1	27500	27500
b	Size:150 mm for 2 DWF	No	1	16800	16800
c	Size:100 mm for 1 DWF	No	1	11200	11200
d	Size: 250 mm for pumping main	No	1	38700	38700
	RUIDP 2017 19.20.4,5,6 page 120				
5	**D I Flanged Pipe**				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welelded) centrifugally (spun) Ductile Iron ISI marked K - 9 grade pipes as per IS: 8329-2000 amended upto date, (including jointing and jointing material) complete including all material , labour, hydraulic testing, commisioning as per technical specifications and as per direction of Engineer				
a	Size:200 mm for 3 DWF	No	5	3960	19800
b	Size:150 mm for 2 DWF	No	5	3030	15150
c	Size:100 mm for 1 DWF	No	5	2310	11550
d	Size: 250 mm for pumping main	No	5	5110	25550
	RUIDP 2017 19.10.2,3,4 page 116				
6	**D I Flanged specials**				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depths / S&S standard specials with rubber ring (EPDM / SBR) joints as per IS : 1582*1985 K 9 such as tees , bends , tapers , caps etc within trenches in DI pipe line complete as per technical specification & as per direction of Engineer				
	up to 300 mm dia	kg	910	118	107380
	RUIDP 2017 19.11.1.1 page 117				
7	**Puddle pipe**				
	Providing fixing in position CI puddle collar (approx 1 m length) in side the wall including all material labour as per technical specification & as per direction of engineer				
a	Size:200 mm for 3 DWF	No	1	8860	8860
b	Size:150 mm for 2 DWF	No	1	6190	6190
c	Size:100 mm for 1 DWF	No	1	4190	4190
d	Size: 250 mm for pumping main	No	1	11500	11500
	RUIDP 2017 19.47.4,5,6 page 138				
8	**CC support saddle below valve , pipe**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20	Cum	4	4580	18320
	RUIDP 2017 13.4.5 page 39				
9	**EOT Crane**				
	Supply installation of & commissioning of electrically operated Travelling crane (EOT). Main girder & end carriage fabricated from rolled steel section. Gear box for all motions . electromagnetic friction disc type brake, all safety limit switches . LT wheel EN 9, double flanged 4 no with squirrel cage motor of adequate rating (kW) , duly painted , mechanical cleaning and one coat of primer & two coat of synthetic paint and as per the direction of engineer crane suitable for 2 MT capacity span 10 M & lift up to 14 m ,	Set	1	515760	515760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
10	**Sluice Gate**				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , fright , loading , unloading , fitting in position including sluice gates are upward opening wall thimble mounted suitable for isolating the flow of sewer into out of the opening in the wall . It consist gate frame , wall thimble . gate slide . shutter , seating sealing faces . The gate will be provided with pads on slide , top & bottom to mount the wages . The gate will be designed in such a manner so that it can be operated at 2 m head . Gate frame & shutter of CI grade IS 210 FG 260 , head stock assembly bolts SS ASTM A 276 type 316 , stem , operating nut SS ASTM A 276 type 316 . Duly tested for tensile strength . tested for overall dimensions as per approved GA drawing in all respect as per specification and direction of Engineer for flowing peak flow and depth up to 8 m channel depth for 4.64 MLD	set	2	110600	221200
	RUIDP -2017-18.7.1 + 18.7.22 added for additional 5m depth page 100 & 101				
11	**Manual Coarse Bar Screen**				
	Supply , fabrication, fixing & testing of stainless steel (SS- 316) Mannual Coarse Bar Screen with flat bar 50 x 10 mm , spacing of bars at 50 mm suitable in mounting in channel of specified size with inclination not more than 45 degree and a movable covered containerof 1 cim capacity complete in all respect as per techanical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 4.64 MLD	set	2	118500	237000
	RUIDP 2017 18.3.2 + 18.3.20 added for additional 5m depth page 98				
12	**Lifting arrangement at screen chamber**				
a	Supply installation of & commissioning of monorail single girder crane suitable for lift up to 9 m , pulley block & travelling trolley cost of girder complete in all respect as per direction of engineer 1 MT capacity	No's	1	24700	24700
	RUIDP -2017-18.10.1 page 102				
	Debries collection bucket				
b	Fabricating, Supply, Installation, Testing and commissioning of Debries collection bucket, fabricating out of 4mm thick MS plate with ISA 25 heavy duty angle frame, including MS sling, ring etc of capacity 0.4 cum, including welding, cutting, painting with one coat of primer and three coats of enamel paint.	kg	150	112	16740
	RUIDP 29.16.1 added 20% for 2017 DSR				
				Grand Total of Mechanical Estimate in Rs.	2358140
				Say	**23,58,200**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Estimate - Mechanical Works for IPS A2

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	**Submersible Sewage pump**				
a	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 122.4 cum/hr. (34 LPS) at the total head of 18 m (Head Range: 15 m-21 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz's, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For peak/ average pumps)**	No	4	245700	982800
	RUIDP -2017-18.1.18 page 95				
b	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 54 cum/hr (15 LPS) at the total head of 10 m (Head Range: 7 m-13 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For half average pumps)**	no	2	131500	263000
	RUIDP -2017-18.1.4 page 95				
2	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
a	Size:150 mm for peak / average pumps	No	4	3750	15000
b	Size:100 mm for half average pumps	No	2	2350	4700
c	Size: 250 mm for pumping main	No	2	7900	15800
	RUIDP 2017 19. 40.2,4,6+ 10 % added for class PN 1.6 page 135 & 136				
3	**Check Valve (Non Return Valve)**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1.6 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
a	Size:150 mm for peak / average pumps	No	4	17900	71600
b	Size:100 mm for half average pumps	No	2	10900	21800
c	Size: 250 mm for pumping main	No	1	49900	49900
	RUIDP 2017 19.34.4,2,6 page 132				
4	**Sluice Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:150 mm for peak / average pumps	No	4	16800	67200
b	Size:100 mm for half average pumps	No	2	11200	22400
c	Size: 250 mm for pumping main	No	1	38700	38700
	RUIDP 2017 19.20.2,4,6 page 120				
5	**D I Flanged Pipe**				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welelded) centrifugally (spun) Ductile Iron ISI marked K - 9 grade pipes as per IS: 8329-2000 amended upto date, (including jointing and jointing material) complete including all material , labour, hydraulic testing, commisioning as per technical specifications and as per direction of Engineer				
a	Size:150 mm for peak / average pumps	No	4	3030	12120
b	Size:100 mm for half average pumps	No	2	2310	4620
c	Size: 250 mm for pumping main	No	1	5110	5110
	RUIDP 2017 19.10.1,2,4 page 116				
6	**D I Flanged specials**				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depths / S&S standard specials with rubber ring (EPDM / SBR) joints as per IS : 1582*1985 K 9 such as tees , bends , tapers , caps etc within trenches in DI pipe line complete as per technical specification & as per direction of Engineer				
	up to 300 mm dia	kg	910	118	107380
	RUIDP 2017 19.11.1.1,2 page 117				
7	**Puddle pipe**				
	Providing fixing in position CI puddle collar (approx 1 m length) in side the wall including all material labour as per technical specification & as per direction of engineer				
a	Size:150 mm for peak / average pumps	No	4	6190	24760
b	Size:100 mm for half average pumps	No	2	4190	8380
c	Size: 250 mm for pumping main	No	1	11500	11500
	RUIDP 2017 19.47.2,4,6 page 138				
8	**CC support saddle below valve , pipe**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20	Cum	4	4580	18320

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	RUIDP 2017 13.4.5 page 39				
9	**EOT Crane**				
	Supply installation of & commissioning of electrically operated Travelling crane (EOT). Main girder & end carriage fabricated from rolled steel section. Gear box for all motions . electromagnetic friction disc type brake, all safety limit switches . LT wheel EN 9, double flanged 4 no with squirrel cage motor of adequate rating (kW) , duly painted , mechanical cleaning and one coat of primer & two coat of synthetic paint and as per the direction of engineer crane suitable for 2 MT capacity span 10 M & lift up to 14 m ,	Set	1	515760	515760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
10	**Sluice Gate**				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , fright , loading , unloading , fitting in position including sluice gates are upward opening wall thimble mounted suitable for isolating the flow of sewer into out of the opening in the wall . It consist gate frame , wall thimble . gate slide . shutter , seating sealing faces . The gate will be provided with pads on slide , top & bottom to mount the wages . The gate will be designed in such a manner so that it can be operated at 2 m head . Gate frame & shutter of CI grade IS 210 FG 260 , head stock assembly bolts SS ASTM A 276 type 316 , stem , operating nut SS ASTM A 276 type 316 . Duly tested for tensile strength . tested for overall dimensions as per approved GA drawing in all respect as per specification and direction of Engineer for flowing peak flow and depth up to 8 m channel depth for 5.88 MLD	set	2	133900	267800
	RUIDP -2017-18.7.2 + 18.7.22 added for additional 5m depth page 100 & 101				
11	**Manual Coarse Bar Screen**				
	Supply , fabrication, fixing & testing of stainless steel (SS- 316) Mannual Coarse Bar Screen with flat bar 50 x 10 mm , spacing of bars at 50 mm suitable in mounting in channel of specified size with inclination not more than 45 degree and a movable covered containerof 1 cim capacity complete in all respect as per techanical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 5.88 MLD	set	2	118500	237000
	RUIDP 2017 18.3.3 + 18.3.20 added for additional 5m depth page 98				
12	**Lifting arrangement at screen chamber**				
a	Supply installation of & commissioning of monorail single girder crane suitable for lift up to 9 m , pulley block & travelling trolley cost of girder complete in all respect as per direction of engineer 1 MT capacity	No's	1	24700	24700
	RUIDP -2017-18.10.1 page 102				
	Debries collection bucket				
b	Fabricating, Supply, Installation, Testing and commissioning of Debries collection bucket, fabricating out of 4mm thick MS plate with ISA 25 heavy duty angle frame, including MS sling, ring etc of capacity 0.4 cum, including welding, cutting, painting with one coat of primer and three coats of enamel paint.	kg	150	112	16740
	RUIDP 29.16.1 added 20% for 2017 DSR				
				Grand Total of Mechanical Estimate in Rs.	**2807090**
				Say	**28,07,100**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Estimate - Mechanical Works for IPS A3

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	**Submersible Sewage pump**				
a	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 111.6 cum/hr. (31 LPS) at the total head of 15 m (Head Range: 12 m-18 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz's, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For peak/ average pumps)**	No	6	245700	1474200
	RUIDP -2017-18.1.17 page 95				
b	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 111.6 cum/hr (31 LPS) at the total head of 12 m (Head Range: 9 m-15 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For half average pumps)**	no	2	245700	491400
	RUIDP -2017-18.1.17 page 95				
2	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
a	Size:150 mm for peak / average pumps	No	6	3750	22500
b	Size:150 mm for half average pumps	No	2	3750	7500
c	Size: 350 mm for pumping main	No	2	12200	24400
	RUIDP 2017 19. 40.4,8+ 10 % added for class PN 1.6 page 135 & 136				
3	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
a	Size:150 mm for peak / average pumps	No	6	17900	107400
b	Size:150 mm for half average pumps	No	2	17900	35800
c	Size: 350 mm for pumping main	No	1	101400	101400
	RUIDP 2017 19.34.1.4,8 page 132				
4	**Sluice Valve**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:150 mm for peak / average pumps	No	6	16800	100800
b	Size:150 mm for half average pumps	No	2	16800	33600
	RUIDP 2017 19.20.1.2,4, page 120				
	Butterfly valve				
	Providing, lowering, laying, aligning, fixing in position D.I. D/F manually operated long body butterfly valves PN-1.0 class of following dia complete (including jointing and jointing material) including all material, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	Size: 350 mm for pumping main	No	1	63800	63800
	RUIDP 2017 19.25.1.8 page 126				
5	**D I Flanged Pipe**				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welelded) centrifugally (spun) Ductile Iron ISI marked K - 9 grade pipes as per IS: 8329-2000 amended upto date, (including jointing and jointing material) complete including all material , labour, hydraulic testing, commisioning as per technical specifications and as per direction of Engineer				
a	Size:150 mm for peak / average pumps	No	6	3030	18180
b	Size:150 mm for half average pumps	No	2	3030	6060
c	Size: 350 mm for pumping main	No	1	8560	8560
	RUIDP 2017 19.10.2,6 page 116				
6	**D I Flanged specials**				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depths / S&S standard specials with rubber ring (EPDM / SBR) joints as per IS : 1582*1985 K 9 such as tees , bends , tapers , caps etc within trenches in DI pipe line complete as per technical specification & as per direction of Engineer				
	up to 300 mm dia	kg	910	118	107380
	Above 300 mm dia and upto 600 mm dia	kg	910	124	112840
	RUIDP 2017 19.11.1.1,2 page 117				
7	**Puddle pipe**				
	Providing fixing in position CI puddle collar (approx 1 m length) in side the wall including all material labour as per technical specification & as per direction of engineer				
a	Size:150 mm for peak / average pumps	No	6	6190	37140
b	Size:150 mm for half average pumps	No	2	6190	12380
c	Size: 350 mm for pumping main	No	1	19100	19100
	RUIDP 2017 19.47.4,6 page 138				
8	**CC support saddle below valve , pipe**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20	Cum	4	4580	18320
	RUIDP 2017 13.4.5 page 39				
9	**EOT Crane**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Supply installation of & commissioning of electrically operated Travelling crane (EOT). Main girder & end carriage fabricated from rolled steel section. Gear box for all motions . electromagnetic friction disc type brake, all safety limit switches . LT wheel EN 9, double flanged 4 no with squirrel cage motor of adequate rating (kW) , duly painted , mechanical cleaning and one coat of primer & two coat of synthetic paint and as per the direction of engineer crane suitable for 2 MT capacity span 10 M & lift up to 14 m ,	Set	1	515760	515760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
10	**Sluice Gate**				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , fright , loading , unloading , fitting in position including sluice gates are upward opening wall thimble mounted suitable for isolating the flow of sewer into out of the opening in the wall . It consist gate frame , wall thimble . gate slide . shutter , seating sealing faces . The gate will be provided with pads on slide , top & bottom to mount the wages . The gate will be designed in such a manner so that it can be operated at 2 m head . Gate frame & shutter of CI grade IS 210 FG 260 , head stock assembly bolts SS ASTM A 276 type 316 , stem , operating nut SS ASTM A 276 type 316 . Duly tested for tensile strength . tested for overall dimensions as per approved GA drawing in all respect as per specification and direction of Engineer for flowing peak flow and depth up to 8 m channel depth for 10.51 MLD	set	2	163600	327200
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 100 & 101				
11	**Manual Coarse Bar Screen**				
	Supply , fabrication, fixing & testing of stainless steel (SS- 316) Mannual Coarse Bar Screen with flat bar 50 x 10 mm , spacing of bars at 50 mm suitable in mounting in channel of specified size with inclination not more than 45 degree and a movable covered containerof 1 cim capacity complete in all respect as per techanical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 10.71 MLD	set	2	122600	245200
	RUIDP 2017 18.3.4 + 18.3.20 added for additional 5m depth page 98				
12	**Lifting arrangement at screen chamber**				
a	Supply installation of & commissioning of monorail single girder crane suitable for lift up to 9 m , pulley block & travelling trolley cost of girder complete in all respect as per direction of engineer 1 MT capacity	No's	1	24700	24700
	RUIDP -2017-18.10.1 page 102				
	Debries collection bucket				
b	Fabricating, Supply, Installation, Testing and commissioning of Debries collection bucket, fabricating out of 4mm thick MS plate with ISA 25 heavy duty angle frame, including MS sling, ring etc of capacity 0.4 cum, including welding, cutting, painting with one coat of primer and three coats of enamel paint.	kg	150	112	16740
	RUIDP 29.16.1 added 20% for 2017 DSR				
				Grand Total of Mechanical Estimate in Rs.	39,32,360
				Say	**39,32,400**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Estimate - Mechanical Works for IPS A4

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	**Submersible Sewage pump**				
a	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 100.8 cum/hr. (28 LPS) at the total head of 12 m (Head Range: 9 m-15 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz's, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For peak/ average pumps)**	No	6	135100	810600
	RUIDP -2017-18.1.11 page 95				
b	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 100.8 cum/hr (28 LPS) at the total head of 9 m (Head Range: 6 m-12 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For half average pumps)**	No	2	135100	270200
	RUIDP -2017-18.1.11 page 95				
2	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
a	Size:150 mm for peak / average pumps	No	6	3750	22500
b	Size:150 mm for half average pumps	No	2	3750	7500
c	Size: 350 mm for pumping main	No	2	12200	24400
	RUIDP 2017 19. 40.4, Page 136				
3	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
a	Size:150 mm for peak / average pumps	No	6	17900	107400
b	Size:150 mm for half average pumps	No	2	17900	35800
c	Size: 350 mm for pumping main	No	1	101400	101400
	RUIDP 2017 19.34.1.4,8 page 132				
4	**Sluice Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:150 mm for peak / average pumps	No	6	16800	100800
b	Size:150 mm for half average pumps	No	2	16800	33600
	RUIDP 2017 19.20.1.4, page 120				
4.1	**Butterfly Valve**				
	Providing, lowering, laying, aligning, fixing in position D.I. D/F manually operated long body butterfly valves PN-1.0 class of following dia complete (including jointing and jointing material) including all material, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	Size: 350 mm for pumping main	No	1	63800	63800
	RUIDP 2017 19.25.1.8, page 126				
5	**D I Flanged Pipe**				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welelded) centrifugally (spun) Ductile Iron ISI marked K - 9 grade pipes as per IS: 8329-2000 amended upto date, (including jointing and jointing material) complete including all material , labour, hydraulic testing, commisioning as per technical specifications and as per direction of Engineer				
a	Size:150 mm for peak / average pumps	No	6	3030	18180
b	Size:150 mm for half average pumps	No	2	3030	6060
c	Size: 350 mm for pumping main	No	1	8560	8560
	RUIDP 2017 19.10.2,6 page 116				
6	**D I Flanged specials**				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depths / S&S standard specials with rubber ring (EPDM / SBR) joints as per IS : 1582*1985 K 9 such as tees , bends , tapers , caps etc within trenches in DI pipe line complete as per technical specification & as per direction of Engineer				
	up to 300 mm dia	kg	910	118	107380
	Above 300 mm dia and upto 600 mm dia	kg	910	124	112840
	RUIDP 2017 19.11.1.1,2 page 117				
7	**Puddle pipe**				
	Providing fixing in position CI puddle collar (approx 1 m length) in side the wall including all material labour as per technical specification & as per direction of engineer				
a	Size:150 mm for peak / average pumps	No	6	6190	37140
b	Size:150 mm for half average pumps	No	2	6190	12380
c	Size: 350 mm for pumping main	No	1	19100	19100
	RUIDP 2017 19.47.4,8 page 138				
8	**CC support saddle below valve , pipe**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20	Cum	4	4580	18320
	RUIDP 2017 13.4.5 page 39				
9	**EOT Crane**				
	Supply installation of & commissioning of electrically operated Travelling crane (EOT). Main girder & end carriage fabricated from rolled steel section. Gear box for all motions . electromagnetic friction disc type brake, all safety limit switches . LT wheel EN 9, double flanged 4 no with squirrel cage motor of adequate rating (kW) , duly painted , mechanical cleaning and one coat of primer & two coat of synthetic paint and as per the direction of engineer crane suitable for 2 MT capacity span 10 M & lift up to 14 m ,	Set	1	515760	515760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
10	**Sluice Gate**				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , fright , loading , unloading , fitting in position including sluice gates are upward opening wall thimble mounted suitable for isolating the flow of sewer into out of the opening in the wall . It consist gate frame , wall thimble . gate slide . shutter , seating sealing faces . The gate will be provided with pads on slide , top & bottom to mount the wages . The gate will be designed in such a manner so that it can be operated at 2 m head . Gate frame & shutter of CI grade IS 210 FG 260 , head stock assembly bolts SS ASTM A 276 type 316 , stem , operating nut SS ASTM A 276 type 316 . Duly tested for tensile strength . tested for overall dimensions as per approved GA drawing in all respect as per specification and direction of Engineer for flowing peak flow and depth up to 8 m channel depth for 9.67 MLD	set	2	158600	317200
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 100 & 101				
11	**Manual Coarse Bar Screen**				
	Supply , fabrication, fixing & testing of stainless steel (SS- 316) Mannual Coarse Bar Screen with flat bar 50 x 10 mm , spacing of bars at 50 mm suitable in mounting in channel of specified size with inclination not more than 45 degree and a movable covered containerof 1 cim capacity complete in all respect as per techanical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 9.57 MLD	set	2	118500	237000
	RUIDP 2017 18.3.4 + 18.3.20 added for additional 5m depth page 98				
12	**Lifting arrangement at screen chamber**				
a	Supply installation of & commissioning of monorail single girder crane suitable for lift up to 9 m , pulley block & travelling trolley cost of girder complete in all respect as per direction of engineer 1 MT capacity	No's	1	24700	24700
	RUIDP -2017-18.10.1 page 102				
	Debries collection bucket				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
b	Fabricating, Supply, Installation, Testing and commissioning of Debries collection bucket, fabricating out of 4mm thick MS plate with ISA 25 heavy duty angle frame, including MS sling, ring etc of capacity 0.4 cum, including welding, cutting, painting with one coat of primer and three coats of enamel paint.	kg	150	112	16740
	RUIDP 29.16.1 added 20% for 2017 DSR				
				Grand Total of Mechanical Estimate in Rs.	**3029360**
				Say	**30,29,400**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Estimate - Mechanical Works for IPS A5

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	**Submersible Sewage pump**				
a	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 108 cum/hr. (30 LPS) at the total head of 15 m (Head Range: 12 m-18 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz's, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For peak/ average pumps)**	No	6	135100	810600
	RUIDP -2017-18.1.11 page 95				
b	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 108 cum/hr (30 LPS) at the total head of 13 m (Head Range: 10 m-16 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For half average pumps)**	no	2	135100	270200
	RUIDP -2017-18.1.11 page 95				
2	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
a	Size:150 mm for peak / average pumps	No	6	3750	22500
b	Size:150 mm for half average pumps	No	2	3750	7500
c	Size: 350 mm for pumping main	No	2	12200	24400
	RUIDP 2017 19. 40.4,8, Page136				
3	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
a	Size:150 mm for peak / average pumps	No	6	17900	107400
b	Size:150 mm for half average pumps	No	2	17900	35800
c	Size: 350 mm for pumping main	No	1	101400	101400
	RUIDP 2017 19.34.1.4,8 page 132				
4	**Sluice Valve**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:150 mm for peak / average pumps	No	6	16800	100800
b	Size:150 mm for half average pumps	No	2	16800	33600
	RUIDP 2017 19.20.1.4, page 120				
4.1	**Butterfly Valve**				
	Providing, lowering, laying, aligning, fixing in position D.I. D/F manually operated long body butterfly valves PN-1.0 class of following dia complete (including jointing and jointing material) including all material, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	Size: 350 mm for pumping main	No	1	63800	63800
	RUIDP 2017 19.25.1.8 page 126				
5	**D I Flanged Pipe**				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welelded) centrifugally (spun) Ductile Iron ISI marked K - 9 grade pipes as per IS: 8329-2000 amended upto date, (including jointing and jointing material) complete including all material , labour, hydraulic testing, commisioning as per technical specifications and as per direction of Engineer				
a	Size:150 mm for peak / average pumps	No	6	3030	18180
b	Size:150 mm for half average pumps	No	2	3030	6060
c	Size: 350 mm for pumping main	No	1	8560	8560
	RUIDP 2017 19.10.2,6 page 116				
6	**D I Flanged specials**				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depths / S&S standard specials with rubber ring (EPDM / SBR) joints as per IS : 1582*1985 K 9 such as tees , bends , tapers , caps etc within trenches in DI pipe line complete as per technical specification & as per direction of Engineer				
	up to 300 mm dia	kg	910	118	107380
	Above 300 mm dia and upto 600 mm dia	kg	910	124	112840
	RUIDP 2017 19.11.1.1,2 page 117				
7	**Puddle pipe**				
	Providing fixing in position CI puddle collar (approx 1 m length) in side the wall including all material labour as per technical specification & as per direction of engineer				
a	Size:150 mm for peak / average pumps	No	6	6190	37140
b	Size:150 mm for half average pumps	No	2	6190	12380
c	Size: 350 mm for pumping main	No	1	19100	19100
	RUIDP 2017 19.47.4,8 page 138				
8	**CC support saddle below valve , pipe**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20	Cum	4	4580	18320
	RUIDP 2017 13.4.5 page 39				
9	**EOT Crane**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Supply installation of & commissioning of electrically operated Travelling crane (EOT). Main girder & end carriage fabricated from rolled steel section. Gear box for all motions . electromagnetic friction disc type brake, all safety limit switches . LT wheel EN 9, double flanged 4 no with squirrel cage motor of adequate rating (kW) , duly painted , mechanical cleaning and one coat of primer & two coat of synthetic paint and as per the direction of engineer crane suitable for 2 MT capacity span 10 M & lift up to 14 m ,	Set	1	515760	515760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
10	**Sluice Gate**				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , fright , loading , unloading , fitting in position including sluice gates are upward opening wall thimble mounted suitable for isolating the flow of sewer into out of the opening in the wall . It consist gate frame , wall thimble . gate slide . shutter , seating sealing faces . The gate will be provided with pads on slide , top & bottom to mount the wages . The gate will be designed in such a manner so that it can be operated at 2 m head . Gate frame & shutter of CI grade IS 210 FG 260 , head stock assembly bolts SS ASTM A 276 type 316 , stem , operating nut SS ASTM A 276 type 316 . Duly tested for tensile strength . tested for overall dimensions as per approved GA drawing in all respect as per specification and direction of Engineer for flowing peak flow and depth up to 8 m channel depth for 10.32 MLD	set	2	163600	327200
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 100 & 101				
11	**Manual Coarse Bar Screen**				
	Supply , fabrication, fixing & testing of stainless steel (SS- 316) Mannual Coarse Bar Screen with flat bar 50 x 10 mm , spacing of bars at 50 mm suitable in mounting in channel of specified size with inclination not more than 45 degree and a movable covered containerof 1 cim capacity complete in all respect as per techanical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 10.37 MLD	set	2	122600	245200
	RUIDP 2017 18.3.4 + 18.3.20 added for additional 5m depth page 98				
12	**Lifting arrangement at screen chamber**				
a	Supply installation of & commissioning of monorail single girder crane suitable for lift up to 9 m , pulley block & travelling trolley cost of girder complete in all respect as per direction of engineer 1 MT capacity	No's	1	24700	24700
	RUIDP -2017-18.10.1 page 102				
	Debries collection bucket				
b	Fabricating, Supply, Installation, Testing and commissioning of Debries collection bucket, fabricating out of 4mm thick MS plate with ISA 25 heavy duty angle frame, including MS sling, ring etc of capacity 0.4 cum, including welding, cutting, painting with one coat of primer and three coats of enamel paint.	kg	150	112	16740
	RUIDP 29.16.1 added 20% for 2017 DSR				
				Grand Total of Mechanical Estimate in Rs.	**3047560**
				Say	**30,47,600**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Estimate - Mechanical Works for MPS A6

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	**Submersible Sewage pump**				
a	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 352.8 cum/hr. (98 LPS) at the total head of 21 m (Head Range: 18 m-24 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz's, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For peak/ average pumps)**	No	6	571600	3429600
	RUIDP -2017-18.1.37 page 96				
b	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 352.8 cum/hr (98 LPS) at the total head of 17 m (Head Range: 14 m-20 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For half average pumps)**	no	2	341100	682200
	RUIDP -2017-18.1.36 page 96				
2	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				
a	Size:250 mm for peak / average pumps	No	6	7900	47400
b	Size:250 mm for half average pumps	No	2	7900	15800
c	Size: 600 mm for pumping main	No	2	32000	64000
	RUIDP 2017 19. 40.6,12, 136				
3	**Check Valve (Non Return Valve)**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
a	Size:250 mm for peak / average pumps	No	6	49900	299400
b	Size:250 mm for half average pumps	No	2	49900	99800
c	Size: 600 mm for pumping main	No	1	254900	254900
	RUIDP 2017 19.34.1.4,8 page 132				
4	**Sluice Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:250 mm for peak / average pumps	No	6	38700	232200
b	Size:250 mm for half average pumps	No	2	38700	77400
	RUIDP 2017 19.20.1.6, page 120				
5	**Butterfly Valve**				
	Providing, lowering, laying, aligning, fixing in position D.I. D/F manually operated long body butterfly valves PN-1.0 class of following dia complete (including jointing and jointing material) including all material, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	Size: 600 mm for pumping main	No	1	173900	173900
	RUIDP 2017 19.25.1.12, page 126				
6	**Air Valve**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS: 14845 of following dia lincluding jointing and jointing material), including all material, laour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	150MM	No.	1	35100	35100
	RUIDP 17-18 Item No. 19.31.1.4 Page No. 131				
7	**D I Flanged Pipe**				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welelded) centrifugally (spun) Ductile Iron ISI marked K - 9 grade pipes as per IS: 8329-2000 amended upto date, (including jointing and jointing material) complete including all material , labour, hydraulic testing, commisioning as per technical specifications and as per direction of Engineer				
a	Size:250 mm for peak / average pumps	No	6	5110	30660
b	Size:250 mm for half average pumps	No	2	5110	10220
c	Size: 600 mm for pumping main	No	1	19600	19600
	RUIDP 2017 19.10.4,10 page 116				
8	**D I Flanged specials**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing, lowering, laying aligning fixing in position, jointing at all level / depths / S&S standard specials with rubber ring (EPDM / SBR) joints as per IS : 1582*1985 K 9 such as tees , bends , tapers , caps etc within trenches in DI pipe line complete as per technical specification & as per direction of Engineer				
	up to 300 mm dia	kg	910	118	107380
	Above 300 mm dia and upto 600 mm dia	kg	910	124	112840
	RUIDP 2017 19.11.1.1,2 page 117				
9	**Puddle pipe**				
	Providing fixing in position CI puddle collar (approx 1 m length) in side the wall including all material labour as per technical specification & as per direction of engineer				
a	Size:250 mm for peak / average pumps	No	6	11500	69000
b	Size:250 mm for half average pumps	No	2	11500	23000
	RUIDP 2017 19.47.5 page 138				
	Size: 600 mm for pumping main	No	1	48900	48900
	RUIDP 2017 19.47.5,6 page 138				
10	**CC support saddle below valve , pipe**				
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20	Cum	4	4580	18320
	RUIDP 2017 13.4.5 page 39				
11	**EOT Crane**				
	Supply installation of & commissioning of electrically operated Travelling crane (EOT). Main girder & end carriage fabricated from rolled steel section. Gear box for all motions . electromagnetic friction disc type brake, all safety limit switches . LT wheel EN 9, double flanged 4 no with squirrel cage motor of adequate rating (kW) , duly painted , mechanical cleaning and one coat of primer & two coat of synthetic paint and as per the direction of engineer crane suitable for 2 MT capacity span 10 M & lift up to 14 m ,	Set	1	515760	515760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
12	**Sluice Gate**				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , fright , loading , unloading , fitting in position including sluice gates are upward opening wall thimble mounted suitable for isolating the flow of sewer into out of the opening in the wall . It consist gate frame , wall thimble . gate slide . shutter , seating sealing faces . The gate will be provided with pads on slide , top & bottom to mount the wages . The gate will be designed in such a manner so that it can be operated at 2 m head . Gate frame & shutter of CI grade IS 210 FG 260 , head stock assembly bolts SS ASTM A 276 type 316 , stem , operating nut SS ASTM A 276 type 316 . Duly tested for tensile strength . tested for overall dimensions as per approved GA drawing in all respect as per specification and direction of Engineer for flowing peak flow and depth up to 8 m channel depth for 33.92 MLD	set	2	236600	473200
	RUIDP -2017-18.7.8 + 18.7.22 added for additional 5m depth page 100 & 101				
13	**Multirake coarse bar Screen**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing and installing Multi-rake coarse bar screens made up of stainless-steel along with embedded parts including fabrication, transport, erection and testing as per detail design and drawing with all lead and lifts etc. complete as per specifications and as per direction of Engineer-in-charge. , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 33.87 MLD	set	2	1432500	2865000
	RUIDP 2017 18.3.8 + 18.3.20 added for additional 5m depth page 98				
14	**Lifting arrangement at screen chamber**				
a	Supply installation of & commissioning of monorail single girder crane suitable for lift up to 9 m , pulley block & travelling trolley cost of girder complete in all respect as per direction of engineer 1 MT capacity	No's	1	24700	24700
	RUIDP -2017-18.10.1 page 102				
	Debries collection bucket				
b	Fabricating, Supply, Installation, Testing and commissioning of Debries collection bucket, fabricating out of 4mm thick MS plate with ISA 25 heavy duty angle frame, including MS sling, ring etc of capacity 0.4 cum, including welding, cutting, painting with one coat of primer and three coats of enamel paint.	kg	150	112	16740
	RUIDP 29.16.1 added 20% for 2017 DSR				
				Grand Total of Mechanical Estimate in Rs.	**9747020**
				Say	**97,48,000**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
Cost Estimate - Mechanical Works for IPS A7

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	**Submersible Sewage pump**				
a	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 32.4 cum/hr. (9 LPS) at the total head of 13 m (Head Range: 10 m -16 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz's, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For 3 DWF)**	No	1	121900	121900
	RUIDP -2017-18.1.2 page 95				
b	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 21.6 cum/hr (6 LPS) at the total head of 13 m (Head Range: 10m - 16 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For 2 DWF)**	no	1	121900	121900
	RUIDP -2017-18.1.2 page 95				
C	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing, installation, testing and commissioning of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain,,10M, 50mm MS galvanized Guide pipe, Duck FootBend, with Guide wire SS 304 etc. complete with all respect as per specification **discharge 10.8 cum/hr (3 LPS) at the total head of 13 m (Head Range:10 m-16 m), 1440 RPM** and coupled to submersible motor , 1500 RPM, (sync) conforming to IS 325 having continuous rating , suitable for operation at 440 V +/- 10% , 3 phase 50 Hz, with F class insulation , temperature rise limited to B class insulation , fitted with suitable space heater & six no of RTDs .self aligning duck foot flange coupling complete as per specifications. **(For 1 DWF)**	no	1	121900	121900
	RUIDP -2017-18.1.2 page 95				
2	**Dismantling Joint**				
	Providing, erecting and commissioning C I/M S Dismantling joint as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 10 kg/cm2 working pressure with required flanges of suitable size with nut bolts etc complete. The joint should have through long bolts so that during normal working pressure there should be no sliding movement of sliding flanges. L.O.F. (length over flange) should not be less than 75% of dia.				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
a	Size:80 mm for 3 DWF	No	1	2120	2120
b	Size:80 mm for 2 DWF	No	1	2120	2120
c	Size:80 mm for 1 DWF	No	1	2120	2120
d	Size: 100 mm for pumping main	No	2	2350	4700
	RUIDP 2017 19. 40.1,2 page 135				
3	**Check Valve (Non Return Valve)**				
	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line, C.I. dual plate check valves as per API:594 and API:598 of PN 1 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)				
a	Size:80 mm for 3 DWF	No	1	9000	9000
b	Size:80 mm for 2 DWF	No	1	9000	9000
c	Size:80 mm for 1 DWF	No	1	9000	9000
d	Size: 100 mm for pumping main	No	1	10900	10900
	RUIDP 2017 19.34.1,2page 132				
4	**Sluice Valve**				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated CI D/F Sluice valves of approved make (IS: 14846 amended upto date) PN 1.6 class of following dia complete (including jointing and jointing material) including all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Category "A" " Make: (Kirloskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:80 mm for 3 DWF	No	1	8390	8390
b	Size:80 mm for 2 DWF	No	1	8390	8390
c	Size:80 mm for 1 DWF	No	1	8390	8390
d	Size: 100 mm for pumping main	No	1	11200	11200
	RUIDP 2017 19.20.1,2 page 120				
5	**D I Flanged Pipe**				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welelded) centrifugally (spun) Ductile Iron ISI marked K - 9 grade pipes as per IS: 8329-2000 amended upto date, (including jointing and jointing material) complete including all material , labour, hydraulic testing, commisioning as per technical specifications and as per direction of Engineer				
a	Size:80 mm for 3 DWF	No	5	2100	10500
b	Size:80 mm for 2 DWF	No	5	2100	10500
c	Size:80 mm for 1 DWF	No	5	2100	10500
d	Size: 100 mm for pumping main	No	5	2310	11550
	RUIDP 2017 19.10.1 page 116				
6	**D I Flanged specials**				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depths / S&S standard specials with rubber ring (EPDM / SBR) joints as per IS : 1582*1985 K 9 such as tees , bends , tapers , caps etc within trenches in DI pipe line complete as per technical specification & as per direction of Engineer				
	up to 300 mm dia	kg	910	118	107380
	RUIDP 2017 19.11.1.1 page 117				
7	**Puddle pipe**				
	Providing fixing in position CI puddle collar (approx 1 m length) in side the wall including all material labour as per technical specification & as per direction of engineer				
a	Size:80 mm for 3 DWF	No	1	3600	3600
b	Size:80 mm for 2 DWF	No	1	3600	3600
c	Size:80 mm for 1 DWF	No	1	3600	3600
d	Size: 100 mm for pumping main	No	1	4190	4190
	RUIDP 2017 19.47.4,5,6 page 138				
8	**CC support saddle below valve , pipe**				

Sr. No.	Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing and laying and compacting plain / RCC concrete of specified grade for support below valves etc as drawing & technical specification including all scaffolding material labour & machinery and as per instruction of Engineer: RCC M20	Cum	4	4580	18320
	RUIDP 2017 13.4.5 page 39				
9	**EOT Crane**				
	Supply installation of & commissioning of electrically operated Travelling crane (EOT). Main girder & end carriage fabricated from rolled steel section. Gear box for all motions . electromagnetic friction disc type brake, all safety limit switches . LT wheel EN 9, double flanged 4 no with squirrel cage motor of adequate rating (kW) , duly painted , mechanical cleaning and one coat of primer & two coat of synthetic paint and as per the direction of engineer crane suitable for 2 MT capacity span 10 M & lift up to 14 m ,	Set	1	515760	515760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
10	**Sluice Gate**				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , fright , loading , unloading , fitting in position including sluice gates are upward opening wall thimble mounted suitable for isolating the flow of sewer into out of the opening in the wall . It consist gate frame , wall thimble . gate slide . shutter , seating sealing faces . The gate will be provided with pads on slide , top & bottom to mount the wages . The gate will be designed in such a manner so that it can be operated at 2 m head . Gate frame & shutter of CI grade IS 210 FG 260 , head stock assembly bolts SS ASTM A 276 type 316 , stem , operating nut SS ASTM A 276 type 316 . Duly tested for tensile strength . tested for overall dimensions as per approved GA drawing in all respect as per specification and direction of Engineer for flowing peak flow and depth up to 8 m channel depth for 0.78 MLD	set	2	110600	221200
	RUIDP -2017-18.7.1 + 18.7.22 added for additional 5m depth page 100 & 101				
11	**Manual Coarse Bar Screen**				
	Supply , fabrication, fixing & testing of stainless steel (SS- 316) Mannual Coarse Bar Screen with flat bar 50 x 10 mm , spacing of bars at 50 mm suitable in mounting in channel of specified size with inclination not more than 45 degree and a movable covered containerof 1 cim capacity complete in all respect as per techanical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 0.78 MLD	set	2	118500	237000
	RUIDP 2017 18.3.2 + 18.3.20 added for additional 5m depth page 98				
12	**Lifting arrangement at screen chamber**				
a	Supply installation of & commissioning of monorail single girder crane suitable for lift up to 9 m , pulley block & travelling trolley cost of girder complete in all respect as per direction of engineer 1 MT capacity	No's	1	24700	24700
	RUIDP -2017-18.10.1 page 102				
	Debries collection bucket				
b	Fabricating, Supply, Installation, Testing and commissioning of Debries collection bucket, fabricating out of 4mm thick MS plate with ISA 25 heavy duty angle frame, including MS sling, ring etc of capacity 0.4 cum, including welding, cutting, painting with one coat of primer and three coats of enamel paint.	kg	150	112	16740
	RUIDP 29.16.1 added 20% for 2017 DSR				
				Grand Total of Mechanical Estimate in Rs.	**1650170**
				Say	**16,47,900**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

Input / Output Schedule for each Pumping Installation

Sr. No.	Description	RTU/PLC I/O			
		DI	DO	AI	AO
1	Pump Motor (8 N0s.)				
i.	Running status	✓			
ii.	Stop status	✓			
iii.	Trip status	✓			
iv.	Stop (command)		✓		
v.	Start (command)		✓		
vi.	Available	✓			
vii.	Motor fault	✓			
viii.	Motor				
a)	Input voltage			✓	
b)	Input Amperage			✓	
c)	Power consumption			✓	
d)	Power factor			✓	
2	Level in sump Well			✓	
3	Sump Level Low	✓			
4	Flow in Pumping Main			✓	
5	Pressure in common header			✓	
6	Emergency Stop	✓			
7	Hardwired Trip Activated	✓			
8	UPS Trouble	✓			

SEWERAGE SYSTEM FOR GAYA EASTERN PART

ICA- Cost Estimate For IPS A1

Supply, Installation and Commissioning including required material

Sr. No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate,PU liner, hastelloy electrode, HART protocol				
	Make: ABB, Krohne, Siemens or E & H				
	Size: 250 mm for pumping main	1	No.	213511	213511.00
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	99051	99051.00
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445.00
4	Pressure transmitter at common header	1	No.	70751	70751.00
5	Automation system with redundant CPU PLC/RTU panel, PC based SCADA system, 21" LED monitor, color printer, programming softwares, etc. and interfacing all pumping station instruments. GPRS modem with all required accessories for event reporting via SMS to concerned officer on his mobile.	1	set	1370800	1370800.00
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
	Make for panel enclosure: Rittal, Pyrotech, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	235837	235837.00
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to PLC cum Instrument panel	1	Lot	1565000	1565000.00
8	Perforated cable trays	1	Lot	250000	250000.00
9	Multi function energy meter intelligent type	1	No.	12500	12500.00
	Total Rs.				**3848895.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

ICA- Cost Estimate IPS A2

Supply, Installation and Commissioning including required material

Sr. No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate,PU liner, hastelloy electrode, HART protocol				
	Make: ABB, Krohne, Siemens or E & H				
	Size: 200 mm for pumping main	1	No.	144961	144961
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	99051	99051
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Pressure transmitter at common header	1	No.	70751	70751
5	Automation system with redundant CPU PLC/RTU panel, PC based SCADA system, 21" LED monitor, color printer, programming softwares, etc. and interfacing all pumping station instruments. GPRS modem with all required accessories for event reporting via SMS to concerned officer on his mobile.	1	set	1488718	1488718
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
	Make for panel enclosure: Rittal, Pyrotech, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	235537	235537
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to PLC cum Instrument panel	1	Lot	1750000	1750000
8	Perforated cable trays	1	Lot	300000	300000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	Total Rs.				**4132963**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

ICA- Cost Estimate IPS A3

Supply, Installation and Commissioning including required material

Sr. No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate,PU liner, hastelloy electrode, HART protocol				
	Make: ABB, Krohne, Siemens or E & H				
	Size: 300 mm for pumping main	1	No.	245899	245899
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	99051	99051
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Pressure transmitter at common header	1	No.	70751	70751
5	Automation system with redundant CPU PLC/RTU panel, PC based SCADA system, 21" LED monitor, color printer, programming softwares, etc. and interfacing all pumping station instruments. GPRS modem with all required accessories for event reporting via SMS to concerned officer on his mobile.	1	set	1670509	1670509
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
	Make for panel enclosure: Rittal, Pyrotech, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	298726	298726
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to PLC cum Instrument panel	1	Lot	1896012	1896012
8	Perforated cable trays	1	Lot	500000	500000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	Total Rs.				**4824893**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

ICA- Cost Estimate IPS A4

Supply, Installation and Commissioning including required material

Sr. No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate,PU liner, hastelloy electrode, HART protocol				
	Make: ABB, Krohne, Siemens or E & H				
	Size: 300 mm for pumping main	1	No.	245899	245899
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	99051	99051
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Pressure transmitter at common header	1	No.	70751	70751
5	Automation system with redundant CPU PLC/RTU panel, PC based SCADA system, 21" LED monitor, color printer, programming softwares, etc. and interfacing all pumping station instruments. GPRS modem with all required accessories for event reporting via SMS to concerned officer on his mobile.	1	set	1670509	1670509
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
	Make for panel enclosure: Rittal, Pyrotech, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	298726	298726
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to PLC cum Instrument panel	1	Lot	1896012	1896012
8	Perforated cable trays	1	Lot	500000	500000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	Total Rs.				**4824893**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

ICA- Cost Estimate IPS A5

Supply, Installation and Commissioning including required material

Sr. No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate,PU liner, hastelloy electrode, HART protocol				
	Make: ABB, Krohne, Siemens or E & H				
	Size: 300 mm for pumping main	1	No.	245899	245899
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	99051	99051
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Pressure transmitter at common header	1	No.	70751	70751
5	Automation system with redundant CPU PLC/RTU panel, PC based SCADA system, 21" LED monitor, color printer, programming softwares, etc. and interfacing all pumping station instruments. GPRS modem with all required accessories for event reporting via SMS to concerned officer on his mobile.	1	set	1670509	1670509
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
	Make for panel enclosure: Rittal, Pyrotech, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	298726	298726
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to PLC cum Instrument panel	1	Lot	1896012	1896012
9	Perforated cable trays	1	Lot	500000	500000
10	Multi function energy meter intelligent type	1	No.	12500	12500
	Total Rs.				**4824893**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

ICA- Cost Estimate MPS A6

Supply, Installation and Commissioning including required material

Sr. No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate,PU liner, hastelloy electrode, HART protocol				
	Make: ABB, Krohne, Siemens or E & H				
	Size: 600 mm for pumping main	1	No.	676579	676579
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	99051	99051
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Pressure transmitter at common header	1	No.	70751	70751
5	Automation system with redundant CPU PLC/RTU panel, PC based SCADA system, 21" LED monitor, color printer, programming softwares, etc. and interfacing all pumping station instruments. GPRS modem with all required accessories for event reporting via SMS to concerned officer on his mobile.	1	set	1670509	1670509
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
	Make for panel enclosure: Rittal, Pyrotech, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	298726	298726
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to PLC cum Instrument panel	1	Lot	1896012	1896012
8	Perforated cable trays	1	Lot	500000	500000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	Total Rs.				**5255573**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

ICA- Cost Estimate IPS A7

Supply, Installation and Commissioning including required material

Sr. No.	Description	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate,PU liner, hastelloy electrode, HART protocol				
	Make: ABB, Krohne, Siemens or E & H				
	Size: 100 mm for pumping main	1	No.	105843	105843
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	99051	99051
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Pressure transmitter at common header	1	No.	70751	70751
5	Automation system with redundant CPU PLC/RTU panel, PC based SCADA system, 21" LED monitor, color printer, programming softwares, etc. and interfacing all pumping station instruments. GPRS modem with all required accessories for event reporting via SMS to concerned officer on his mobile.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
	Make for panel enclosure: Rittal, Pyrotech, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	235837	235837
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to PLC cum Instrument panel	1	Lot	1565000	1565000
8	Perforated cable trays	1	Lot	250000	250000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	Total Rs.				**3741227**

SEWERAGE SYSTEM FOR GAYA CITY (EASTERN PART)

Grand Cost Summary - Eastern Part (Cost in Lakh INR)

Sr. No.	Description	Cost in Lakh INR
I	**Collection System**	
	Collection System for South Area	3655.38
	Collection System for Central Area	2606.39
	Collection System for North Area	3355.74
	Sub-Total	**9617.51**
II	**Pumping Station**	
	Pumping Station: Pumping Station IPS A1	191.27
	Pumping Station: Pumping Station IPS A2	209.52
	Pumping Station: Pumping Station IPS A3	247.48
	Pumping Station: Pumping Station IPS A4	228.74
	Pumping Station: Pumping Station IPS A5	236.60
	Pumping Station: Pumping Station MPS A6	364.25
	Sub-Total	**1477.87**
III	**Pumping Main, Collection Chamber and Two way surge tank**	
	From IPS A1 to GC.1403	89.24
	From IPS A2 to GN.925	56.19
	From IPS A3 to GC.439	110.73
	From IPS A4 to GC.442	109.94
	From IPS A5 to GC.238	57.34
	MPS A6 to STP	204.91
	Sub-Total	**628.35**
IV	**Sewage Treatment Plant And IPS A7**	**1209.38**
V	**Sewer Cleaning Equipment**	**121.20**
VI	**Base Cost= (I + II + III + IV+V)**	**13054.30**
VII	**Provisional Sum for Power Connection, Railway Crossing,NH Crossings, RCD Road Crossings and other Statutary requirements & shifting utilities**	**650.00**
VIII	**O&M Cost for 7 years (without power)**	**1465.17**
IX	**Engineer's Cost Estimate to be Tendered**	**15169.47**
X	**Contingencies like Price Adjustment, Vaiations, Additional items etc (Not to be included in Bid and Bid Evaluation)**	**910.17**
XI	**Power Cost for O&M for 7 years (Not to be included in Bid and Bid Evalation)**	**1569.78**
XII	**Total cost of the Project with power cost**	**17649.42**
XIII	**Total Cost of the Project without power cost**	**16079.64**
XIV	**Centage charge (upto Rs.10 Cr. @ 7% + Above Rs.10 Cr to Rs. 100 Cr. @ 5% + Above Rs.100 Cr. @ 1%)**	**580.79**
XV	**Total cost including centage charges and without Power cost**	**16660.43**
XVI	**Total cost including centage charges with Power cost**	**18230.21**

Rate Analysis based on Budgetary quotation of DWC PE pipe stiffness class – SN-8 confirming to IS – 16098, Part-II for Sewerage System for Gaya Project

Sl. No.	Item Description	QTY	UOM	Basic per MTR	Unit price incl. FRT & GST	Contractors Profit @ 10%	Lowering, Laying & Jointing of SN 8 PE pipes	Testing and Commissioning	Total Cost per meter
1	**150MM ID, DWC PE PIPE, SN-8**	1110	MTR	**180.24**	245.64	24.56	33.00	3.08	306.28
2	**200MM ID, DWC PE PIPE, SN-8**	570	MTR	**287.43**	403.35	40.34	39.00	4.10	486.79
3	**250MM ID, DWC PE PIPE, SN-8**	420	MTR	**458.90**	628.60	62.86	48.00	5.13	744.59
4	**300MM ID, DWC PE PIPE, SN-8**	264	MTR	**643.80**	898.24	89.82	59.00	6.15	1053.21
5	**400MM ID, DWC PE PIPE, SN-8**	132	MTR	**1156.47**	1641.76	164.18	72.00	7.18	1885.12
6	**500MM ID, DWC PE PIPE, SN-8**	96	MTR	**1672.00**	2354.01	235.40	85.00	8.20	2682.61
7	**600MM ID, DWC PE PIPE, SN-8**	72	MTR	**2503.20**	3461.84	346.18	98.00	10.25	3916.27
8	**800MM ID, DWC PE PIPE, SN-8**	36	MTR	**4551.72**	6387.14	638.71	114.00	11.28	7151.13

1	Hydraulic testing of HDPE double wall corrugated pipe for non pressure underground line to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position Rate for SN 4 & SN 8	MJP-2018-2019, Sr. No. 6, Page No. 196
2	Lowering, Laying and Jointing (PE material) HDPE double wall corrugated pipe for non pressure underground by heating to the ends of pipes with the help of tefflon coated electric heater to the required temparature and then pressing the ends together against each other, to form a monolithic & leak proof joint by thermosetting process. The pressing may be required to be done with Jacks/ Hydraulic Jacks/Butt fusion machine etc. complete with all materials labours as directed by Engineer - in charge. including Rate for SN 4 & SN 8	MJP-2018-2019, Sr. No. 5, Page No. 195

Rate Analysis based on Budgetary Quotation of Supreme make HDI

Sl. No.	ITEMS	Net Price including FRT & GST Grade - PE 80	
		PN 2.5	PN 4
1	HDPE PIPE 160 MM DIA IS 14333:1996	367.59	565.33
2	HDPE PIPE 180 MM DIA IS 14333:1996	464.55	710.22
3	HDPE PIPE 200 MM DIA IS 14333:1996	572.68	879.93
4	HDPE PIPE 225 MM DIA IS 14333:1996	725.84	1,112.74
5	HDPE PIPE 250 MM DIA IS 14333:1996	888.81	1,372.50
6	HDPE PIPE 280 MM DIA IS 14333:1996	1,112.89	1,717.89
7	HDPE PIPE 315 MM DIA IS 14333:1996	1,412.33	2,160.84
8	HDPE PIPE 355 MM DIA IS 14333:1996	1,778.50	2,757.87
9	HDPE PIPE 400 MM DIA IS 14333:1996	2,304.05	3,532.42
10	HDPE PIPE 450 MM DIA IS 14333:1996	2,906.13	4,470.86

1	Lowering, Laying and Jointing H. D. P. E./M. D. P. E. pipes in proper position including all specials by compression fitting/electrofusion and butt fusion jointing procedure as per relevent IS Code complete with all materials for jointing procedure like Electrofusion machine, Electric heater/butt fusion welding machine with hydraulic jack, top loading clamp etc. and all labours as directed by engineer in charge as per IS-7634 Part II	MJP-2018-2019, Sr. 2, page no.191
2	For testing and commissioning non pressure test rates are not available so we are considering 10% of Lowering and laying charges for testing of pipe	

PE pipes for Sewerage for Patna, Bihar

Lowering, Laying & Jointing of HDPE pipes	*Testing and commissioning*	*Total Cost per meter*	
		Grade - PE 80	
		PN 2.5	*PN 4*
95.00	9.50	472.09	669.83
95.00	9.50	569.05	814.72
106.00	10.60	689.28	996.53
136.00	13.60	875.44	1262.34
140.00	14.00	1042.81	1526.50
174.00	17.40	1304.29	1909.29
191.00	19.10	1622.43	2370.94
208.00	20.80	2007.30	2986.67
211.00	21.10	2536.15	3764.52
238.00	23.80	3167.93	4732.66

Sr. No.	Description of work	Units
A) 1	**Clearing jungle** including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth upto 30 cm measured at a height of 1 m above ground level and removal of rubbish upto a distance of 50 m outside the periphery of the area cleared.	sqm
B)	**EXCAVATION AND REFILLING**	
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.	
	All types of Soil	
a)	Upto 1.5 m	cum
b)	From 1.5 m to 3.0 m	cum
c)	From 3.0 m to 4.5 m	cum
d)	From 4.5 m to 6 m	cum
e)	From 6 m to 7.5 m	cum
3	Excavation work in foundation trenches including dressing of sides and ramming of bottoms for all lifts, including getting cut the excavated soil and disposal of surplus excavated soiis as directed, within a lead of 50 m .	
I)	**Ordinary Rock**	
a)	From 4.5 m to 6 m	cum
b)	From 6.0 m to 7.5 m	cum
II)	**Hard Rock (Blasting Prohibited)**	
a)	From 4.5 m to 6.0 m	cum
b)	From 6.0 m to 7.5 m	cum
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering for all lifts and leads.	cum
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL
	Disposal of Excavated Earth	
6	**Removal of unserviceable soil** with Disposal above 8 Km etc. complete and as per direction of engineer in charge.	cum
C)	**PIPE MATERIAL**	
I)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP3 class** (with s/s ends IS: 458 - 1988 (amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.	
	200 mm internal diameter	M
	250 mm internal diameter	M
	300 mm internal diameter	M
	500 mm internal diameter	M
	600 mm internal diameter	M

	900 mm internal diameter	M
	1800 mm internal diameter	M
II)	Providing at site, lowering & laying in trenches, aligning & jointing of **RCC pipes NP4 class** (with s/s ends IS: 458 - 1988 (amended up to date) marked and manufactured through spun process at all levels with Rubber gaskets (EPDM/SBR) for sewer lines as per IS: 5382 with Sulphate Resistance cement and 12 mm high alumina mortar lining (1:3) ratio (including cost of Rubber gaskets lubricants) as per drawing, sectional testing of the sewer pipe line (including cost and conveyance of water to site) etc., complete as directed by Engineer.	
	200 mm internal diameter	M
	250 mm internal diameter	M
	300 mm internal diameter	M
	350 mm internal diameter	M
	400 mm internal diameter	M
	450 mm internal diameter	M
	500 mm internal diameter	M
	600 mm internal diameter	M
	700 mm internal diameter	M
	900 mm internal diameter	M
	1000 mm internal diameter	M
	1100 mm internal diameter	M
	1200 mm internal diameter	M
	1400 mm internal diameter	M
	1600 mm internal diameter	M
	1800 mm internal diameter	M
7	Property connection (House connection)	
	Providing, laying and jointing follwing **P.V.C.-U pipes** with solvent cement joint for Non - pressure gravity drain and sewer application including testing of joints, cost of jointing materials etc.complete in all respect (conform to IS 15328:2003, solvent cement shall coform to IS 14182)	
1)	110 mm dia	m
8	Providing and placing in position precast **RCC in verical post of** size 40x90x1500 mm depth **at each House service connection** in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centreing complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	cum
D)	**MANHOLES**	
9	Constructing **brick masonry circular type manhole 0.91 m internal dia** at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer Incharge :	

	0.91 m deep with **S.F.R.C. cover and frame** (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS: 4885	each
	Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m	m
	For Sewer Diameter - upto 400 mm dia	
1)	Upto 1.225 m depth to invert	No.
2)	Upto 1.50 m depth to invert	No.
3)	Upto 1.65 m depth to invert	No.
10	Constructing **brick masonry circular manhole 1.22 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement :4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as perstandard drawing and as directed by Engineer Incharge :	
	1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering , refilling,all complete.Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS:4885	Each
	Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :	M
	For Sewer Diameter - upto 700 mm dia	
1)	Upto 1.68m depth to invert	No.
2)	Upto 2.00 m depth to invert	No.
3)	Upto 2.30 m depth to invert	No.
11	Constructing **brick masonry circular manhole 1.52 m internal dia** at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer Incharge :	
	2.30 m deep with **SFRC Cover and frame** (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering, refilling all complete. Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be carried out:with sewer bricks conforming to IS:4885	

	Extra depth for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m
	For Sewer Diameter - upto 800 mm dia	
1)	Upto 2.65 m depth to invert	No.
2)	Upto 3.00 m depth to invert	No.
3)	Upto 3.50 m depth to invert	No.
4)	Upto 4.00 m depth to invert	No.
5)	Upto 4.25 m depth to invert	No.
6)	Upto 4.50 m depth to invert	No.
7)	Upto 5.00 m depth to invert	No.
8)	Upto 5.50 m depth to invert	No.
9)	Upto 6.00 m depth to invert	No.
10)	Upto 6.5 m depth to invert	No.
11)	Upto 7.00 m depth to invert	No.
12)	Upto 7.50 m depth to invert	No.
13)	Upto 8.00 m depth to invert	No.
E)	**Bedding**	
12	Providing and laying Compacted **Grannular Bedding** in 15cm thick layers and well compacted etc. complete **(Type A bedding)**	cum
F)	**TIMBERING AND BARRACADING**	
13	**Close timberin**g in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):	
a)	Depth not exceeding 1.5 m	sqm
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm
d)	Depth more than 4.5 m and upto 6.0 m	sqm
e)	Depth more than 6.0 m and upto 7.5 m	sqm
14	Extra for **planking, strutting and packing** materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm
15	**Open timberin**g in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):	
a)	Depth not exceeding 1.5 m	sqm
16	Extra for **planking, strutting and packing** materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm
17	Providing and fixing Barricading at site of work for restricting the general public using 80-100 mm dia Wooden Ballies as vertical post with average spacing of 1.80 meter between two vertical posts, having height at least 1.5 m above road/ ground level and at least 30-45 cm below road/ ground level by making suitable size hole in road/ ground, providing and fixing two rows of 80-100 mm Wooden Ballies as horizontal members with jute russies. Both vertical and horizontal members shall be painted in red and white colour strips as per approved pattern as and when it becomes shabby but at least after every alternate shifting at new location. After shifting/ removal of barricading holes shall be filled up properly and site is to be cleared in all respect. (Note: measurement is to be done in linear basis.	m
G)	**ROAD RESTORATION AND DISMANTLING WORKS**	
18	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum

19	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum
20	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	
	Water bound macadam road	Sq m
	Cement concrete road Restoration	
21	Supply and stacking of **Fly ash** conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum
22	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum
23	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum
	Restoration of WMM Road	
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum
25	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum
	Reconstruction of Bituminous Asphalt Roads	
26	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)	
	Grading II: 100 mm thick	cum

	Grading III: 100 mm thick	cum
27	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm
28	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm
29	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum
30	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm
31	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm
32	**Demolishing stone rubble masonry** including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.	
	In Lime Mortar	cum
	In Cement Mortar	cum
33	**Dismantling stone slab flooring** laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	sqm
34	**Demolishing Cement Concrete** including disposal of materials within 50 meter lead:	
	1:3:6 or richer mix	cum
	1:4:8 or leaner mix	cum
35	**Demolishing R.C.C.work** including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	cum
36	**Installation of laboratory** for testing various materials and concrete cubes required for the project components as specofied in specificaions and as directed by Engineer in charge etc complete	L.S.
37	**Utility Shifting:** Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	km

38	Construction of 450 mm internal dia circular Road side Chamber in all types of soil with 225mm thick BB masonary in CM (1:4), M20 PCC bed block, 225 mm thick PCC of M10 in foundation, 20mm thick inside and outside plastering with CM (1:4), finished with PCC M15 flooring of 75mm thick as per drawings, including Providing and fixing SFRC Medium duty Manhole Frame & cover of clear opening 450 mm dia, complete as per drawing and/or directed by Engineer.	No.
39	Providing **PVC-U pipes as per IS 15328 drop connection** externally for depth from 0.60 m and upto 1.0 m drop from branch sewer line to main sewer manhole or vise versa including inspection and cleaning eye, PVC-U drop pipe and bend encased around with cement concrete M15 with all form work, cutting holes in walls and making good with brick/ stone masonry work in cement sand mortar 1:4 plastered with cement sand mortar 1:3 with stiff cement mortar 1:1 around PVC-U pipe in brick masonry wall, making required channels complete as per standard design and specifications and/ or as the directed of the Engineer:	
A)	280 mm dia	
i)	For 0.6 m to 1.0 m drop	No.
ii)	Upto 1.5 m drop	No.
iii)	upto 2 m drop	No.
iv)	upto 2.5 m drop	No.
v)	upto 3.0 m drop	No.
vi)	upto 3.5 m drop	No.
vii)	upto 4.0 m drop	No.
viii)	upto 4.5 m drop	No.
B)	315 mm dia	
i)	For 0.6 m to 1.0 m drop	No.
ii)	upto 1m drop	No.
iii)	Upto 1.5 m drop	No.
iv)	upto 2 m drop	No.
v)	upto 3 m drop	No.
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by **trenchless method** adopting any suitable technology below ground at required depth including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipments for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit upto 3 metre depth with proper protection at the three sides, providing and casting of MS cutting edges for front shield and constructing thrust bed at designed level as directed by the Engineer, crane for handling of pipes, and any other machinery, tool & tackles required, complete in all respect as per specification and the direction of the Engineer.	
	In all types of soils	
i)	200 mm internal diameter	M
ii)	250 mm internal diameter	M
iii)	300 mm internal diameter	M
iv)	350 mm internal diameter	M
v)	400 mm internal diameter	M
vi)	450 mm internal diameter	M
vii)	500 mm internal diameter	M

41	Providing, laying and jointing RCC NP4 pipe with cement mortar joints by trenchless method adopting any suitable technology below ground at required depth under running traffic condition as per the direction of NHAI including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipments for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit (upto 3 metre depth) with proper protection at the three sides, providing and casting of MS cutting edges for front shield and constructing thrust bed at designed level as directed by the Engineer, necessary de-watering and providing concrete foundations at the base of the Drive pit, crane for handling of pipes, and any other machinery, tool & tackels required, construction of temporary works as per requirement and as approved by NH authorities complete in all respect for the road crossing at necessary depth (all depths) with all lead and lifts, as per specification and the direction of the Engineer.	
	In all types of soils	
i)	600 mm internal diameter	M
ii)	700 mm internal diameter	M
iii)	900 mm internal diameter	M
iv)	1000 mm internal diameter	M
v)	1100 mm internal diameter	M
vi)	1200 mm internal diameter	M
vii)	1400 mm internal diameter	M
viii)	1600 mm internal diameter	M
ix)	1800 mm internal diameter	M
42	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in **trenchless technology**, with proper protection at three sides with shoring sheets/ wooden planks and ISMB's, maintaining during pushing/ puling of pipe, back filling, necessary de-watering including all machinery, tools, and tackles required as per specification and the direction of the Engineer	
	In all types of soils	
i)	Upto 4.0 Meter	Nos
ii)	Upto 5.0 Meter	Nos
iii)	Upto 6.0 Meter	Nos
iv)	Upto 7.0 Meter	Nos
43	**Carriage of Material**	
	Sand	MT
	Aggregate	MT
	Bricks	MT

44	Construction of **RCC Circular Manhole** cylindrical in shape or corbelling in shape at top, with cement concrete in sulphur resitant cement for M20, in foundation using RCC M20 and vertical wall in RCC M20 of approved quality and benching with 1 :12 slope in the concrete towards the central drain, Internal lining with high alumina cement (25 mm thick) with 1:3 (cement: sand) ratio,finish smooth and fixing of pipes in PCC M15 including supplying and fixing SFRC manhole frame and cover. Supplying and fixing of CI foot steps as per IS 5455 coated with plastic staggered at 30cms apart as directed, with watering, curing, barricading, danger lighting, excavation, refilling, disposal of surplus earth, shoring, strutting as per drawing with all lead and lift for various depths as noted below including supply, transportation, fabricating and placing of reinforcement (TMT Fe 500 steel bar) as per specifications, drawing etc complete and as directed by Engineer.	
	For sewer dia - 900 mm	
1	Upto 2.3 m depth to invert	No.
2	Upto 3.0 m depth to invert	No.
3	Upto 3.5 m depth to invert	No.
4	Upto 4.5 m depth to invert	No.
5	Upto 5 m depth to invert	No.
6	Upto 5.5 m depth to invert	No.
7	Upto 6 m depth to invert	No.
8	Upto 6.5 m depth to invert	No.
9	Upto7.0 m depth to invert	No.
	For Sewer Dia-1000 mm to 1100 mm	
1)	Upto 5 m depth to invert	No.
2)	Upto 5.5 m depth to invert	No.
3)	Upto 6.0 m depth to invert	No.
4)	Upto 6.5 m depth to invert	No.
	For Sewer Dia - 1200 mm	
1)	Upto 5 m depth to invert	No.
1)	Upto 5.5 m depth to invert	No.
2)	Upto 6.0 m depth to invert	No.
	For Sewer Dia 1400 mm	
1)	Upto 5.5 m depth to invert	No.
2)	Upto 6 m depth to invert	No.
3)	Upto 6.5 m depth to invert	No.
4)	Upto 7.0 m depth to invert	No.
	For Sewer Dia 1600 mm	
1)	Upto 5.0 m depth to invert	No.
2)	Upto 5.5 m depth to invert	No.
3)	Upto 6 m depth to invert	No.
4)	Upto 6.5 m depth to invert	No.
5)	Upto 7.0 m depth to invert	No.
	For Sewer Dia 1800 mm	
1)	Upto 3.0 m depth to invert	No.

2)	Upto 3.5 m depth to invert	No.
3)	Upto4.0 m depth to invert	No.
4)	Upto4.5 m depth to invert	No.
5)	Upto 5.0 m depth to invert	No.
6)	Upto 5.5 m depth to invert	No.
7)	Upto 6.0 m depth to invert	No.
8)	Upto 6.5 m depth to invert	No.

Rate in Rs.	Reference
5.8	SOR-BCD-18; It.-2.32; Pg.-75
	SOR-BCD-18; It.-2..8.1; Pg.-72 and 2.27.1 Pg-75
319.60	
360.60	
401.60	
442.60	
483.60	
723.20	SOR-BCD-18; It.-2.9.1; Pg.-73 and 2.27.2 Pg-75
796.70	
1254.00	SOR-BCD-18; It.-2.9.3; Pg.-73 and 2.27.2 Pg-75
1327.50	
103.30	BSR-BCD-18-Item 2.26; Pg-75
92.20	BSR-BCD-18-Item 2.25; Pg-75
262.50	BSR - RCD-18- Item- 3.11, P-45 & RA
	SOR-RUIDP-17; Item-17.19 to 17.19.19., and Item 17.21 to 17.21.2.19 Pg.-66/67/68 and rate analysis
636.51	
875.89	
1188.77	
2862.28	
3640.04	

6006.81	
20331.62	
	SOR-RUIDP-17; Item-17.18 to 17.18.19., and Item 17.21 to 17.21.2.19 Pg.-66/67/68 and rate analysis
677.51	
947.89	
1238.77	
1865.65	
2128.03	
2590.41	
2962.28	
3960.04	
4906.30	
6536.81	
7416.57	
8728.33	
11592.08	
14478.60	
18044.11	
23431.62	
	SOR-RUIDP-17; Item-17.25.1 Page 70
244.00	
8677.50	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48 + 30% increase
	BSR-BCD'18; Item-19.9 and 19.10-Pg-243 + Rate Analysis

7052.00	
4891.76	
11403.94	
13120.27	
14484.59	
	BSR-BCD'18; Item-19.11 and 19.12-Pg-244+Rate Analysis
13906.10	
6350.80	
18358.94	
21183.22	
23846.04	
	BSR-BCD'18; Item-19.13 + 19.14-Pg-244 & 245 +rate analysis
31068.40	

14494.02

15264.50		
46826.65		
53565.50		
63330.09		
73094.68		
77976.98		
82618.37		
92382.96		
102147.55		
111671.24		
121435.83		
131200.42		
140724.11		
150488.70		
805.00	BSR-BCD-18; Sr. No.-1.1; Pg.-65+Item-0295, Pg.-6	
	BSR-BCD-18; Item-2.16, Pg-74	
110.40		
115.00		4.60
126.40		11.40
134.40		
142.40		
1480.10	BSR-BCD-18; Item-2.19, Pg-74	
56.70	BSR-BCD-18; Item-2.20, Pg-74	
758.20	BSR-BCD-18; Item-2.23, Pg-75	
84.00	RUIDP SOR 17 Item-4.26, Pg-13	
342.00	RCD/SOR-18; Item-2.5-II A; Pg-29	

1520.00	RCD/SOR-18; Item-2.6; Pg-29
74.90	BSR-BCD-18; Item-15.43.1, Pg-188
10.00	BSR-BCD-18; Item-2.39, Pg-77
103.30	BSR-BCD-18; Item-2.40, Pg-77
4461.00	RCD/SOR-18; Item-6.2; Pg-138
637.00	SOR-RCD-18; Item-4.2 (iii); Pg.-66
896.00	SOR-RCD-18; Item-4.12 ; Pg.-76
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72
904.00	

949.00	
30.30	BSR-RCD-18-Item 5.1, Pg-84
11.10	BSR-RCD-18-Item 5.2, Pg-84
5406.00	BSR-RCD-18-Item 5.3 (I), Pg-84
246.00	BSR-RCD-18-Item 5.4 A, Pg-84
110.00	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85
	BSR-BCD-18; Item-15.9.1, Pg-185, BSR-BCD-18; Item-15.9.2, Pg-185
385.70	
817.10	
88.70	BSR-BCD-18; Item-15.25, Pg-187
	BSR-BCD-18; Item-15.2.1, Pg-185, BSR-BCD-18; Item-15.2.2, Pg-185
807.20	
498.80	
1172.70	BSR-BCD-18; Item-15.3, Pg-185
500000.00	
11264	RA

10543.00	RA
	SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90
17700.00	
19105.00	
20510.00	
21915.00	
23320.00	
24725.00	
26130.00	
27535.00	
27700.00	
27700.00	
29825.00	
31950.00	
36200.00	
	SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93
7180	
7420	
10600	
12150	
13700	
15450	
17200	

	SOR-RUIDP-17; Item-17.79, Pg.-92
18200	
19100	
23800	
24600	
27600	
30400	
36100	
39600	
48700	
	SOR-RUIDP-17; Item-17.82 Pg.-94
48400	
96800	
145200	
193600	
237	
814	
237	

64295.28	
75706.08	
82618.14	
97137.17	
106687.19	
111827.88	
121189.85	
135415.82	
144852.48	
121555.47	
132242.57	
142810.86	
153696.08	
140159.33	
152340.59	
165243.07	
170253.87	
183776.15	
197298.45	
210598.41	
183177.19	
193233.90	
304203.13	
318613.02	
333015.07	
138784.99	

150059.82	
161494.46	
172400.58	
183177.19	
193233.90	
263696.64	
273293.42	

BRICK MANHOLE

Rate analysis for Excavation, External plaster and Foot rest

MANHOLE DATA					EXCAVATION				PCC (M10)	Benching (M15)	COLLAR (M15)	BRICKS (1:3)					Cement Plaster Internal 1:3	Cement Plaster External Surface	Foot rest	Rate for excavation - BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75	Rate for plaster - 12 mm thick (1:3) - BSR-BCD-18-Item 13.11.1; Pg-167	Providing orange colour safety foot rest - BSR-BCD-18-Item 19.16; Pg-245	Total Amount (Rs.)
Manhole Type	No. of Manhole	Diameter of Manhole mm	Inner Diameter of Manhole m	Depth of Manhole	Excavation Depth	Excavation Diameter of Manhole m	Excavation Qty, in Cum	Total Excavation Qty Cum	Each MH	Each MH	Each MH	Upper Portion	Bottom/Middle Portion	Lower Portion	Bottom Portion	Total							
A	520.00	910.00	0.91	1.225	1.48	1.76	3.59	1866.00	0.382	0.128	0.365	0.509	0.381			0.89	2.83	4.56	4.00	319.6	153.6	240.9	2811.04
	804.00	910.00	0.91	1.50	1.75	1.76	4.26	3423.02	0.382	0.128	0.365	0.509	0.601			1.11	3.46	5.58	4.00	319.6	153.6	240.9	3182.13
	260.00	910.00	0.91	1.68	1.93	1.76	4.70	1220.80	0.382	0.128	0.365	0.509	0.746			1.25	3.88	6.26	5.00	319.6	153.6	240.9	3665.93
B	51.00	1220.00	1.22	1.68	2.01	2.07	6.76	344.98	0.686	0.269	0.365	1.457	0.102			1.56	4.70	7.07	5.00	319.6	153.6	240.9	4452.84
	319.00	1220.00	1.22	2.00	2.33	2.07	7.84	2501.37	0.686	0.269	0.365	1.457	0.153			1.61	5.59	8.42	6.00	319.6	153.6	240.9	5244.87
	175.00	1220.00	1.22	2.30	2.63	2.07	8.85	1548.90	0.686	0.269	0.365	1.457	0.459			1.92	6.43	9.68	7.00	319.6	153.6	240.9	6002.45
C	117.00	1520.00	1.52	2.65	3.05	2.84	19.29	2256.83	1.617	0.507	0.365	1.787			2.391	4.18	9.79	15.13	8.00	319.6	153.6	240.9	10415.68
	100.00	1520.00	1.52	3.00	3.40	2.84	21.51	2150.63	1.617	0.507	0.365	1.787	0.295		3.126	5.21	11.46	18.04	9.00	319.6	153.6	240.9	11811.95
	79.00	1520.00	1.52	3.50	3.90	2.84	24.67	1949.22	1.617	0.507	0.365	1.787	0.984	0.418	3.126	6.32	13.85	22.19	11.00	319.6	153.6	240.9	13944.29
	35.00	1520.00	1.52	4.00	4.40	2.84	27.84	974.44	1.617	0.507	0.365	1.787	0.984	1.809	3.126	7.71	16.24	26.35	13.00	319.6	153.6	240.9	16076.63
	13.00	1520.00	1.52	4.25	4.65	2.84	29.42	382.52	1.617	0.507	0.365	1.787	0.984	2.505	3.126	8.40	17.43	28.42	14.00	319.6	153.6	240.9	17142.80
	15.00	1520.00	1.52	4.50	4.90	2.84	31.01	465.13	1.617	0.507	0.365	1.787	0.984	3.201	3.126	9.10	18.63	30.50	14.00	319.6	153.6	240.9	17968.07
	26.00	1520.00	1.52	5.00	5.40	2.84	34.18	888.57	1.617	0.507	0.365	1.787	0.984	4.593	3.126	10.49	21.01	34.66	16.00	319.6	153.6	240.9	20100.41
	12.00	1520.00	1.52	5.50	5.90	2.84	37.34	448.12	1.907	0.507	0.365	1.787	0.984	5.985	3.126	11.88	23.40	38.81	18.00	319.6	153.6	240.9	22232.75
	4.00	1520.00	1.52	6.00	6.40	2.84	40.51	162.04	1.907	0.507	0.365	1.787	0.984	7.377	3.126	13.27	25.79	42.97	19.00	319.6	153.6	240.9	24124.19
	3.00	1520.00	1.52	6.5	6.895	2.84	43.68	131.03	1.907	0.507	0.365	1.787	0.984	8.76837	3.126	14.67	28.1775	47.12	21.00	319.6	153.6	240.9	26256.53
	8.00	1520.00	1.52	7.00	7.40	2.84	46.85	374.76	1.907	0.507	0.365	1.787	0.984	10.16	3.126	16.06	30.57	51.28	23.00	319.6	153.6	240.9	28388.87
	4.00	1520.00	1.52	7.5	7.90	2.84	50.01	200.05	1.907	0.507	0.365	1.787	0.984	11.55	3.126	17.45	32.95	55.43	24.00	319.6	153.6	240.9	30280.31
	7.00	1520.00	1.52	8	8.40	2.84	53.18	372.26	1.907	0.507	0.365	1.787	0.984	12.94	3.126	18.84	35.34	59.59	26.00	319.6	153.6	240.9	32412.65

Rate Analysis for Repairing water Supply Lines, Cabels etc.
(UTILITY SHIFTING)

S. No.	Particulars	No.	Qty.	Unit	Total Qty.	Rate	Amount Rs.
1	**REPAIRING THE DOF WATER SUPPLY PIPE LINES, ELECTRICAL CABLE UTILITY LINES DURING THE EXCAVATION & LAYING OF DRAINAGE PIPE ETC.**						
	Total No. of properties in 1.00 Km length in city Area Consider property connection at 30 mtr distance	1000/30		No.	33.00		
	i) Consider 10% comercial properties in 1.00 km	33 x 10%		No.	4.00		
	ii) Consider 90% Recidencial properties in 1.00 km	33 x 90%		No.	29.00		
1.1	**COST OF MATERIAL**						
	i) 20 mm dia. G.I. pipe (For Commercial)	4	2.5	Rmt	10.00	120.00	1,200.00
	ii) 15 mm dia. G.I. pipe (For Residential)	29	2.5	Rmt	72.50	91.00	6,597.50
	iii) 20 mm dia. G. I. Coupler	4	1	Nos.	4.00	39.00	156.00
	iv) 15 mm dia. G. I. Coupler	29	1	Nos.	29.00	30.00	870.00
	v) 20 mm dia. G. I. Union	4	1	Nos.	4.00	49.00	196.00
	vi) 15 mm dia. G. I. Union	29	1	Nos.	29.00	30.00	870.00
	Total cost of Material						**9,889.50**
	vii) Add 2 % Misc. Material charges						197.79
1.2	**COST OF LABOUR**						
	i) Plumber			No	1.00	323.00	323.00
	ii) Helper			No	1.00	254.00	254.00
	Total cost of Labour						**577.00**
1.3	**COST OF CABLE**						
	Consider 100 mtr cable replacement for 1.00 Km			LS			600.00
	Total cost of Cable						**600.00**
	TOTAL						**11,264.29**
						Say Rs.	**11,264.00**

Rate Analysis for Road Side Chamber					
Sr. No.	**Description Of Item**	**Unit**	**Quantity**	**Rate in Rs. (BSR-18)**	**Amount (Rs.)**
1	**Excavation :**				
	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	cum	2.12	360.70	**765.69**
	BSR-BCD-18-Item 2.8.1; Pg-72				
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering-all work up to plinth level.				
	M - 10	cum	0.32	3387.10	**1090.86**
	M - 15	cum	0.01	3953.40	**23.58**
	M - 20	cum	0.08	4380.40	**350.92**
	BSR-BCD-18; Sr. No.-4.1.5,4.1.3 and 4.1.2; Pg-79				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	cum	1.02	548.10	**559.83**
	BSR-BCD-18-Item 2.26; Pg-75				
4	Brick work with bricks of class designation 100A in foundations and plinth in :				
	Cement Mortar 1:4 (1Cement : 4 Coarse Sand)	cum	0.64	5048.20	**3211.53**
	BSR - BCD-18- Item- 6.1.12/1, P-93				
5	20 mm cement plaster 1:3 (1 cement : 3 coarsed sand) finished with a floating coat of neat cement.				
	BSR-BCD-18; Item-13.13.1, Pg-167	Sq m	8.06	218.60	**1761.52**
6	**Disposal of Excavated Earth**				
	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	1.10	262.50	**289.11**
	BSR - RCD-18- Item- 3.11, P-45 & RA				
7	**SFRC Frame Cover**				
	Providing & fixing of Circular shape 450 mm dia SFRC manhole cover with frame - MD - 10	No.	1.00	990.10	**990.10**
	BSR - BCD-18- Item- 19.19.2.1, P-245				
8	**Miscelleneous Items :**				
	Repairing the damaged water supply lines, telephone cables, electrical cables & other cables, taking required permissions if required from private or government agencies, etc. as required in order to complete the execution of the sewerage scheme in all respect.	L.S.	1.00	1500.00	**1500.00**
	TOTAL =				**10543.14**
	Rate per Road Side Chamber =				**10543.00**

RATE ANALYSIS FOR GRANULAR BEDDING

Sr. No.	Decscription of item	Unit	Rate in Rs. (BSR-20)
1)	Cost of 20 mm aggregates	Cum	604.90
	Add Contractors Profit 10%		60.49
	Add Overhead Charges 10%		66.54
	BSR-BCD-16; Sr. No.-0295; Pg.-6/45 & BSR-BCD-16; Sr. No.-1.1; Pg.-77 & 79/ 118 & 120 ('@151.10/cum-loading & unloading & '@ 7.40-Haulage t.km (Unit wt. 2900 tonne.cum	Total	731.93
2)	Labour for laying Jointing	10%	805.12
		Say Rs.	**805.00**

SEWERAGE SYSTEM FOR GAYA CITY- PHASE 1

I. Statement of Materials for Sand, Coarse Aggregate for RCC Manhole

	Manholes		Type	Concrete (C:S:A)				Cement		Sand		Aggregate		High Alumina Cement Plastering			Zone B3			Zone B3A			Zone B5		
	Dia (mm)	Depth (m)		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M25 (1:1:2)	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Volume (m3)	Wt (MT) 1870kg/m 3	25 thk m2 (1:3)	Volume (m3)	Sand Wt (MT) 1840kg/m3	No. of MH	Sand (MT)	Aggregate (MT)	No. of MH	Sand (MT)	Aggregate (MT)	No. of MH	Sand (MT)	Aggregate (MT)
	900	2.0	D		1.19	2.82		0.68	0.98	1.11	2.04	2.22	4.15	2.69	0.07	0.10		0.00	0.00		0.00	0.00		0.00	0.00
	900	2.5	D		1.19	3.26		0.76	1.09	1.23	2.26	2.46	4.60	4.18	0.10	0.14		0.00	0.00		0.00	0.00		0.00	0.00
	900	3.0	D		1.19	4.12		0.92	1.32	1.46	2.69	2.92	5.46	5.67	0.14	0.19		0.00	0.00		0.00	0.00		0.00	0.00
	900	3.5	D		1.19	4.14		0.92	1.32	1.47	2.70	2.93	5.48	7.17	0.18	0.25		0.00	0.00		0.00	0.00		0.00	0.00
	900	4.0	D		1.19	4.31		0.95	1.37	1.51	2.78	3.03	5.67	8.66	0.22	0.30		0.00	0.00		0.00	0.00		0.00	0.00
	900	4.5	D		1.19	4.74		1.03	1.48	1.63	3.00	3.27	6.11	10.15	0.25	0.35		0.00	0.00		0.00	0.00	7	23.45	42.77
	900	5.0	D		1.19	5.18		1.11	1.60	1.75	3.22	3.50	6.55	11.64	0.29	0.40		0.00	0.00		0.00	0.00	5	18.10	32.75
	900	5.5	D		1.19	5.62		1.19	1.71	1.87	3.44	3.74	6.99	13.14	0.33	0.46		0.0	0.00	5	19.5	34.95		0.00	0.00
	900	6.0	D		1.19	6.06		1.27	1.83	1.99	3.66	3.98	7.44	14.63	0.37	0.51		0.00	0.00	17	70.89	126.48		0.00	0.00
	900	6.5	D		1.19	6.50		1.35	1.94	2.11	3.88	4.22	7.89	16.12	0.40	0.55		0.00	0.00	11	48.73	86.79		0.00	0.00
	900	7.0	D		1.19	6.93		1.43	2.06	2.23	4.10	4.46	8.34	17.62	0.44	0.61		0.00	0.00	2	9.42	16.68		0.00	0.00
	900	7.5	D		1.19	7.37		1.51	2.17	2.35	4.32	4.70	8.79	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
	900	8.0	D		1.19	7.81		1.59	2.29	2.47	4.54	4.94	9.24	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
	900	8.5	D		1.19	8.25		1.67	2.40	2.59	4.77	5.18	9.69	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
	900	9.0	D		1.19	8.69		1.75	2.52	2.71	4.99	5.42	10.14	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.0	0.00
	900	9.5	D		1.19	9.12		1.83	2.64	2.83	5.21	5.65	10.57	17.62	0.44	0.61		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	2.0	E		1.51	3.21		0.80	1.15	1.31	2.41	2.62	4.90	2.60	0.07	0.10		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	2.5	E		1.51	3.70		0.89	1.28	1.44	2.65	2.88	5.39	4.41	0.11	0.15		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	3.0	E		1.51	4.73		1.08	1.56	1.72	3.16	3.44	6.43	6.22	0.16	0.22		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	3.5	E		1.51	4.67		1.06	1.53	1.71	3.15	3.41	6.38	8.02	0.20	0.28		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	4.0	E		1.51	4.83		1.09	1.57	1.75	3.22	3.50	6.55	9.83	0.25	0.35		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	4.5	E		1.51	5.31		1.18	1.70	1.88	3.46	3.76	7.03	11.64	0.29	0.40		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	5.0	E		1.51	5.80		1.27	1.83	2.01	3.70	4.03	7.54	13.45	0.34	0.47		0.00	0.00		0.00	0.00	3	12.51	22.62
	1000/1100	5.5	E		1.51	6.28		1.36	1.96	2.14	3.94	4.29	8.02	15.25	0.38	0.52		0.00	0.00		0.00	0.00	14	62.44	112.28
	1000/1100	6.0	E		1.51	6.77		1.45	2.09	2.28	4.20	4.55	8.51	17.06	0.43	0.59		0.00	0.00		0.00	0.00	3	14.37	25.53
	1000/1100	6.5	E		1.51	7.25		1.53	2.20	2.41	4.43	4.82	9.01	18.87	0.47	0.65		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	7.0	E		1.51	7.74		1.62	2.33	2.54	4.67	5.08	9.50	20.67	0.52	0.72		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	8.0	E		1.51	8.71		1.80	2.59	2.81	5.17	5.61	10.49	20.67	0.52	0.72		0.00	0.00		0.00	0.00		0.00	0.00
	1000/1100	8.5	E		1.51	9.19		1.89	2.72	2.94	5.41	5.88	11.00	20.67	0.52	0.72		0.00	0.00		0.00	0.00		0.00	0.00
	1200	2.0	F		2.11	3.74		0.98	1.41	1.62	2.98	3.25	6.08	2.46	0.06	0.08		0.00	0.00		0.00	0.00		0.00	0.00
	1200	2.5	F		2.11	4.28		1.08	1.56	1.77	3.26	3.54	6.62	4.66	0.12	0.17		0.00	0.00		0.00	0.00		0.00	0.00
	1200	3.0	F		2.11	5.54		1.31	1.89	2.11	3.88	4.23	7.91	6.86	0.17	0.23		0.00	0.00		0.00	0.00		0.00	0.00
	1200	3.5	F		2.11	5.37		1.28	1.84	2.07	3.81	4.14	7.74	9.06	0.23	0.32		0.00	0.00		0.00	0.00		0.00	0.00
	1200	4.0	F		2.11	5.51		1.30	1.87	2.11	3.88	4.21	7.87	11.26	0.28	0.39		0.00	0.00		0.00	0.00		0.00	0.00
	1200	4.5	F		2.11	6.06		1.40	2.02	2.25	4.14	4.51	8.43	13.46	0.34	0.47		0.00	0.00		0.00	0.00		0.00	0.00
	1200	5.0	F		2.11	6.60		1.50	2.16	2.40	4.42	4.80	8.98	15.66	0.39	0.54		0.00	0.00		0.00	0.00	2	9.92	17.96
	1200	5.5	F		2.11	7.14		1.60	2.30	2.55	4.69	5.10	9.54	17.86	0.45	0.62		0.00	0.00		0.00	0.00	6	31.86	57.24
	1200	6.0	F		2.11	7.69		1.70	2.45	2.70	4.97	5.40	10.10	20.06	0.50	0.69		0.00	0.00		0.00	0.00	4	22.64	40.40
	1200	6.5	F		2.11	8.23		1.80	2.59	2.85	5.24	5.69	10.64	22.27	0.56	0.77		0.00	0.00		0.00	0.00		0.00	0.00
	1200	7.0	F		2.11	8.78		1.90	2.74	3.00	5.52	5.99	11.20	29.36	0.73	1.01		0.00	0.00		0.00	0.00		0.00	0.00
	1400	2.0	G		2.42	4.18		1.11	1.60	1.83	3.37	3.66	6.84	8.39	0.21	0.29		0.00	0.00		0.00	0.00		0.00	0.00
	1400	2.5	G		2.42	4.77		1.21	1.74	1.99	3.66	3.99	7.46	10.90	0.27	0.37		0.00	0.00		0.00	0.00		0.00	0.00
	1400	3.0	G		2.42	6.23		1.48	2.13	2.39	4.40	4.78	8.94	13.42	0.34	0.47		0.00	0.00		0.00	0.00		0.00	0.00
	1400	3.5	G		2.42	5.95		1.43	2.06	2.32	4.27	4.63	8.66	15.93	0.40	0.55		0.00	0.00		0.00	0.00		0.00	0.00
	1400	4.0	G		2.42	6.08		1.45	2.09	2.35	4.32	4.70	8.79	18.45	0.46	0.63		0.00	0.00		0.00	0.00		0.00	0.00
	1400	4.5	G		2.42	6.67		1.56	2.25	2.51	4.62	5.02	9.39	20.96	0.52	0.72		0.00	0.00		0.00	0.00		0.00	0.00
	1400	5.0	G		2.42	7.26		1.67	2.40	2.67	4.91	5.34	9.99	23.47	0.59	0.81		0.00	0.00		0.00	0.00		0.00	0.00
	1400	5.5	G		2.42	7.85		1.77	2.55	2.83	5.21	5.67	10.60	25.99	0.65	0.90		0.00	0.00		0.00	0.00		0.00	0.00
	1400	6.0	G		2.42	8.44		1.88	2.71	2.99	5.50	5.99	11.20	28.50	0.71	0.98		0.00	0.00		0.00	0.00		0.00	0.00
	1400	6.5	G		2.42	9.03		1.99	2.87	3.16	5.81	6.31	11.80	31.02	0.78	1.08		0.00	0.00		0.00	0.00		0.00	0.00
	1400	7.0	G		2.42	9.62		2.10	3.02	3.32	6.11	6.63	12.40	33.53	0.84	1.16		0.00	0.00		0.00	0.00		0.00	0.00
	1400	7.5	G		2.42	10.22		2.20	3.17	3.48	6.40	6.96	13.02	33.53	0.84	1.16		0.00	0.00		0.00	0.00		0.00	0.00
	1400	8.0	G		2.42	10.81		2.31	3.33	3.64	6.70	7.28	13.61	33.53	0.84	1.16		0.00	0.00		0.00	0.00		0.00	0.00
	1400	8.5	G		2.42	11.40		2.42	3.48	3.80	6.99	7.60	14.21	33.53	0.84	1.16		0.00	0.00		0.00	0.00		0.00	0.00
	1400	9.0	G		2.42	11.99		2.53	3.64	3.96	7.29	7.92	14.81	33.53	0.84	1.16		0.00	0.00		0.00	0.00		0.00	0.00
	1400	9.5	G		2.42	12.58		2.63	3.79	4.12	7.58	8.25	15.43	33.53	0.84	1.16		0.00	0.00		0.00	0.00		0.00	0.00

	1600	6.0	I		5.51	0.06	12.83	4.01	5.77	4.80	8.83	9.60	17.95	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1600	6.5	I		5.51	0.06	13.28	4.12	5.93	4.91	9.03	9.82	18.36	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1600	7.0	I		5.51	0.06	13.73	4.23	6.09	5.02	9.24	10.05	18.79	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1600	7.5	I		5.51	0.06	14.18	4.34	6.25	5.14	9.46	10.27	19.20	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1600	8.0	I		5.51	0.06	14.63	4.46	6.42	5.25	9.66	10.50	19.64	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1600	8.5	I		5.51	0.06	15.60	4.70	6.77	5.49	10.10	10.98	20.53	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1600	9.0	I		5.51	0.06	16.05	4.81	6.93	5.60	10.30	11.21	20.96	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1600	8.5	I		5.51	0.06	16.50	4.92	7.08	5.72	10.52	11.43	21.37	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1800	6.0	J		5.35	0.06	12.78	3.97	5.72	4.74	8.72	9.48	17.73	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1800	6.5	J		5.35	0.06	13.14	4.06	5.85	4.83	8.89	9.66	18.06	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1800	7.0	J		5.35	0.06	13.59	4.17	6.00	4.94	9.09	9.88	18.48	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1800	7.5	J		5.35	0.06	14.04	4.28	6.16	5.05	9.29	10.11	18.91	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1800	8.0	J		5.35	0.06	14.49	4.40	6.34	5.17	9.51	10.33	19.32	19.14	0.48	0.66		0.00	0.00		0.00	0.00		0.00	0.00
	1800/ Cylindrical	3.0	H		3.06	0.06	6.44	2.06	2.97	2.50	4.60	5.00	9.35	31.37	0.78	1.08		0.00	0.00		0.00	0.00		0.00	0.00
	1800/ Cylindrical	3.5	H		3.06	0.06	6.85	2.16	3.11	2.60	4.78	5.20	9.72	35.14	0.88	1.21		0.00	0.00		0.00	0.00		0.00	0.00
	1800/ Cylindrical	4.0	H		3.06	0.06	7.25	2.26	3.25	2.70	4.97	5.41	10.12	38.90	0.97	1.34		0.00	0.00		0.00	0.00		0.00	0.00
	1800/ Cylindrical	4.5	H		3.06	0.06	7.66	2.36	3.40	2.80	5.15	5.61	10.49	42.67	1.07	1.48		0.00	0.00		0.00	0.00		0.00	0.00
	1800/ Cylindrical	5.0	H		3.06	0.06	8.06	2.46	3.54	2.91	5.35	5.81	10.86	46.44	1.16	1.60		0.00	0.00		0.00	0.00		0.00	0.00
	1800/ Cylindrical	5.5	H		3.06	0.06	8.47	2.56	3.69	3.01	5.54	6.01	11.24	50.21	1.26	1.74		0.00	0.00		0.00	0.00		0.00	0.00
	Total																**0**	**0**	**0**	**35**	**149**	**264.9**	**44**	**195**	**351.55**

Summary

	B3	B3A	B5	B6
Sand	0	148.54	195.29	1445.97
Aggregate	0	264.9	351.55	2608.29
Bricks	-	-	-	-

Zone B6			
No. of MH	Sand (MT)	Aggregate (MT)	(MT= 1000 kg)
	0.00	0.00	
1	2.40	4.60	
1	2.88	5.46	
2	5.90	10.96	
7	21.56	39.69	
13	43.55	79.43	
16	57.92	104.80	
10	39.00	69.90	
5	20.85	37.20	
1	4.43	7.89	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
2	8.92	16.04	
5	23.95	42.55	
3	15.24	27.03	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
1	6.11	10.60	
12	77.76	134.40	
7	48.23	82.60	
1	7.27	12.40	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	

45	#####	807.75	
20	#####	367.20	
10	99.00	187.90	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
7	65.66	124.11	
2	19.10	36.12	
	0.00	0.00	
	0.00	0.00	
	0.00	0.00	
1	5.68	9.35	
2	11.98	19.44	
4	25.24	40.48	
3	19.89	31.47	
12	83.40	130.32	
15	#####	168.60	
208	**1446**	**2608.29**	

Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
S.no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2259.57
	1.5m to 3.0	1	4.71		1.10	5.19		360.60	1871.51
						12.26	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.68			
						1.19	Cum	4151.40	4924.06
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.34	0.15	1.80	1.44			
		1	0.15	0.50	0.65	0.05			
						2.71	Cum.	4902.30	13299.35
5	**Reinforcement Steel**	1	-	-	-	**298.00**	Kg	76.00	22648.00
6	**Shuttering**								
	For foundation	1.00	6.44		0.35	2.25			
	For RCC - wall	2.00	5.34		1.80	19.23			
	For coverslab	1.00	1.89			1.89			
	Total					**23.37**	Sqm.	186.30	4353.38
7	**CI Steps-5 Kg**	3	-	-	-	**3.00**	No's	240.9	722.70
8	**Disposal of Surplus earth upto 8km lead beyond 50m initial lead**	1	8.26			8.26	Cum	262.5	2166.98
9	**Cost of SFRC Manholeframe and Cover**								**1528.10**
10	**Internal Lining by High Alumina Cement (1:3)**		2.69				Sqm	343.22	**922.32**
11	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		4.00				Cum	103.3	**413.42**
	Total Cost								**55618.98**

Detailed Estimate : RCC M 20 Manholes for Sewers= 900 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
S.No.	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		0.05	**0.24**		401.60	94.66
						14.38	Cum		
2	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	**0.22**			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
3	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	**-0.05**			
						0.11	Cum	4681.30	509.59
4	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.34	0.15	2.30	1.84			
		1	0.15	0.50	1.15	**0.09**			
						3.15	Cum.	4902.30	15446.82
5	**Reinforcement Steel**	1.00	-	-	-	**347.00**	Kg	76.00	26372.00
6	Shuttering								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.30	24.57			
	For coverslab	1.00	1.89			**1.89**			
	Total					**28.39**	Sqm.	186.30	5288.36
7	**CI Steps-5 Kg**	4	-	-	-	4.00	No's	240.9	963.60
8	Disposal of Surplus earth upto 8km lead beyond 50m intitial lead	1.00	9.03			9.03	Cum	262.5	2371.06
9	**Cost of SFRC Manholeframe and Cover**								**1528.10**
10	**Internal Lining by High Alumina Cement (1:3)**		4.18				Sqm	343.22	**1434.72**
11	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		5.35				Cum	103.3	**552.26**
	Total Cost								**64295.28**

Detailed Estimate : RCC M 20 Manholes for Sewers=900 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		0.55	**2.59**		401.60	1041.31
						16.74	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		0.55	2.59		126.4	327.74
						2.59	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	**0.74**			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	2.69		0.20	**0.54**			
	For circular opening	-1	0.25	-	0.20	**-0.05**			
	For walls	1.00	5.34	0.15	2.80	**2.24**			
		1.00	0.15	0.50	1.65	0.12			
						4.01	Cum.	4902.30	19660.26
6	Reinforcement Steel	1.00	-	-	-	401.00	Kg	76.00	30476.00
7	Shuttering								
	For foundation	1	6.44		0.30	**1.93**			
	For RCC - wall	2	5.34		2.80	29.91			
	For coverslab	1.00	1.89			1.89			
	Total					33.73	Sqm.	186.30	6283.33
8	**CI Steps-5 Kg**	6.00	-	-	-	6.00	No's	240.9	1445.40
9	**Disposal of Surplus earth upto 8km lead**	1.00	10.05			10.05	Cum	262.5	2637.02
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		**5.67**				Sqm	343.22	1947.13
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		**6.69**				**Cum**	**103.3**	**691.09**
	Total Cost								75706.08

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.05	**4.95**		401.60	1987.95
						19.09	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.05	4.95		126.4	625.69
						4.95	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	**0.74**			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	**0.12**			
	For circular opening	-1	0.25	-	0.20	**-0.05**			
	For walls	1.00	5.34	0.15	3.30	**2.64**			
		1.00	0.15	0.50	2.15	0.16			
						4.03	Cum.	4902.30	19741.75
6	Reinforcement Steel	1.00	-	-	-	443.00	Kg	76.00	33668.00
7	Shuttering								
	For foundation	1	6.44		0.30	**1.93**			
	For RCC - wall	2	5.34		3.30	35.25			
	For coverslab	1.00	1.89			1.89			
	Total					39.07	Sqm.	186.30	7278.31
8	**CI Steps-5 Kg**	8.00	-	-	-	8.00	No's	240.9	1927.20
9	**Disposal of Surplus earth upto 8km lead**	1.00	11.06			11.06	Cum	262.5	2902.98
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		**7.17**				Sqm	343.22	2459.53
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		8.03				Cum	103.3	829.93
	Total Cost								**82618.14**

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -F)									
	DEPTH - D=4 m							4	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	**7.07**		401.60	2839.93
	4.5m to 6.0m	1	4.71		0.05	0.24		442.60	104.33
						21.45	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.50	**7.07**		126.4	893.84
	4.5m to6.0m	1	4.71		0.05	0.24		134.6	31.73
						7.31	Sqm.		
3	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	**0.22**			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	**0.94**			
						1.67			
						1.19	Cum	4151.40	4924.06
4	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	**1.16**			
	walls for conical portion	1.00	3.79	0.15	1.80	**1.02**			
	For walls	1.00	5.34	0.15	2.25	1.80			
		1.00	0.15	0.50	2.90	0.22			
						4.20	Cum.	4902.30	20576.56
6	Reinforcement Steel	1.00	-	-	-	**462.00**	Kg	76.00	35112.00
7	**Shuttering**								
	For foundation	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.25	24.03			
	walls for conical portion	2.00	3.79		1.80	13.63			
	Total					39.59	Sqm.	186.30	7376.27
8	**CI Steps-5 Kg**	9.00	-	-	-	9.00	No's	240.9	2168.10
9	**Disposal of Surplus earth upto 8km lead**	1.00	13.19			13.19	Cum	262.5	3462.44
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		8.66				Sqm	343.22	2971.93
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		**8.26**				**Cum**	**103.3**	**853.27**
	Total Cost								**87587.20**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=4.5 m							4.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		0.55	2.59		442.60	1147.61
						23.81	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		0.55	2.59		134.60	349.00
						9.66	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	2.75	2.20			
		1	0.15	0.50	3.40	0.26			
						4.64	Cum.	4902.30	22724.03
6	**Reinforcement Steel**	1	-	-	-	**510.00**	Kg	76.00	38760.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.75	29.37			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**44.93**	Sqm.	186.30	8371.24
8	**CI Steps-5 Kg**	11	-	-	-	**11.00**	No's	240.9	2649.90
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	14.20			14.20	Cum	262.5	3728.39
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		10.15				Sqm	343.22	**3484.33**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.60				Cum	103.3	**992.10**
	Total Cost								**97137.17**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=5.0 m							5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.05	4.95		442.60	2190.90
						26.16	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.05	4.95		134.60	666.28
						12.02	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	3.25	2.60			
		1	0.15	0.50	3.90	0.29			
						5.07	Cum.	4902.30	24871.50
6	**Reinforcement Steel**	1	-	-	-	**558.00**	Kg	76.00	42408.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		3.25	34.71			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**50.27**	Sqm.	186.30	9366.22
8	**CI Steps-5 Kg**	13	-	-	-	**13.00**	No's	240.9	3131.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	15.22			15.22	Cum	262.5	3994.35
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**		11.64				Sqm	343.22	**3996.73**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		10.95				Cum	103.3	**1130.94**
	Total Cost								**106687.19**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=5.5 m							5.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		0.05	**0.24**		483.60	113.99
						28.52	Cum		
2	Timbering								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	**7.07**		134.60	951.83
	6m to 7.5m	1	4.71		0.05	0.24		142.80	33.66
						14.38	Sqm.		
3	PCC - M15 Grade								
	For benching portion	1	1.89		1.40	**2.64**			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	**1.55**	0.55	**0.94**			
						1.67			
						1.19	Cum	4151.40	4924.06
4	PCC - M20 Grade								
	For collar portion	1	2.54	0.25	0.25	**0.16**			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	RCC - M20 Grade								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	3.75	**3.00**			
		1	0.15	0.50	4.40	**0.33**			
						5.51	Cum.	4902.30	27018.97
6	Reinforcement Steel	1.00	-	-	-	551.00	Kg	76.00	41876.00
7	Shuttering								
	For foundation	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		3.75	**40.06**			
	walls for conical portion	2	3.79		1.80	**13.63**			
	Total					55.62	Sqm.	186.30	10361.19
8	CI Steps-5 Kg	14.00	-	-	-	14.00	No's	240.9	3372.60
9	**Disposal of Surplus earth upto 8 km lea**	1.00	16.23			16.23	Cum	262.5	4260.30
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	13.14				Sqm		343.22	**4509.14**
12	**Filling available excavated earth (excluding roc**		12.29				Cum	103.3	**1269.77**
	Total Cost								**111827.88**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=6.0 m							6	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		0.55	2.59		483.60	1253.92
						30.88	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		0.55	2.59		142.80	370.27
						16.74	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	4.25	3.40			
		1	0.15	0.50	4.90	0.37			
						5.95	Cum.	4902.30	29166.43
6	**Reinforcement Steel**	1	-	-	-	**595.00**	Kg	76.00	45220.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		4.25	45.40			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**60.96**	Sqm.	186.30	11356.16
8	**CI Steps-5 Kg**	16	-	-	-	**16.00**	No's	240.9	3854.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	17.24			17.24	Cum	262.5	4526.26
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement**	14.63				Sqm		343.22	**5021.54**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		13.64				Cum	103.3	**1408.61**
	Total Cost								**121189.85**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=6.5 m							6.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.05	4.95		483.60	2393.85
						33.24	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		1.05	4.95		142.80	706.87
						19.09	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	4.75	3.81			
		1	0.15	0.50	5.40	0.41			
						6.39	Cum.	4902.30	31313.90
6	**Reinforcement Steel**	1	-	-	-	**703.00**	Kg	76.00	53428.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		4.75	50.74			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**66.30**	Sqm.	186.30	12351.14
8	**CI Steps-5 Kg**	18	-	-	-	**18.00**	No's	240.9	4336.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	18.26			18.26	Cum	262.5	4792.21
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement**	16.12				Sqm		343.22	**5533.94**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.98				Cum	103.3	**1547.45**
	Total Cost								**135415.82**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=7.0 m							7	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		0.05	0.24		524.60	123.66
						35.59	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.80	1009.81
	7.5m to 9.0m	1	4.71		0.05	0.24		151.00	35.59
						21.45	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	5.25	4.21			
		1	0.15	0.50	5.90	0.44			
						6.83	Cum.	4902.30	33461.37
6	**Reinforcement Steel**	1	-	-	-	**751.00**	Kg	76.00	57076.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		5.25	56.08			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**71.64**	Sqm.	186.30	13346.11
8	**CI Steps-5 Kg**	19	-	-	-	**19.00**	No's	240.9	4577.10
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.27			19.27	Cum	262.5	5058.17
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.34**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.32				Cum	103.3	**1686.28**
	Total Cost								**144852.48**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=7.5 m							7.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		0.55	2.59		524.60	1360.23
						37.95	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.80	1009.81
	7.5m to 9.0m	1	4.71		0.55	2.59		151.00	391.53
						23.81	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	5.75	4.61			
		1	0.15	0.50	6.40	0.48			
						7.26	Cum.	4902.30	35608.84
6	**Reinforcement Steel**	1	-	-	-	**799.00**	Kg	76.00	60724.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		5.75	61.42			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**76.98**	Sqm.	186.30	14341.08
8	**CI Steps-5 Kg**	21	-	-	-	**21.00**	No's	240.9	5058.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.28			20.28	Cum	262.5	5324.12
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.34**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		17.67				Cum	103.3	**1825.12**
	Total Cost								**154122.02**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=8.0 m							8	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		1.05	4.95		524.60	2596.81
						40.31	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.80	1009.81
	7.5m to 9.0m	1	4.71		1.05	4.95		151.00	747.46
						26.16	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	6.25	5.01			
		1	0.15	0.50	6.90	0.52			
						7.70	Cum.	4902.30	37756.30
6	**Reinforcement Steel**	1	-	-	-	**847.00**	Kg	76.00	64372.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		6.25	66.76			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**82.32**	Sqm.	186.30	15336.06
8	**CI Steps-5 Kg**	23	-	-	-	**23.00**	No's	240.9	5540.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	21.30			21.30	Cum	262.5	5590.08
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.34**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.01				Cum	103.3	**1963.96**
	Total Cost								**163391.57**

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
	DEPTH - D=8.5 m							8.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		1.55	7.31		524.60	3833.38
						42.66	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.80	1009.81
	7.5m to 9.0m	1	4.71		1.55	7.31		151.00	1103.39
						28.52	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	6.75	5.41			
		1	0.15	0.50	7.40	0.56			
						8.14	Cum.	4902.30	39903.77
6	**Reinforcement Steel**	1	-	-	-	**895.00**	Kg	76.00	68020.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		6.75	72.10			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**87.66**	Sqm.	186.30	16331.03
8	**CI Steps-5 Kg**	24	-	-	-	**24.00**	No's	240.9	5781.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.31			22.31	Cum	262.5	5856.03
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.34**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		20.36				Cum	103.3	**2102.79**
	Total Cost								**172420.19**

	DEPTH - D=9.0 m							9	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		2.05	9.66		524.60	5069.96
						45.02	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.80	1009.81
	7.5m to 9.0m	1	4.71		2.05	9.66		151.00	1459.33
						30.88	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	7.25	5.81			
		1	0.15	0.50	7.90	0.59			
						8.58	Cum.	4902.30	42051.24
6	**Reinforcement Steel**	1	-	-	-	**944.00**	Kg	76.00	71744.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		7.25	77.44			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**93.00**	Sqm.	186.30	17326.01
8	**CI Steps-5 Kg**	26	-	-	-	**26.00**	No's	240.9	6263.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	23.32			23.32	Cum	262.5	6121.99
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.34**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		21.70				Cum	103.3	**2241.63**
	Total Cost								**181765.76**

	DEPTH - D=9.5m							9.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	4.71		1.50	7.07		319.60	2260.06
	1.5m to 3.0	1	4.71		1.50	7.07		360.60	2549.99
	3.0m to 4.5m	1	4.71		1.50	7.07		401.60	2839.93
	4.5m to 6.0m	1	4.71		1.50	7.07		442.60	3129.86
	6.0m to 7.5m	1	4.71		1.50	7.07		483.60	3419.79
	7.5m to 9.0m	1	4.71		2.55	12.02		524.60	6306.53
						47.38	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to6.0m	1	4.71		1.50	7.07		134.60	951.83
	6m to 7.5m	1	4.71		1.50	7.07		142.80	1009.81
	7.5m to 9.0m	1	4.71		2.55	12.02		151.00	1815.26
						33.24	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	For channel portion(Circular portion)	1	0.48		1.55	0.74			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						1.19	Cum	4151.40	4924.06
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	3.30		0.35	1.16			
	walls for conical portion	1	3.79	0.15	1.80	1.02			
	For walls	1	5.34	0.15	7.75	6.21			
		1	0.15	0.50	8.40	0.63			
						9.02	Cum.	4902.30	44198.71
6	**Reinforcement Steel**	1	-	-	-	**992.00**	Kg	76.00	75392.00
7	**Shuttering**								
	For foundation	1.00	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		7.75	82.78			
	walls for conical portion	2	3.79		1.80	13.63			
	Total					**98.34**	Sqm.	186.30	18320.98
8	**CI Steps-5 Kg**	28	-	-	-	**28.00**	No's	240.9	6745.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	24.34			24.34	Cum	262.5	6387.95
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Internal Lining by High Alumina Cement (1:3)**	17.62				Sqm		343.22	**6046.34**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		23.04				Cum	103.3	**2380.47**
	Total Cost								**191035.30**

Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.10	6.07		360.60	**2187.76**
						14.34	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
4	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	1.80	1.61			
		1	0.15	0.50	0.47	0.04			
						3.11	Cum.	4902.30	**15223.75**
5	**Reinforcement Steel**	1	-	-	-	**342.00**	Kg	76.00	**25992.00**
6	**Shuttering**								
	For foundation	1.00	7.07		0.35	2.47			
	For RCC - wall	2.00	5.97		1.80	21.49			
	For coverslab	1.00	2.41			2.41			
	Total					**26.37**	Sqm.	186.30	**4912.32**
7	**CI Steps-5 Kg**	2	-	-	-	**2.00**	No's	240.9	**481.80**
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	9.40			9.40	Cum	262.5	**2467.78**
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
11	**Internal Lining by High Alumina**	2.60				Sqm		343.22	**893.20**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		4.94				Cum	103.3	**510.21**
	Total Cost								**64264.29**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
Sr no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		0.05	0.28		401.60	**110.75**
						16.82	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
4	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	2.30	2.06			
		1	0.15	0.50	0.97	0.07			
						3.59	Cum.	4902.30	**17602.23**
5	**Reinforcement Steel**	1	-	-	-	**395.00**	Kg	76.00	**30020.00**
6	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.30	27.46			
	For coverslab	1.00	2.41			2.41			
	Total					**31.98**	Sqm.	186.30	**5958.50**
7	**CI Steps-5 Kg**	4	-	-	-	**4.00**	No's	240.9	**963.60**
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	10.23			10.23	Cum	262.5	**2686.09**
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
11	**Internal Lining by High Alumina**	4.41				Sqm		343.22	**1513.47**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		6.59				Cum	103.3	**680.69**
	Total Cost								**74114.11**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		0.55	3.03		401.60	**1218.25**
						19.58	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		0.55	3.03		126.40	**383.43**
						3.03	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	3.30		0.20	0.66			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	2.80	2.51			
		1	0.15	0.50	1.47	0.11			
						4.62	Cum.	4902.30	**22647.33**
6	**Reinforcement Steel**	1	-	-	-	**508.00**	Kg	76.00	**38608.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.80	33.43			
	For coverslab	1.00	2.41			2.41			
	Total					**37.95**	Sqm.	186.30	**7070.53**
8	**CI Steps-5 Kg**	5	-	-	-	**5.00**	No's	240.9	**1204.50**
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	11.34			11.34	Cum	262.5	**2976.78**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina**	6.22				Sqm		343.22	**2133.75**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		8.24				Cum	103.3	**851.17**
	Total Cost								**91672.52**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.05	5.79		401.60	**2325.76**
						22.34	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.05	5.79		126.40	**732.01**
						5.79	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	5.97	0.15	3.30	2.95			
		1	0.15	0.50	1.97	0.15			
						4.56	Cum.	4902.30	**22359.20**
6	**Reinforcement Steel**	1	-	-	-	**502.00**	Kg	76.00	**38152.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.30	39.40			
	For coverslab	1.00	2.41			2.41			
	Total					**43.92**	Sqm.	186.30	**8182.56**
8	**CI Steps-5 Kg**	7	-	-	-	**7.00**	No's	240.9	**1686.30**
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	12.45			12.45	Cum	262.5	**3267.48**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina**	8.02				Sqm		343.22	**2754.02**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.89				Cum	103.3	**1021.64**
	Total Cost								**95059.75**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=4 m							4	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		0.05	0.28		442.60	**122.06**
						25.10	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	**1045.73**
	4.5m to6.0m	1	5.52		0.05	0.28		134.6	**37.12**
						8.55	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	2.25	2.01			
		1	0.15	0.50	2.72	0.20			
						4.72	Cum.	4902.30	**23124.71**
6	**Reinforcement Steel**	1	-	-	-	**519.00**	Kg	76.00	**39444.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.25	26.86			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**43.74**	Sqm.	186.30	**8148.84**
8	**CI Steps-5 Kg**	9	-	-	-	**9.00**	No's	240.9	**2168.10**
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	15.17			15.17	Cum	262.5	**3981.77**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina**	9.83				Sqm		343.22	**3374.30**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.93				Cum	103.3	**1025.43**
	Total Cost								**100373.35**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=4.5 m							4.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		0.55	3.03		442.60	**1342.63**
						27.85	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	**1045.73**
	4.5m to6.0m	1	5.52		0.55	3.03		134.6	**408.31**
						11.31	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	2.75	2.46			
		1	0.15	0.50	3.22	0.24			
						5.20	Cum.	4902.30	**25503.19**
6	**Reinforcement Steel**	1	-	-	-	**572.00**	Kg	76.00	**43472.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		2.75	32.83			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**49.71**	Sqm.	186.30	**9260.87**
8	**CI Steps-5 Kg**	10	-	-	-	**10.00**	No's	240.9	**2409.00**
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	16.28			16.28	Cum	262.5	**4272.47**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina**	11.64				Sqm		343.22	**3994.58**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		11.58				Cum	103.3	**1195.90**
	Total Cost								**110805.97**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=5.0 m							5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.05	5.79		442.60	**2563.20**
						30.61	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	**1045.73**
	4.5m to6.0m	1	5.52		1.05	5.79		134.6	**779.50**
						14.06	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	3.25	2.91			
		1	0.15	0.50	3.72	0.28			
						5.69	Cum.	4902.30	**27881.67**
6	**Reinforcement Steel**	1	-	-	-	**626.00**	Kg	76.00	**47576.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.25	38.80			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**55.68**	Sqm.	186.30	**10372.89**
8	**CI Steps-5 Kg**	12	-	-	-	**12.00**	No's	240.9	**2890.80**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	17.38			17.38	Cum	262.5	**4563.16**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	13.45				Sqm		343.22	**4614.85**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		13.23				Cum	103.3	**1366.38**
	Total Cost								**121555.47**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=5.5 m							5.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	**3661.71**
	6.0m to 7.5m	1	5.52		0.05	0.28		483.60	**133.36**
						33.37	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	**1045.73**
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	**1113.57**
	6m to 7.5m	1	5.52		0.05	0.28		142.80	**39.38**
						16.82	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	3.75	3.36			
		1	0.15	0.50	4.22	0.32			
						6.17	Cum.	4902.30	**30260.16**
6	**Reinforcement Steel**	1	-	-	-	**679.00**	Kg	76.00	**51604.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		3.75	44.77			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**61.65**	Sqm.	186.30	**11484.92**
8	**CI Steps-5 Kg**	14	-	-	-	**14.00**	No's	240.9	**3372.60**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	18.49			18.49	Cum	262.5	**4853.86**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	15.25				Sqm		343.22	**5235.13**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.88				Cum	103.3	**1536.86**
	Total Cost								**132242.57**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=6.0 m							6	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	**3661.71**
	6.0m to 7.5m	1	5.52		0.55	3.03		483.60	**1467.00**
						36.13	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	**1045.73**
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	**1113.57**
	6m to 7.5m	1	5.52		0.55	3.03		142.80	**433.18**
						19.58	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	4.25	3.81			
		1	0.15	0.50	4.72	0.35			
						6.66	Cum.	4902.30	**32638.64**
6	**Reinforcement Steel**	1	-	-	-	**732.00**	Kg	76.00	**55632.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		4.25	50.74			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**67.62**	Sqm.	186.30	**12596.95**
8	**CI Steps-5 Kg**	15	-	-	-	**15.00**	No's	240.9	**3613.50**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	19.60			19.60	Cum	262.5	**5144.55**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina**	17.06				Sqm		343.22	**5855.40**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.53				Cum	103.3	**1707.34**
	Total Cost								**142810.86**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=6.5 m							6.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	**3661.71**
	6.0m to 7.5m	1	5.52		1.05	5.79		483.60	**2800.64**
						38.88	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	**1045.73**
	4.5m to6.0m	1	5.52		1.50	8.27		134.6	**1113.57**
	6m to 7.5m	1	5.52		1.05	5.79		142.80	**826.99**
						22.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	4.75	4.25			
		1	0.15	0.50	5.22	0.39			
						7.14	Cum.	4902.30	**35017.12**
6	**Reinforcement Steel**	1	-	-	-	**786.00**	Kg	76.00	**59736.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		4.75	56.71			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**73.59**	Sqm.	186.30	**13708.98**
8	**CI Steps-5 Kg**	17	-	-	-	**17.00**	No's	240.9	**4095.30**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.71			20.71	Cum	262.5	**5435.25**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina**	18.87				Sqm		343.22	**6475.68**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		18.18				Cum	103.3	**1877.82**
	Total Cost								**153696.08**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=7.0 m							7	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	**3661.71**
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	**4000.91**
	7.5m to 9.0m	1	5.52		0.05	0.28		524.60	**144.67**
						41.64	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	**1045.73**
	4.5m to6.0m	1	5.52		1.50	8.27		134.60	**1113.57**
	6m to 7.5m	1	5.52		1.50	8.27		142.80	**1181.41**
	7.5m to 9.0m	1	5.52		0.05	0.28		151.00	**41.64**
						25.10	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	5.25	4.70			
		1	0.15	0.50	5.72	0.43			
						7.63	Cum.	4902.30	**37395.60**
6	**Reinforcement Steel**	1	-	-	-	**839.00**	Kg	76.00	**63764.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		5.25	62.67			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**79.55**	Sqm.	186.30	**14821.01**
8	**CI Steps-5 Kg**	19	-	-	-	**19.00**	No's	240.9	**4577.10**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	21.81			21.81	Cum	262.5	**5725.94**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7095.95**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.83				Cum	103.3	**2048.29**
	Total Cost								**164518.82**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
	DEPTH - D=7.5 m							7.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	**3661.71**
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	**4000.91**
	7.5m to 9.0m	1	5.52		0.55	3.03		524.60	**1591.38**
						44.40	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	**1045.73**
	4.5m to6.0m	1	5.52		1.50	8.27		134.60	**1113.57**
	6m to 7.5m	1	5.52		1.50	8.27		142.80	**1181.41**
	7.5m to 9.0m	1	5.52		0.55	3.03		151.00	**458.06**
						27.85	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	5.75	5.15			
		1	0.15	0.50	6.22	0.47			
						8.11	Cum.	4902.30	**39774.09**
6	**Reinforcement Steel**	1	-	-	-	**892.00**	Kg	76.00	**67792.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		5.75	68.64			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**85.52**	Sqm.	186.30	**15933.04**
8	**CI Steps-5 Kg**	20	-	-	-	**20.00**	No's	240.9	**4818.00**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.92			22.92	Cum	262.5	**6016.64**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7095.95**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		21.48				Cum	103.3	**2218.77**
	Total Cost								**174602.55**

	DEPTH - D=8.0 m							8	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	**3661.71**
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	**4000.91**
	7.5m to 9.0m	1	5.52		1.05	5.79		524.60	**3038.08**
						47.16	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	**1045.73**
	4.5m to6.0m	1	5.52		1.50	8.27		134.60	**1113.57**
	6m to 7.5m	1	5.52		1.50	8.27		142.80	**1181.41**
	7.5m to 9.0m	1	5.52		1.05	5.79		151.00	**874.48**
						30.61	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	6.25	5.60			
		1	0.15	0.50	6.72	0.50			
						8.60	Cum.	4902.30	**42152.57**
6	**Reinforcement Steel**	1	-	-	-	**946.00**	Kg	76.00	**71896.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		6.25	74.61			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**91.49**	Sqm.	186.30	**17045.07**
8	**CI Steps-5 Kg**	22	-	-	-	**22.00**	No's	240.9	**5299.80**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	24.03			24.03	Cum	262.5	**6307.33**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7095.95**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		23.13				Cum	103.3	**2389.25**
	Total Cost								**185003.15**

	DEPTH - D=8.5 m							8.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	**2644.11**
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	**2983.31**
	3.0m to 4.5m	1	5.52		1.50	8.27		401.60	**3322.51**
	4.5m to 6.0m	1	5.52		1.50	8.27		442.60	**3661.71**
	6.0m to 7.5m	1	5.52		1.50	8.27		483.60	**4000.91**
	7.5m to 9.0m	1	5.52		1.55	8.55		524.60	**4484.78**
						49.91	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	**1045.73**
	4.5m to6.0m	1	5.52		1.50	8.27		134.60	**1113.57**
	6m to 7.5m	1	5.52		1.50	8.27		142.80	**1181.41**
	7.5m to 9.0m	1	5.52		1.55	8.55		151.00	**1290.89**
						33.37	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	Deductions								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						2.56			
						1.51	Cum	4151.40	**6274.12**
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	**509.59**
5	**RCC - M20 Grade**								
	For foundation	1	3.98		0.35	1.39			
	walls for conical portion	1	4.10	0.15	1.80	1.11			
	For walls	1	5.97	0.15	6.75	6.04			
		1	0.15	0.50	7.22	0.54			
						9.08	Cum.	4902.30	**44531.05**
6	**Reinforcement Steel**	1	-	-	-	**999.00**	Kg	76.00	**75924.00**
7	**Shuttering**								
	For foundation	1.00	7.07		0.30	2.12			
	For RCC - wall	2.00	5.97		6.75	80.58			
	walls for conical portion	2	4.10		1.80	14.76			
	Total					**97.46**	Sqm.	186.30	**18157.10**
8	**CI Steps-5 Kg**	24	-	-	-	**24.00**	No's	240.9	**5781.60**
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	25.14			25.14	Cum	262.5	**6598.03**
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.67				Sqm		343.22	**7095.95**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		24.78				Cum	103.3	**2559.73**
	Total Cost								**195327.75**

Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.10	7.27		360.60	2620.02
						17.17	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	6.75	0.15	1.80	1.82			
		1	0.15	0.50	0.31	0.02			
						3.63	Cum.	4902.30	17804.76
5	**Reinforcement Steel**	1	-	-	-	**400.00**	Kg	76.00	30400.00
6	**Shuttering**								
	For foundation	1.00	7.85		0.35	2.75			
	For RCC - wall	2.00	6.75		1.80	24.32			
	For coverslab	1.00	3.14			3.14			
	Total					**30.21**	Sqm.	186.30	5627.45
7	**CI Steps-5 Kg**	1	-	-	-	**1.00**	No's	240.9	240.90
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	10.93			10.93	Cum	262.5	2868.13
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	meter	134.95	1214.55
11	**Internal Lining by High Alumina Cement (1:3)**	2.46				Sqm		343.22	**845.73**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		6.25				Cum	103.3	**645.35**
	Total Cost								**75648.63**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
Sr no	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		0.05	0.33		401.60	132.63
						20.15	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	6.75	0.15	2.30	2.33			
		1	0.15	0.50	0.81	0.06			
						4.18	Cum.	4902.30	20472.01
5	**Reinforcement Steel**	1	-	-	-	**459.00**	Kg	76.00	34884.00
6	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		2.30	31.07			
	For coverslab	1.00	3.14			3.14			
	Total					**36.57**	Sqm.	186.30	6812.64
7	**CI Steps-5 Kg**	3	-	-	-	**3.00**	No's	240.9	722.70
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	11.82			11.82	Cum	262.5	3103.06
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
11	**Internal Lining by High Alumina Cement (1:3)**	4.66				Sqm		343.22	**1600.85**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		8.32				Cum	103.3	**859.94**
	Total Cost								**86756.87**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	2033.08
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	2291.67
	3.0m to 4.5m	1	6.61		0.55	3.63		401.60	935.10
						23.45	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		0.55	3.63		126.40	415.24
						3.63	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	7006.19
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	For coverslab	1	4.15		0.20	0.83			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	6.75	0.15	2.80	2.84			
		1	0.15	0.50	1.31	0.10			
						5.43	Cum.	4902.30	21093.77
6	**Reinforcement Steel**	1	-	-	-	**598.00**	Kg	76.00	43175.60
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		2.80	37.82			
	For coverslab	1.00	3.14			3.14			
	Total					**43.32**	Sqm.	186.30	7221.87
8	**CI Steps-5 Kg**	5	-	-	-	**5.00**	No's	240.9	1008.50
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	13.05			13.05	Cum	262.5	3587.76
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	6.86				Sqm		343.22	**2265.22**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		10.40				Cum	103.3	**690.70**
	Total Cost								**96951.66**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.05	6.94		401.60	2785.28
						26.75	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.05	6.94		126.40	876.64
						6.94	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	6.75	0.15	3.30	3.34			
		1	0.15	0.50	1.81	0.14			
						5.26	Cum.	4902.30	25806.51
6	**Reinforcement Steel**	1	-	-	-	**579.00**	Kg	76.00	44004.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		3.30	44.58			
	For coverslab	1.00	3.14			3.14			
	Total					**50.08**	Sqm.	186.30	9329.34
8	**CI Steps-5 Kg**	6	-	-	-	**6.00**	No's	240.9	1445.40
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	14.27			14.27	Cum	262.5	3746.30
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	9.06				Sqm		343.22	**3111.09**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		12.48				Cum	103.3	**1289.13**
	Total Cost								**110562.73**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=4 m							4	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		0.05	0.33		442.60	146.17
						30.05	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to6.0m	1	6.61		0.05	0.33		134.6	44.45
						10.24	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	2.25	2.28			
		1	0.15	0.50	2.56	0.19			
						5.40	Cum.	4902.30	26485.39
6	**Reinforcement Steel**	1	-	-	-	**594.00**	Kg	76.00	45144.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		2.25	30.39			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**48.92**	Sqm.	186.30	9114.55
8	**CI Steps-5 Kg**	8	-	-	-	**8.00**	No's	240.9	1927.20
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	17.82			17.82	Cum	262.5	4678.49
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	11.26				Sqm		343.22	**3866.21**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		12.23				Cum	103.3	**1263.45**
	Total Cost								**116070.27**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=4.5 m							4.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		0.55	3.63		442.60	1607.90
						33.36	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to6.0m	1	6.61		0.55	3.63		134.6	488.98
						13.54	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	2.75	2.79			
		1	0.15	0.50	3.06	0.23			
						5.95	Cum.	4902.30	29152.64
6	**Reinforcement Steel**	1	-	-	-	**654.00**	Kg	76.00	49704.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		2.75	37.15			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**55.68**	Sqm.	186.30	10372.89
8	**CI Steps-5 Kg**	10	-	-	-	**10.00**	No's	240.9	2409.00
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	19.05			19.05	Cum	262.5	5000.11
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	13.46				Sqm		343.22	**4621.32**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.31				Cum	103.3	**1478.04**
	Total Cost								**128235.24**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=5.0 m							5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		1.05	6.94		442.60	3069.63
						36.66	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to6.0m	1	6.61		1.05	6.94		134.6	933.51
						16.84	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	3.25	3.29			
		1	0.15	0.50	3.56	0.27			
						6.49	Cum.	4902.30	31819.89
6	**Reinforcement Steel**	1	-	-	-	**714.00**	Kg	76.00	54264.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		3.25	43.90			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**62.43**	Sqm.	186.30	11631.24
8	**CI Steps-5 Kg**	11	-	-	-	**11.00**	No's	240.9	2649.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	20.27			20.27	Cum	262.5	5321.73
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	15.66				Sqm		343.22	**5376.44**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.39				Cum	103.3	**1692.63**
	Total Cost								**140159.33**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=5.5 m							5.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		1.50	9.91		442.60	4385.19
	6.0m to 7.5m	1	6.61		0.05	0.33		483.60	159.71
						39.96	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to6.0m	1	6.61		1.50	9.91		134.6	1333.59
	6m to 7.5m	1	6.61		0.05	0.33		142.80	47.16
						20.15	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	3.75	3.80			
		1	0.15	0.50	4.06	0.30			
						7.03	Cum.	4902.30	34487.15
6	**Reinforcement Steel**	1	-	-	-	**774.00**	Kg	76.00	58824.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		3.75	50.66			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**69.19**	Sqm.	186.30	12889.59
8	**CI Steps-5 Kg**	13	-	-	-	**13.00**	No's	240.9	3131.70
9	**Disposal of Surplus earth upto 8 km**	1	21.50			21.50	Cum	262.5	5643.35
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	17.86				Sqm		343.22	**6131.56**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		18.46				Cum	103.3	**1907.23**
	Total Cost								**152340.59**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=6.0 m							6	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		1.50	9.91		442.60	4385.19
	6.0m to 7.5m	1	6.61		0.55	3.63		483.60	1756.85
						43.26	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to6.0m	1	6.61		1.50	9.91		134.6	1333.59
	6m to 7.5m	1	6.61		0.55	3.63		142.80	518.77
						23.45	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	4.25	4.31			
		1	0.15	0.50	4.56	0.34			
						7.58	Cum.	4902.30	37154.40
6	**Reinforcement Steel**	1	-	-	-	**834.00**	Kg	76.00	63384.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		4.25	57.41			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**75.94**	Sqm.	186.30	14147.94
8	**CI Steps-5 Kg**	15	-	-	-	**15.00**	No's	240.9	3613.50
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.72			22.72	Cum	262.5	5964.97
10	**Cost of SFRC Manholeframe and Cover**								**1528.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	20.06				Sqm		343.22	**6886.68**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		20.54				Cum	103.3	**2121.82**
	Total Cost								**165243.07**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=6.5 m							6.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		1.50	9.91		442.60	4385.19
	6.0m to 7.5m	1	6.61		1.05	6.94		483.60	3353.99
						46.57	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to6.0m	1	6.61		1.50	9.91		134.6	1333.59
	6m to 7.5m	1	6.61		1.05	6.94		142.80	990.38
						26.75	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	4.75	4.81			
		1	0.15	0.50	5.06	0.38			
						8.12	Cum.	4902.30	39821.65
6	**Reinforcement Steel**	1	-	-	-	**894.00**	Kg	76.00	67944.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		4.75	64.17			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**82.70**	Sqm.	186.30	15406.29
8	**CI Steps-5 Kg**	16	-	-	-	**16.00**	No's	240.9	3854.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	23.95			23.95	Cum	262.5	6286.59
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	22.27				Sqm		343.22	**7641.80**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		22.62				Cum	103.3	**2336.41**
	Total Cost								**176754.65**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=7.0 m							7	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		1.50	9.91		442.60	4385.19
	6.0m to 7.5m	1	6.61		1.50	9.91		483.60	4791.41
	7.5m to 9.0m	1	6.61		0.05	0.33		524.60	173.25
						49.87	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.40	1252.35
	4.5m to6.0m	1	6.61		1.50	9.91		134.60	1333.59
	6m to 7.5m	1	6.61		1.50	9.91		142.80	1414.83
	7.5m to 9.0m	1	6.61		0.05	0.33		151.00	49.87
						30.05	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	5.25	5.32			
		1	0.15	0.50	5.56	0.42			
						8.67	Cum.	4902.30	42488.90
6	**Reinforcement Steel**	1	-	-	-	**953.00**	Kg	76.00	72428.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		5.25	70.92			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**89.45**	Sqm.	186.30	16664.64
8	**CI Steps-5 Kg**	18	-	-	-	**18.00**	No's	240.9	4336.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	25.17			25.17	Cum	262.5	6608.21
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	29.36				Sqm		343.22	**10077.42**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		24.70				Cum	103.3	**2551.01**
	Total Cost								**190702.88**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=7.5 m							7.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		1.50	9.91		442.60	4385.19
	6.0m to 7.5m	1	6.61		1.50	9.91		483.60	4791.41
	7.5m to 9.0m	1	6.61		0.55	3.63		524.60	1905.80
						53.17	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.40	1252.35
	4.5m to6.0m	1	6.61		1.50	9.91		134.60	1333.59
	6m to 7.5m	1	6.61		1.50	9.91		142.80	1414.83
	7.5m to 9.0m	1	6.61		0.55	3.63		151.00	548.56
						33.36	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	5.75	5.83			
		1	0.15	0.50	6.06	0.45			
						9.21	Cum.	4902.30	45156.16
6	**Reinforcement Steel**	1	-	-	-	**1013.00**	Kg	76.00	76988.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		5.75	77.68			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**96.20**	Sqm.	186.30	17922.99
8	**CI Steps-5 Kg**	20	-	-	-	**20.00**	No's	240.9	4818.00
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	26.40			26.40	Cum	262.5	6929.83
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	29.36				Sqm		343.22	**10077.42**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		26.77				Cum	103.3	**2765.60**
	Total Cost								**202437.74**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=8.0 m							8	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	6.61		1.50	9.91		319.60	3166.53
	1.5m to 3.0	1	6.61		1.50	9.91		360.60	3572.75
	3.0m to 4.5m	1	6.61		1.50	9.91		401.60	3978.97
	4.5m to 6.0m	1	6.61		1.50	9.91		442.60	4385.19
	6.0m to 7.5m	1	6.61		1.50	9.91		483.60	4791.41
	7.5m to 9.0m	1	6.61		1.05	6.94		524.60	3638.34
						56.47	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.40	1252.35
	4.5m to6.0m	1	6.61		1.50	9.91		134.60	1333.59
	6m to 7.5m	1	6.61		1.50	9.91		142.80	1414.83
	7.5m to 9.0m	1	6.61		1.05	6.94		151.00	1047.25
						36.66	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	Deductions								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						3.70			
						2.11	Cum	4151.40	8752.52
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	4.91		0.35	1.72			
	walls for conical portion	1	4.49	0.15	1.80	1.21			
	For walls	1	6.75	0.15	6.25	6.33			
		1	0.15	0.50	6.56	0.49			
						9.76	Cum.	4902.30	47823.41
6	**Reinforcement Steel**	1	-	-	-	**1073.00**	Kg	76.00	81548.00
7	**Shuttering**								
	For foundation	1.00	7.85		0.30	2.36			
	For RCC - wall	2.00	6.75		6.25	84.43			
	walls for conical portion	2	4.49		1.80	16.17			
	Total					**102.96**	Sqm.	186.30	19181.34
8	**CI Steps-5 Kg**	21	-	-	-	**21.00**	No's	240.9	5058.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	27.62			27.62	Cum	262.5	7251.45
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	29.36				Sqm		343.22	**10077.42**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		28.85				Cum	103.3	**2980.19**
	Total Cost								**213931.68**

Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)									
	DEPTH - D=2 m							2	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.10	8.30		360.60	2993.86
						19.62	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	7.38	0.15	1.80	1.99			
		1	0.15	0.50	0.08	0.01			
						4.07	Cum.	4902.30	19953.34
5	**Reinforcement Steel**	1	-	-	-	**448.00**	Kg	76.00	34048.00
6	**Shuttering**								
	For foundation	1.00	8.48		0.35	2.97			
	For RCC - wall	2.00	7.38		1.80	26.58			
	For coverslab	1.00	3.80			3.80			
	Total					**33.35**	Sqm.	186.30	6212.73
7	**CI Steps-5 Kg**	1	-	-	-	**1.00**	No's	240.9	240.90
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	12.22			12.22	Cum	262.5	3207.90
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
11	**Internal Lining by High Alumina Cement (1:3)**	8.39				Sqm		343.22	**2878.79**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		7.40				Cum	103.3	**764.77**
	Total Cost								**86648.59**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=2.5 m							2.5	
Srno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		0.05	0.38		401.60	151.56
						23.02	Cum		
2	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
3	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
4	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	7.38	0.15	2.30	2.55			
		1	0.15	0.50	0.58	0.04			
						4.66	Cum.	4902.30	22851.61
5	**Reinforcement Steel**	1	-	-	-	**513.00**	Kg	76.00	38988.00
6	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		2.30	33.96			
	For coverslab	1.00	3.80			3.80			
	Total					**40.31**	Sqm.	186.30	7509.13
7	**CI Steps-5 Kg**	2	-	-	-	**2.00**	No's	240.9	481.80
8	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	13.16			13.16	Cum	262.5	3455.19
9	**Cost of SFRC Manholeframe and Cover**								**953.10**
10	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
11	**Internal Lining by High Alumina Cement (1:3)**	10.90				Sqm		343.22	**3741.78**
12	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		9.86				Cum	103.3	**1018.31**
	Total Cost								**98628.22**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=3.0 m							3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	2323.17
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	2618.67
	3.0m to 4.5m	1	7.55		0.55	4.15		401.60	1068.52
						26.79	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		0.55	4.15		126.40	474.48
						4.15	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	8046.95
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	407.26
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	For coverslab	1	4.91		0.20	0.98			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	7.38	0.15	2.80	3.10			
		1	0.15	0.50	1.08	0.08			
						6.12	Cum.	4902.30	23745.89
6	**Reinforcement Steel**	1	-	-	-	**673.00**	Kg	76.00	48590.60
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		2.80	41.34			
	For coverslab	1.00	3.80			3.80			
	Total					**47.69**	Sqm.	186.30	7949.82
8	**CI Steps-5 Kg**	4	-	-	-	**4.00**	No's	240.9	806.80
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	14.48			14.48	Cum	262.5	3982.58
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**3262.50**
12	**Internal Lining by High Alumina Cement (1:3)**	13.42				Sqm		343.22	**4427.41**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		12.31				Cum	103.3	**817.53**
	Total Cost								**110079.40**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=3.5 m							3.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.05	7.93		401.60	3182.70
						30.57	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.05	7.93		126.40	1001.73
						7.93	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	For coverslab	1	0.58		0.20	0.12			
	For circular opening	-1	0.25	-	0.20	-0.05			
	For walls	1	7.38	0.15	3.30	3.65			
		1	0.15	0.50	1.58	0.12			
						5.84	Cum.	4902.30	28648.14
6	**Reinforcement Steel**	1	-	-	-	**643.00**	Kg	76.00	48868.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		3.30	48.73			
	For coverslab	1.00	3.80			3.80			
	Total					**55.07**	Sqm.	186.30	10259.94
8	**CI Steps-5 Kg**	6	-	-	-	**6.00**	No's	240.9	1445.40
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	15.80			15.80	Cum	262.5	4147.91
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	15.93				Sqm		343.22	**5467.77**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.77				Cum	103.3	**1525.38**
	Total Cost								**124977.81**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=4 m							4	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		0.05	0.38		442.60	167.03
						34.34	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04
	4.5m to6.0m	1	7.55		0.05	0.38		134.6	50.80
						11.70	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	2.25	2.49			
		1	0.15	0.50	2.33	0.17			
						5.97	Cum.	4902.30	29257.72
6	**Reinforcement Steel**	1	-	-	-	**656.00**	Kg	76.00	49856.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		2.25	33.22			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**53.07**	Sqm.	186.30	9887.11
8	**CI Steps-5 Kg**	7	-	-	-	**7.00**	No's	240.9	1686.30
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	20.09			20.09	Cum	262.5	5273.90
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
12	**Internal Lining by High Alumina Cement (1:3)**	18.45				Sqm		343.22	**6330.76**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		14.25				Cum	103.3	**1472.12**
	Total Cost								**130390.34**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=4.5 m							4.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		0.55	4.15		442.60	1837.33
						38.12	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04
	4.5m to6.0m	1	7.55		0.55	4.15		134.6	558.75
						15.47	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	2.75	3.05			
		1	0.15	0.50	2.83	0.21			
						6.56	Cum.	4902.30	32155.98
6	**Reinforcement Steel**	1	-	-	-	**722.00**	Kg	76.00	54872.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		2.75	40.61			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**60.45**	Sqm.	186.30	11262.52
8	**CI Steps-5 Kg**	9	-	-	-	**9.00**	No's	240.9	2168.10
9	**Disposal of Surplus earth upto 8km lead beyond 50m intitial lead**	1	21.41			21.41	Cum	262.5	5620.26
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	20.96				Sqm		343.22	**7193.75**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.71				Cum	103.3	**1725.65**
	Total Cost								**143802.94**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=5.0 m							5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.05	7.93		442.60	3507.63
						41.89	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04
	4.5m to6.0m	1	7.55		1.05	7.93		134.6	1066.71
						19.25	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	3.25	3.60			
		1	0.15	0.50	3.33	0.25			
						7.15	Cum.	4902.30	35054.25
6	**Reinforcement Steel**	1	-	-	-	**787.00**	Kg	76.00	59812.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		3.25	47.99			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**67.84**	Sqm.	186.30	12637.92
8	**CI Steps-5 Kg**	11	-	-	-	**11.00**	No's	240.9	2649.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.73			22.73	Cum	262.5	5966.62
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	23.47				Sqm		343.22	**8056.75**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.16				Cum	103.3	**1979.19**
	Total Cost								**157139.57**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=5.5 m							5.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		0.05	0.38		483.60	182.50
						45.66	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.6	1523.88
	6m to 7.5m	1	7.55		0.05	0.38		142.80	53.89
						23.02	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	3.75	4.15			
		1	0.15	0.50	3.83	0.29			
						7.74	Cum.	4902.30	37952.52
6	**Reinforcement Steel**	1	-	-	-	**852.00**	Kg	76.00	64752.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		3.75	55.37			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**75.22**	Sqm.	186.30	14013.33
8	**CI Steps-5 Kg**	12	-	-	-	**12.00**	No's	240.9	2890.80
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	24.05			24.05	Cum	262.5	6312.98
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	25.99				Sqm		343.22	**8919.74**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		21.61				Cum	103.3	**2232.73**
	Total Cost								**170253.87**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=6.0 m							6	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		0.55	4.15		483.60	2007.53
						49.44	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.6	1523.88
	6m to 7.5m	1	7.55		0.55	4.15		142.80	592.79
						26.79	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	4.25	4.71			
		1	0.15	0.50	4.33	0.32			
						8.33	Cum.	4902.30	40850.79
6	**Reinforcement Steel**	1	-	-	-	**917.00**	Kg	76.00	69692.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		4.25	62.75			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**82.60**	Sqm.	186.30	15388.73
8	**CI Steps-5 Kg**	14	-	-	-	**14.00**	No's	240.9	3372.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	25.37			25.37	Cum	262.5	6659.34
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	28.50				Sqm		343.22	**9782.73**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		24.07				Cum	103.3	**2486.26**
	Total Cost								**183776.15**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=6.5 m							6.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		1.05	7.93		483.60	3832.56
						53.21	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.6	1523.88
	6m to 7.5m	1	7.55		1.05	7.93		142.80	1131.70
						30.57	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	4.75	5.26			
		1	0.15	0.50	4.83	0.36			
						8.92	Cum.	4902.30	43749.05
6	**Reinforcement Steel**	1	-	-	-	**982.00**	Kg	76.00	74632.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		4.75	70.14			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**89.98**	Sqm.	186.30	16764.14
8	**CI Steps-5 Kg**	16	-	-	-	**16.00**	No's	240.9	3854.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	26.69			26.69	Cum	262.5	7005.70
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	31.02				Sqm		343.22	**10645.72**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		26.52				Cum	103.3	**2739.80**
	Total Cost								**197298.45**

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
	DEPTH - D=7.0 m							7	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		1.50	11.32		483.60	5475.08
	7.5m to 9.0m	1	7.55		0.05	0.38		524.60	197.98
						56.98	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.60	1523.88
	6m to 7.5m	1	7.55		1.50	11.32		142.80	1616.71
	7.5m to 9.0m	1	7.55		0.05	0.38		151.00	56.98
						34.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	5.25	5.81			
		1	0.15	0.50	5.33	0.40			
						9.52	Cum.	4902.30	46647.32
6	**Reinforcement Steel**	1	-	-	-	**1047.00**	Kg	76.00	79572.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		5.25	77.52			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**97.37**	Sqm.	186.30	18139.54
8	**CI Steps-5 Kg**	17	-	-	-	**17.00**	No's	240.9	4095.30
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	28.01			28.01	Cum	262.5	7352.06
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	33.53				Sqm		343.22	**11508.72**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		28.98				Cum	103.3	**2993.34**
	Total Cost								**210598.41**

	DEPTH - D=7.5 m							7.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		1.50	11.32		483.60	5475.08
	7.5m to 9.0m	1	7.55		0.55	4.15		524.60	2177.73
						60.76	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.60	1523.88
	6m to 7.5m	1	7.55		1.50	11.32		142.80	1616.71
	7.5m to 9.0m	1	7.55		0.55	4.15		151.00	626.83
						38.12	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	5.75	6.37			
		1	0.15	0.50	5.83	0.44			
						10.11	Cum.	4902.30	49545.59
6	**Reinforcement Steel**	1	-	-	-	**1112.00**	Kg	76.00	84512.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		5.75	84.90			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**104.75**	Sqm.	186.30	19514.95
8	**CI Steps-5 Kg**	19	-	-	-	**19.00**	No's	240.9	4577.10
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	29.33			29.33	Cum	262.5	7698.42
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	33.53				Sqm		343.22	**11508.72**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		31.43				Cum	103.3	**3246.87**
	Total Cost								**223443.38**

	DEPTH - D=8.0 m							8	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		1.50	11.32		483.60	5475.08
	7.5m to 9.0m	1	7.55		1.05	7.93		524.60	4157.49
						64.53	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.60	1523.88
	6m to 7.5m	1	7.55		1.50	11.32		142.80	1616.71
	7.5m to 9.0m	1	7.55		1.05	7.93		151.00	1196.68
						41.89	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	6.25	6.92			
		1	0.15	0.50	6.33	0.47			
						10.70	Cum.	4902.30	52443.86
6	**Reinforcement Steel**	1	-	-	-	**1177.00**	Kg	76.00	89452.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		6.25	92.28			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**112.13**	Sqm.	186.30	20890.35
8	**CI Steps-5 Kg**	21	-	-	-	**21.00**	No's	240.9	5058.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	30.65			30.65	Cum	262.5	8044.78
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	33.53				Sqm		343.22	**11508.72**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		33.89				Cum	103.3	**3500.41**
	Total Cost								**236288.36**

	DEPTH - D=8.5 m							8.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		1.50	11.32		483.60	5475.08
	7.5m to 9.0m	1	7.55		1.55	11.70		524.60	6137.24
						68.31	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.60	1523.88
	6m to 7.5m	1	7.55		1.50	11.32		142.80	1616.71
	7.5m to 9.0m	1	7.55		1.55	11.70		151.00	1766.53
						45.66	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	6.75	7.48			
		1	0.15	0.50	6.83	0.51			
						11.29	Cum.	4902.30	55342.13
6	**Reinforcement Steel**	1	-	-	-	**1242.00**	Kg	76.00	94392.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		6.75	99.67			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**119.52**	Sqm.	186.30	22265.76
8	**CI Steps-5 Kg**	22	-	-	-	**22.00**	No's	240.9	5299.80
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	31.97			31.97	Cum	262.5	8391.14
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	33.53				Sqm		343.22	**11508.72**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		36.34				Cum	103.3	**3753.94**
	Total Cost								**248892.43**

	DEPTH - D=9.0 m							9	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		1.50	11.32		483.60	5475.08
	7.5m to 9.0m	1	7.55		2.05	15.47		524.60	8117.00
						72.08	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.60	1523.88
	6m to 7.5m	1	7.55		1.50	11.32		142.80	1616.71
	7.5m to 9.0m	1	7.55		2.05	15.47		151.00	2336.38
						49.44	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	7.25	8.03			
		1	0.15	0.50	7.33	0.55			
						11.88	Cum.	4902.30	58240.39
6	**Reinforcement Steel**	1	-	-	-	**1307.00**	Kg	76.00	99332.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		7.25	107.05			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**126.90**	Sqm.	186.30	23641.16
8	**CI Steps-5 Kg**	24	-	-	-	**24.00**	No's	240.9	5781.60
9	**Disposal of Surplus earth upto 8 km**	1	33.29			33.29	Cum	262.5	8737.50
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	33.53				Sqm		343.22	**11508.72**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		38.79				Cum	103.3	**4007.48**
	Total Cost								**261737.40**

	DEPTH - D=9.5m							9.5	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	7.55		1.50	11.32		319.60	3618.36
	1.5m to 3.0	1	7.55		1.50	11.32		360.60	4082.54
	3.0m to 4.5m	1	7.55		1.50	11.32		401.60	4546.72
	4.5m to 6.0m	1	7.55		1.50	11.32		442.60	5010.90
	6.0m to 7.5m	1	7.55		1.50	11.32		483.60	5475.08
	7.5m to 9.0m	1	7.55		2.55	19.25		524.60	10096.75
						75.85	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to6.0m	1	7.55		1.50	11.32		134.60	1523.88
	6m to 7.5m	1	7.55		1.50	11.32		142.80	1616.71
	7.5m to 9.0m	1	7.55		2.55	19.25		151.00	2906.23
						53.21	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						7.90			
	Deductions								
	For channel portion(Circular portion)	1	1.10		2.20	2.41			
	Rectangular portion	1	1.67	2.20	0.84	3.07			
						5.48			
						2.42	Cum	4151.40	10052.70
4	**PCC - M20 Grade**								
	For collar portion	1	2.54	0.25	0.25	0.16			
	Forcollar portion	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
5	**RCC - M20 Grade**								
	For foundation	1	5.73		0.35	2.00			
	walls for conical portion	1	4.81	0.15	1.80	1.30			
	For walls	1	7.38	0.15	7.75	8.58			
		1	0.15	0.50	7.83	0.59			
						12.47	Cum.	4902.30	61138.66
6	**Reinforcement Steel**	1	-	-	-	**1372.00**	Kg	76.00	104272.00
7	**Shuttering**								
	For foundation	1.00	8.48		0.30	2.54			
	For RCC - wall	2.00	7.38		7.75	114.43			
	walls for conical portion	2	4.81		1.80	17.30			
	Total					**134.28**	Sqm.	186.30	25016.57
8	**CI Steps-5 Kg**	26	-	-	-	**26.00**	No's	240.9	6263.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	34.61			34.61	Cum	262.5	9083.86
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	**1214.55**
12	**Internal Lining by High Alumina Cement (1:3)**	33.53				Sqm		343.22	**11508.72**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		41.25				Cum	103.3	**4261.02**
	Total Cost								**274582.38**

Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 25 Manholes for Sewers = 1880 mm dia (TYPE -I)									
MH Input	**Out going sewer pipe dia (mm)**	**Pipe thk (mm)**	**MH ID (mm)**	**MH Depth (m)**	**Slanting Depth (m)**	**Base slab thk (m)**	**Cover dia (m)**	**Wall thk (m)**	**Open Excavation**
	1880	230	2700	6	2.9	0.35	0.6	0.3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		0.60	8.31		483.60	4020.00
						91.44	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.6	2797.21
	6m to 7.5m	1	13.85		0.60	8.31		142.80	1187.05
						49.88	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	2.70	2.43			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.49	0.30		-2.10			
						12.83	Cum.	6434.40	82547.08
6	**Reinforcement Steel**	1	-	-	-	**1411.00**	Kg	76.00	107236.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		3.15	59.38			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**99.53**	Sqm.	186.30	18541.63
8	**CI Steps-5 Kg**	13	-	-	-	**13.00**	No's	240.9	3131.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	53.90			53.90	Cum	262.5	14147.74
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		37.54				Cum	103.3	**3878.20**
	Total Cost							INR	**304203.13**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1880 mm dia (TYPE -I)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Slanting Depth (m)	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	1880	230	2700	6.5	2.9	0.35	0.6	0.3	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.10	15.24		483.60	7370.00
						98.37	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.6	2797.21
	6m to 7.5m	1	13.85		1.10	15.24		142.80	2176.25
						56.80	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	3.20	2.88			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.49	0.30		-2.10			
						13.28	Cum.	6434.40	85442.56
6	**Reinforcement Steel**	1	-	-	-	**1461.00**	Kg	76.00	111036.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		3.65	68.80			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**108.95**	Sqm.	186.30	20297.47
8	**CI Steps-5 Kg**	15	-	-	-	**15.00**	No's	240.9	3613.50
9	**Disposal of Surplus earth upto 8 km**	1	56.55			56.55	Cum	262.5	14843.55
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		41.82				Cum	103.3	**4319.96**
	Total Cost							INR	**318613.02**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1880 mm dia (TYPE -I)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Slanting Depth (m)	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	1880	230	2700	7	2.9	0.35	0.6	0.3	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0m	1	13.85		0.10	1.39		524.60	726.80
						105.29	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0m	1	13.85		0.10	1.39		151.00	209.20
						62.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	3.70	3.33			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.49	0.30		-2.10			
						13.73	Cum.	6434.40	88338.04
6	**Reinforcement Steel**	1	-	-	-	**1510.00**	Kg	76.00	114760.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		4.15	78.23			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**118.38**	Sqm.	186.30	22053.30
8	**CI Steps-5 Kg**	17	-	-	-	**17.00**	No's	240.9	4095.30
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	59.20			59.20	Cum	262.5	15539.36
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		46.10				Cum	103.3	**4761.72**
	Total Cost							INR	**333015.07**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1880 mm dia (TYPE -I)									
MH Input	**Out going sewer pipe dia (mm)**	**Pipe thk (mm)**	**MH ID (mm)**	**MH Depth (m)**	**Slanting Depth (m)**	**Base slab thk (m)**	**Cover dia (m)**	**Wall thk (m)**	**Open Excavation**
	1880	230	2700	7.5	2.9	0.35	0.6	0.3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0 m	1	13.85		0.50	6.93		524.60	3634.02
						110.84	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0 m	1	13.85		0.50	6.93		151.00	1046.01
						62.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	4.20	3.78			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.49	0.30		-2.10			
						14.18	Cum.	6434.40	91233.52
6	**Reinforcement Steel**	1	-	-	-	**1560.00**	Kg	76.00	118560.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		4.65	87.65			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**127.80**	Sqm.	186.30	23809.14
8	**CI Steps-5 Kg**	18	-	-	-	**18.00**	No's	240.9	4336.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	60.46			60.46	Cum	262.5	15871.50
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		50.37				Cum	103.3	**5203.48**
	Total Cost							INR	**346225.22**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1880 mm dia (TYPE -I)									
MH Input	**Out going sewer pipe dia (mm)**	**Pipe thk (mm)**	**MH ID (mm)**	**MH Depth (m)**	**Slanting Depth (m)**	**Base slab thk (m)**	**Cover dia (m)**	**Wall thk (m)**	**Open Excavation**
	1880	230	2700	8	2.9	0.35	0.6	0.3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0 m	1	13.85		1.05	14.55		524.60	7631.43
						118.46	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0 m	1	13.85		1.05	14.55		151.00	2196.62
						62.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	4.70	4.23			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.49	0.30		-2.10			
						14.63	Cum.	6434.40	94129.00
6	**Reinforcement Steel**	1	-	-	-	**1609.00**	Kg	76.00	122284.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		5.15	97.08			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**137.22**	Sqm.	186.30	25564.97
8	**CI Steps-5 Kg**	20	-	-	-	**20.00**	No's	240.9	4818.00
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	63.81			63.81	Cum	262.5	16749.15
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		54.65				Cum	103.3	**5645.24**
	Total Cost							INR	**361549.76**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1600 mm dia (TYPE -I)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk	MH ID	MH Depth	Slanting	Base slab	Cover dia	Wall thk	Open
	1600	230	2700	8.5	2.9	0.35	0.6	0.3	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0 m	1	13.85		1.50	20.78		524.60	10902.05
	9.0 m to 10.5 m	1	13.85		0.050	0.69		553.80	383.63
						125.38	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to 6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0 m	1	13.85		1.50	20.78		151.00	3138.03
	9.0 m to 10.5 m	1	13.85		0.050	0.69		159.20	110.28
						62.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	5.20	4.68			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	2.63	0.30		-1.58			
						15.60	Cum.	6434.40	100367.84
6	**Reinforcement Steel**	1	-	-	-	**1716.00**	Kg	76.00	130416.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		5.65	106.50			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**146.65**	Sqm.	186.30	27320.81
8	**CI Steps-5 Kg**	22	-	-	-	**22.00**	No's	240.9	5299.80
9	**Disposal of Surplus earth upto 8 km**	1	67.75			67.75	Cum	262.5	17783.89
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
	Total Cost							INR	**378253.68**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1600 mm dia (TYPE -I)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk	MH ID	MH Depth	Slanting	Base slab	Cover dia	Wall thk	Open
	1600	230	2700	9	2.9	0.35	0.6	0.3	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9 m	1	13.85		1.50	20.78		524.60	10902.05
	9 m to 10.5m	1	13.85		0.55	7.62		553.80	4219.92
						132.31	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9 m	1	13.85		1.50	20.78		151.00	3138.03
	9 m to 10.5m	1	13.85		0.55	7.62		159.20	1213.09
						62.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	5.70	5.13			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	2.63	0.30		-1.58			
						16.05	Cum.	6434.40	103263.32
6	**Reinforcement Steel**	1	-	-	-	**1765.00**	Kg	76.00	134140.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		6.15	115.92			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**156.07**	Sqm.	186.30	29076.65
8	**CI Steps-5 Kg**	23	-	-	-	**23.00**	No's	240.9	5540.70
9	**Disposal of Surplus earth upto 8 km**	1	67.30			67.30	Cum	262.5	17665.76
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
	Total Cost							INR	**391690.87**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1600 mm dia (TYPE -I)									
MH Input	**Out going sewer pipe dia (mm)**	**Pipe thk (mm)**	**MH ID (mm)**	**MH Depth (m)**	**Slanting Depth (m)**	**Base slab thk (m)**	**Cover dia (m)**	**Wall thk (m)**	**Open Excavation**
	1600	230	2700	9.5	2.9	0.35	0.6	0.3	
Sno	**Description**	**No's**	**Length**	**Breadth**	**Depth**	**Quantity**	**Unit**	**Rate**	**Amount Rs**
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0 m	1	13.85		1.50	20.78		524.60	10902.05
	9.0 m to 10.5 m	1	13.85		1.050	14.55		553.80	8056.21
						139.24	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to 6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0 m	1	13.85		1.50	20.78		151.00	3138.03
	9.0 m to 10.5 m	1	13.85		1.050	14.55		159.20	2315.91
						62.34	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						13.01			
	Deductions								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						5.51	Cum	4151.40	22888.14
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	6.20	5.58			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	2.63	0.30		-1.58			
						16.50	Cum.	6434.40	106158.80
6	**Reinforcement Steel**	1	-	-	-	**1815.00**	Kg	76.00	137940.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		6.65	125.35			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**165.50**	Sqm.	186.30	30832.48
8	**CI Steps-5 Kg**	25	-	-	-	**25.00**	No's	240.9	6022.50
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	66.85			66.85	Cum	262.5	17547.64
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
	Total Cost							INR	**405444.97**

Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 25 Manholes for Sewers = 1950 mm dia (TYPE -K)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Slanting Depth (m)	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	1950	230	2700	6.1	2.9	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		0.65	9.01		483.60	4355.00
						92.13	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.6	2797.21
	6m to 7.5m	1	13.85		0.65	9.01		142.80	1285.97
						50.57	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						13.41			
	Deductions								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						5.35	Cum	4151.40	22191.79
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	2.80	2.52			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.73	0.30		-2.24			
						12.78	Cum.	6434.40	82216.08
6	**Reinforcement Steel**	1	-	-	-	**1406.00**	Kg	76.00	106856.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		3.25	61.26			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**101.41**	Sqm.	186.30	18892.80
8	**CI Steps-5 Kg**	13	-	-	-	**13.00**	No's	240.9	3131.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	53.73			53.73	Cum	262.5	14105.06
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		38.40				Cum	103.3	**3966.55**
	Total Cost							INR	**303626.54**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1950 mm dia (TYPE -K)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Slanting Depth (m)	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	1950	230	2700	6.5	2.9	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.05	14.55		483.60	7035.00
						97.67	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.6	2797.21
	6m to 7.5m	1	13.85		1.05	14.55		142.80	2077.33
						56.11	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						13.41			
	Deductions								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						5.35	Cum	4151.40	22191.79
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	3.20	2.88			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.73	0.30		-2.24			
						13.14	Cum.	6434.40	84532.47
6	**Reinforcement Steel**	1	-	-	-	**1445.00**	Kg	76.00	109820.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		3.65	68.80			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**108.95**	Sqm.	186.30	20297.47
8	**CI Steps-5 Kg**	15	-	-	-	**15.00**	No's	240.9	3613.50
9	**Disposal of Surplus earth upto 8 km**	1	55.85			55.85	Cum	262.5	14661.71
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		41.82				Cum	103.3	**4319.96**
	Total Cost							INR	**315174.82**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1950 mm dia (TYPE -K)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Slanting Depth (m)	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	1950	230	2700	7	2.9	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0m	1	13.85		0.05	0.69		524.60	363.40
						104.60	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0m	1	13.85		0.05	0.69		151.00	104.60
						63.04	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						13.41			
	Deductions								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						5.35	Cum	4151.40	22191.79
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	3.70	3.33			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.73	0.30		-2.24			
						13.59	Cum.	6434.40	87427.95
6	**Reinforcement Steel**	1	-	-	-	**1495.00**	Kg	76.00	113620.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		4.15	78.23			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**118.38**	Sqm.	186.30	22053.30
8	**CI Steps-5 Kg**	16	-	-	-	**16.00**	No's	240.9	3854.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	58.50			58.50	Cum	262.5	15357.53
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		46.10				Cum	103.3	**4761.72**
	Total Cost							INR	**329377.90**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1950 mm dia (TYPE -K)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Slanting Depth (m)	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	1950	230	2700	7.5	2.9	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0 m	1	13.85		0.55	7.62		524.60	3997.42
						111.53	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0 m	1	13.85		0.55	7.62		151.00	1150.61
						69.96	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						13.41			
	Deductions								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						5.35	Cum	4151.40	22191.79
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	4.20	3.78			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.73	0.30		-2.24			
						14.04	Cum.	6434.40	90323.43
6	**Reinforcement Steel**	1	-	-	-	**1544.00**	Kg	76.00	117344.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		4.65	87.65			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**127.80**	Sqm.	186.30	23809.14
8	**CI Steps-5 Kg**	18	-	-	-	**18.00**	No's	240.9	4336.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	61.16			61.16	Cum	262.5	16053.34
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		50.37				Cum	103.3	**5203.48**
	Total Cost							INR	**344052.62**

Detailed Estimate : RCC M 25 Manholes for Sewers = 1950 mm dia (TYPE -K)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Slanting Depth (m)	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	1950	230	2700	8	2.9	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	13.85		1.50	20.78		319.60	6641.81
	1.5m to 3.0	1	13.85		1.50	20.78		360.60	7493.86
	3.0m to 4.5m	1	13.85		1.50	20.78		401.60	8345.90
	4.5m to 6.0m	1	13.85		1.50	20.78		442.60	9197.95
	6.0m to 7.5m	1	13.85		1.50	20.78		483.60	10050.00
	7.5 m to 9.0 m	1	13.85		1.05	14.55		524.60	7631.43
						118.46	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.40	2626.80
	4.5m to6.0m	1	13.85		1.50	20.78		134.60	2797.21
	6m to 7.5m	1	13.85		1.50	20.78		142.80	2967.62
	7.5 m to 9.0 m	1	13.85		1.05	14.55		151.00	2196.62
						76.89	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						13.41			
	Deductions								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						5.35	Cum	4151.40	22191.79
4	**PCC - M20 Grade**								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	11.95		0.35	4.18			
	Walls- Straight	1	3.00	0.30	4.70	4.23			
	Wall-conical	1	17.43	9.41		8.02			
		1	1.48		0.20	0.30			
	Pipe cutout	-2	3.73	0.30		-2.24			
						14.49	Cum.	6434.40	93218.91
6	**Reinforcement Steel**	1	-	-	-	**1594.00**	Kg	76.00	121144.00
7	**Shuttering**								
	For foundation	1	13.19		0.35	4.62			
	For RCC - wall	2	9.42		5.15	97.08			
	walls for conical portion	2	6.13		2.90	35.53			
	Total					**137.22**	Sqm.	186.30	25564.97
8	**CI Steps-5 Kg**	20	-	-	-	**20.00**	No's	240.9	4818.00
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	63.81			63.81	Cum	262.5	16749.15
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	**1727.36**
12	**Internal Lining by High Alumina Cement (1:3)**		19.14				Sqm	343.22	**6569.53**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		54.65				Cum	103.3	**5645.24**
	Total Cost							INR	**358803.32**

Rate Analysis for RCC Cylindrical Manhole

Detailed Estimate : RCC M 25 Manholes for Sewers = 2100 mm dia (TYPE -J)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Cover slab thk	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	2100	230	2400	3	0.4	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	11.95		1.50	17.92		319.60	5726.87
	1.5m to 3.0	1	11.95		1.50	17.92		360.60	6461.54
	3.0m to 4.5m	1	11.95		0.60	7.17		401.60	2878.49
						43.01	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	11.95		0.60	7.17		126.4	905.98
						7.17	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						11.37			
	Deductions								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						3.06	Cum	4151.40	12706.18
4	**PCC - M20 Grade**								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	10.18		0.35	3.56			
	Walls- Straight	1	2.70	0.30	2.60	2.11			
	Cover ring beam	1	3.14	0.40	0.40	0.50			
	Top slab	1	7.07		0.40	2.83			
	Cover slab	-1	0.00		0.40	0.00			
	Pipe cutout	-2	4.26	0.30		-2.56			
						6.44	Cum.	6434.40	41448.10
6	**Reinforcement Steel**	1	-	-	-	**709.00**	Kg	76.00	53884.00
7	**Shuttering**								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		2.80	47.50			
	Total					**51.79**	Sqm.	186.30	9648.32
8	**CI Steps-5 Kg**	3	-	-	-	**3.00**	No's	240.9	722.70
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	26.56			26.56	Cum	262.5	6971.13
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	**1565.42**
12	**Internal Lining by High Alumina Cement (1:3)**								
	Top slab	1.00	4.24			4.24			
	Walls	1.00	7.54		3.00	22.61			
	Base surfaces	1.00	4.52			4.52			
						31.37	Sqm	343.22	**10766.33**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		16.45				Cum	103.3	**1699.14**
	Total Cost							INR	**156609.37**

Detailed Estimate : RCC M 25 Manholes for Sewers = 2100 mm dia (TYPE -J)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Cover slab thk	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	2100	230	2400	3.5	0.4	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	11.95		1.50	17.92		319.60	5726.87
	1.5m to 3.0	1	11.95		1.50	17.92		360.60	6461.54
	3.0m to 4.5m	1	11.95		1.10	13.14		401.60	5277.22
						48.98	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	11.95		1.10	13.14		126.4	1660.96
						13.14	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						11.37			
	Deductions								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						3.06	Cum	4151.40	12706.18
4	**PCC - M20 Grade**								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	10.18		0.35	3.56			
	Walls- Straight	1	2.70	0.30	3.10	2.51			
	Cover ring beam	1	3.14	0.40	0.40	0.50			
	Top slab	1	7.07		0.40	2.83			
	Cover slab	-1	0.00		0.40	0.00			
	Pipe cutout	-2	4.26	0.30		-2.56			
						6.85	Cum.	6434.40	44054.04
6	**Reinforcement Steel**	1	-	-	-	**753.00**	Kg	76.00	57228.00
7	**Shuttering**								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		3.30	55.98			
	Total					**60.27**	Sqm.	186.30	11228.57
8	**CI Steps-5 Kg**	4	-	-	-	**4.00**	No's	240.9	963.60
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	29.00			29.00	Cum	262.5	7611.27
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	**1565.42**
12	**Internal Lining by High Alumina Cement (1:3)**								
	Top slab	1.00	4.24			4.24			
	Walls	1.00	7.54		3.50	26.38			
	Base surfaces	1.00	4.52			4.52			
						35.14	Sqm	343.22	**12059.58**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		19.98				Cum	103.3	**2064.23**
	Total Cost							INR	**169832.65**

Detailed Estimate : RCC M 25 Manholes for Sewers = 2100 mm dia (TYPE -J)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Cover slab thk	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	2100	230	2400	4	0.4	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	11.95		1.50	17.92		319.60	5726.87
	1.5m to 3.0	1	11.95		1.50	17.92		360.60	6461.54
	3.0m to 4.5m	1	11.95		1.50	17.92		401.60	7196.21
	4.5m to 6.0 m	1	11.95		0.10	1.19		442.60	528.73
						54.95	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	11.95		1.50	17.92		126.4	2264.94
						17.92	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						11.37			
	Deductions								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						3.06	Cum	4151.40	12706.18
4	**PCC - M20 Grade**								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	10.18		0.35	3.56			
	Walls- Straight	1	2.70	0.30	3.60	2.92			
	Cover ring beam	1	3.14	0.40	0.40	0.50			
	Top slab	1	7.07		0.40	2.83			
	Cover slab	-1	0.00		0.40	0.00			
	Pipe cutout	-2	4.26	0.30		-2.56			
						7.25	Cum.	6434.40	46659.97
6	**Reinforcement Steel**	1	-	-	-	**798.00**	Kg	76.00	60648.00
7	**Shuttering**								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		3.80	64.47			
	Total					**68.75**	Sqm.	186.30	12808.82
8	**CI Steps-5 Kg**	6	-	-	-	**6.00**	No's	240.9	1445.40
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	31.43			31.43	Cum	262.5	8251.42
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	**1565.42**
12	**Internal Lining by High Alumina Cement (1:3)**								
	Top slab	1.00	4.24			4.24			
	Walls	1.00	7.54		4.00	30.14			
	Base surfaces	1.00	4.52			4.52			
						38.90	Sqm	343.22	**13352.84**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		23.52				Cum	103.3	**2429.32**
	Total Cost							INR	**183270.83**

Detailed Estimate : RCC M 25 Manholes for Sewers = 2100 mm dia (TYPE -J)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Cover slab thk	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	2100	230	2400	4.5	0.4	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	11.95		1.50	17.92		319.60	5726.87
	1.5m to 3.0	1	11.95		1.50	17.92		360.60	6461.54
	3.0m to 4.5m	1	11.95		1.50	17.92		401.60	7196.21
	4.5m to 6.0 m	1	11.95		0.60	7.17		442.60	3172.35
						60.92	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	11.95		1.50	17.92		126.4	2264.94
						17.92	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						11.37			
	Deductions								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						3.06	Cum	4151.40	12706.18
4	**PCC - M20 Grade**								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	10.18		0.35	3.56			
	Walls- Straight	1	2.70	0.30	4.10	3.32			
	Cover ring beam	1	3.14	0.40	0.40	0.50			
	Top slab	1	7.07		0.40	2.83			
	Cover slab	-1	0.00		0.40	0.00			
	Pipe cutout	-2	4.26	0.30		-2.56			
						7.66	Cum.	6434.40	49265.90
6	**Reinforcement Steel**	1	-	-	-	**842.00**	Kg	76.00	63992.00
7	**Shuttering**								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		4.30	72.95			
	Total					**77.24**	Sqm.	186.30	14389.08
8	**CI Steps-5 Kg**	8	-	-	-	**8.00**	No's	240.9	1927.20
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	33.87			33.87	Cum	262.5	8891.57
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	**1565.42**
12	**Internal Lining by High Alumina Cement (1:3)**								
	Top slab	1.00	4.24			4.24			
	Walls	1.00	7.54		4.50	33.91			
	Base surfaces	1.00	4.52			4.52			
						42.67	Sqm	343.22	**14646.09**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		27.05				Cum	103.3	**2794.42**
	Total Cost							INR	**196224.94**

Detailed Estimate : RCC M 25 Manholes for Sewers = 2100 mm dia (TYPE -J)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Cover slab thk	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	2100	230	2400	5	0.4	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	11.95		1.50	17.92		319.60	5726.87
	1.5m to 3.0	1	11.95		1.50	17.92		360.60	6461.54
	3.0m to 4.5m	1	11.95		1.50	17.92		401.60	7196.21
	4.5m to 6.0 m	1	11.95		1.10	13.14		442.60	5815.98
						66.90	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	11.95		1.50	17.92		126.4	2264.94
						17.92	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						11.37			
	Deductions								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						3.06	Cum	4151.40	12706.18
4	**PCC - M20 Grade**								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	10.18		0.35	3.56			
	Walls- Straight	1	2.70	0.30	4.60	3.73			
	Cover ring beam	1	3.14	0.40	0.40	0.50			
	Top slab	1	7.07		0.40	2.83			
	Cover slab	-1	0.00		0.40	0.00			
	Pipe cutout	-2	4.26	0.30		-2.56			
						8.06	Cum.	6434.40	51871.83
6	**Reinforcement Steel**	1	-	-	-	**887.00**	Kg	76.00	67412.00
7	**Shuttering**								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		4.80	81.43			
	Total					**85.72**	Sqm.	186.30	15969.33
8	**CI Steps-5 Kg**	9	-	-	-	**9.00**	No's	240.9	2168.10
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	36.31			36.31	Cum	262.5	9531.72
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	**1565.42**
12	**Internal Lining by High Alumina Cement (1:3)**								
	Top slab	1.00	4.24			4.24			
	Walls	1.00	7.54		5.00	37.68			
	Base surfaces	1.00	4.52			4.52			
						46.44	Sqm	343.22	**15939.34**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		30.59				Cum	103.3	**3159.51**
	Total Cost							INR	**209014.14**

Detailed Estimate : RCC M 25 Manholes for Sewers = 2100 mm dia (TYPE -J)									
MH Input	Out going sewer pipe dia (mm)	Pipe thk (mm)	MH ID (mm)	MH Depth (m)	Cover slab thk	Base slab thk (m)	Cover dia (m)	Wall thk (m)	Open Excavation
	2100	230	2400	5.5	0.4	0.35	0.6	0.3	

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	**Earthwork Exacavation**								
	0 - 1.5 m	1	11.95		1.50	17.92		319.60	5726.87
	1.5m to 3.0	1	11.95		1.50	17.92		360.60	6461.54
	3.0m to 4.5m	1	11.95		1.50	17.92		401.60	7196.21
	4.5m to 6.0 m	1	11.95		1.50	17.92		442.60	7930.89
	6.0m to 7.5 m	1	11.95		0.10	1.19		483.60	577.70
						72.87	Cum		
2	**Timbering**								
	3.0m to 4.5m	1	11.95		1.50	17.92		126.40	2264.94
	4.5m to 6.0m	1	11.95		1.50	17.92		134.60	2411.88
	6.0 m to 7.5 m	1	11.95		0.10	1.19		142.80	170.59
						37.03	Sqm.		
3	**PCC - M15 Grade**								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						11.37			
	Deductions								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						3.06	Cum	4151.40	12706.18
4	**PCC - M20 Grade**								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						0.06	Cum	4681.30	272.07
5	**RCC - M25 Grade**								
	For foundation	1	10.18		0.35	3.56			
	Walls- Straight	1	2.70	0.30	5.10	4.13			
	Cover ring beam	1	3.14	0.40	0.40	0.50			
	Top slab	1	7.07		0.40	2.83			
	Cover slab	-1	0.00		0.40	0.00			
	Pipe cutout	-2	4.26	0.30		-2.56			
						8.47	Cum.	6434.40	54477.76
6	**Reinforcement Steel**	1	-	-	-	**931.00**	Kg	76.00	70756.00
7	**Shuttering**								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		5.30	89.91			
	Total					**94.20**	Sqm.	186.30	17549.58
8	**CI Steps-5 Kg**	11	-	-	-	**11.00**	No's	240.9	2649.90
9	**Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead**	1	22.68			22.68	Cum	262.5	5952.45
10	**Cost of SFRC Manholeframe and Cover**								**953.10**
11	**Hand Rail of G.I. Pipe - 32 mm dia**	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	**1565.42**
12	**Internal Lining by High Alumina Cement (1:3)**								
	Top slab	1.00	4.24			4.24			
	Walls	1.00	7.54		5.50	41.45			
	Base surfaces	1.00	4.52			4.52			
						50.21	Sqm	343.22	**17232.60**
13	**Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering**		50.19				Cum	103.3	**5185.04**
	Total Cost							INR	**222040.72**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

6000 LTR. CLEANWATER TANK CAPACITY, MCV CHASSIS MOUNTED SEWER AND DRAIN LINE JETTING MACHINE

Sr.No.	Description	Qty.	Rate (Rs.)	Amount in Rs.
1	6000 litre capacity Suction cum Jetting Machine Pump, Flow Rate & Pressure : 70 LPM & 130 Bar including 11 Ton GVW Chassis	3	3422850	10268550
		Sub Total		10268550
	GST @ 18%			1848339
	Grand Total			12116889
			Say	12120000

Operation and Maintenance Cost for Sewer Cleaning Equipments - 6000 Litre

Table 1: Manpower Cost

S. No.	Details	Position	No.	Salary (Rs. /Month)	Total Cost yearly
1	6000 Litre	Driver	1	12,000	144000.00
		Helper	4	8,000	384000.00
				Total	528000.00

Table 2: Power Cost

S. No.	Kilometer covered for one trip (Km)	No of trip	Total Km	Avg per Km	Diesel Consumed litre	Cost of Diesel	Diesel consumed per day in Rs	Diesel consumed per month	Diesel Consumed per year
1	20	4	80	4	20.00	70	1400	36400	436800

Table 3: Maitenance Cost

S. No.	Maintence cost for 3 month	No of quarter	Cost for One Year Rs.
1	10000	4	40000

Total O&M Cost (Rs. Lakh) for one vehicle	**1004800**
Total O&M Cost (Rs. Lakh) for one vehicle after adding 20% profit of contractor	**1205760**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST SUMMARY - SEWAGE TREATMENT PLANT (STP)

Cost in Rs. Lakh

Sr. No.	Description	Estimated Cost
A	**Sewage Treatment Plant**	
1	Treatment Plant	966.35
2	Compound Wall	48.28
3	Internal Roads and Approach Road	16.16
4	Material Carrying Charges for Compound Wall and Internal Road	2.58
	Sub Total	**1033.37**
B	**Pumping Station (IPS A7)**	
1	**Civil Work**	
a	Screen Chamber	4.56
b	Pump House (Wet well and Superstructure)	15.54
c	Manifold Chamber	1.71
d	Butterfly Valve Chamber	1.51
e	Flowmeter Chamber	1.52
h	Material Carrying Charges	0.15
	Sub Total	**24.99**
2	**Mechanical Work**	**16.48**
3	**Electrical Work**	**93.82**
4	**Instrumentation and Control**	**37.41**
C	**Pumping Main (IPS A7)**	**3.30**
	Total	**1209.38**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE - SEWAGE TREATMENT PLANT(STP)

Sr. No.	Item Description	Unit	Qty	Rates Rs.	Amount in Rs.
1	**SEWAGE TREATMENT PLANT (STP)**				
	Cyclic Activated Sludge Process				
	Designing , providing, constructing, hydraulic testing, commissioning and giving satisfactory trials of STP based on SBR technology consisting of Inlet Chamber, Screen Chamber, Detritus Tanks, Distribution Chamber and Biological CASP Basins, Sludge Sump, Chlorine Contact Tank, Chlorinator Room/Shed, Sludge Centrifuge necessary piping work with required valves, gates, drains, pathways administration Block cum Laboratory, Laboratory Equipments, Tools and Plants, Spare Parts, etc. complete as turnkey job with all involved civil, electrical and mechanical works inclusive of following items, units as per detailed specification for civil, electrical and mechanical components with excluding GST levied by GOI & GOM in all respect etc. complete to achieve BOD < 30 ppm, COD < 30 ppm, TSS < 100 ppm, to get recyclable quality of water for industrial / agricultural purposes. (In Case Cyclic activated sludge plant is designed for N, P outlet parameters shall also include TN < 10 ppm, Nh3N < 2 ppm and TP < 1 ppm)				
	UNITS INCLUDED				
	1. Inlet Chamber				
	Designing, providing, and constructing RCC (M:250) inlet chamber for the peak low of 2 DWF including necessary excavation in all types of strata including walkway all around the periphery. Each compartment will have phosphor bronze steel gates with extension rod, head stock, operating wheels. GI pipe railing etc. The work includes providing and making necessary arrangements to connect the flow to screen chamber by approach channel as directed and as per specifications.				
	2. Screen Chamber				
	Designing, providing, constructing, testing and commissioning of screen chamber, designed for average 1 DWF and maximum peak flow of 2 DWF in RCC (M -25.0), including inlet pipe / channel from inlet chamber, outlet pipe channel to detritus tank, free board of 0.5 m minimum, RCC walkway 1.2 m wide with GI pipe railing, RCC stair case of 1.2 m width from GL to screen chamber				
	3. Detritus Tank				
	Designing, providing and constructing continuous grit removal type of Detritus Tank, mechanically operated in RCC (M 25.0) capable of removing 100% of 0.2 mm size particle and above, having specific gravity 2.30 designed for one peak 2 DWF with suitable arrangement of separation of grit from putrescible solids. Inlet and outlet channels of required sizes as may be required to connect the flow to connecting unit etc. Complete including hydraulic testing for water tightness of structure having minimum FB of 0.3 m, wash out arrangement to Grit chamber and platform 1.2 m wide RCC walkway with GI pipe handling shall be provided. A pit for collecting grit conveyed by conveyor shall be provided. It should be suitable to handle the grit for carting. All arrangements shall be as detailed specifications and as directed.				

Sr. No.	Item Description	Unit	Qty	Rates Rs.	Amount in Rs.
	4. CASP Basins				
	Designing, providing and constructing in RCC (M:25.0), CASP basins for biological removal of BOD along with nitrification, denitrification, Bio-P removal in compartments to handle combine flow of 1 DWF incoming flow and recirculation flow including construction of selector compartments and providing 1.2 m wide clear approach walkways, expansion joints wherever necessary, including foundations etc as per specifications. Peak factor shall be 2, F/M ration shall be 0.15, complete with air blowers, fine diffused aeration grid / equipment and FB 0.5 m and SWD as required. DO level in basin to be minimum 2 mg/l complete with "Oxygen Uptake Rate" control system and all related instruments. Stainless steel decanters and automation works. MLSS concentrations shall be 2000-5500 mg/l or more, MLVSS to MLSS ratio to be 0.8. HRT shall be between 12 to 13 hrs and SRT suitable for fully disgested sludge. It should have all other related works as per detailed specification. In Case CASP is designed to achieve N,P removal HRT				
	5. Chlorine Contact Tank				
	Designing providing and constructing chlorine contact chamber of adequate capacity to deal with 1 DWF average flow. The chlorine contact tank should be 30 min capacity, during average flow to achieve 99.99% coliform reduction. Chlorine dose shall be maintained as per standard provisions, including designing, providing and constructing water supply provision for chlorination including providing dewatering and by pass arrangement jointing to final effluent mains and outlet weir, etc complete. The effluent quality should match with the standards laid down by Maharashtra water pollution control board and as per obligatory provision and as detailed specification and as directed by Engineer-in-charge.				
	6. Chlorinator and Chlorinator Room / Tonner Room				
	Designing, providing and constructing chlorinators vacuum type 2 Nos. with auto switchover facility and having capacity for dosage of adequate chlorine to ensure 99.99% coliform reduction as per obligatory provisions and detailed specifications with necessary provision of having chlorinator room of adequate size. The chlorinator equipment shall include cost of chlorine cylinders / tonner piping, valves, measuring and controlling equipments, safety devices, lifting euipments, etc. complete as per IS-10553 (part II) 1982. The tonner room should have minimum 3 MTcapacity Hoist for loading and unloading facility. Tonner storage should be distinctly isolated and should be for minimum storage space as directed in the design specification and as per gas laws 1981 and factory act shall be provided. All other matching amenities shall be provided, 5 MT gantry rail shall be provided for full length of tonner room at 6 m height from level of tonner room, with outlet chamber and treated effluent outlet channel etc. complete as per detailed specification.				
	7. Sludge Sump				
	Designing, providing and constructing of sludge sump and pump house of appropriate size with pumps, ceiling height minimum 6 m over sump for discharging sludge to centrifuge using CI pipe complete as per detailed specification				

Sr. No.	Item Description	Unit	Qty	Rates Rs.	Amount in Rs.
	8. Sludge Centrifuge Platform with Centrifuges				
	Designing, providing, constructing and installing including foundation etc., sludge centrifuge to handle the sludge flow of 1 day in 20 hours per unit with sludge dewatering unit drain etc complete as per specification. Sludge centrifuges with the necessary arrangement, as per detailed specification mentioned in tender and obligatory provisions to be provided with satisfactory functioning.				
	9. Outfall Sewer				
	Designing, providing and constructing appropriate outfall sewer of RCC NP2 pipe, to discharge treated effluent from outlet chamber after chlorination tank to the local Nallah at the point shown on the drawing including necessary chamber for inspection and cleaning including necessary excavation, dewatering, refilling concrete encasing / bedding concrete steps to reach the nallah bed level, pitching and energy dissipation chamber in nallah portion etc. complete upto 50m length RCC NP2 pipe line and including all above items.				
	10. Piping work in DI K-9 Class including Sluice valves, Reflux Valves, MS gates				
	Providing laying and jointing pipes other than those already included in the above items for interconnection by - pass drains etc. of all units including adequate numbers of manhole chambers. The item includes excavations, refilling and hydraulic testing of pipes, valves, gates, accessories and cost of jointing materials. The items includes required channels with gates for interconnection of units by pass drains etc for all units as directed etc complete as per detailed specifications.				
	11. Administrative Building cum Laboratory (G+1)				
	Designing, providing and constructing administrative building, office cum laboratory including stores. This shall be a building having appropriate carpet area and ground floor and at first floor complete as per specifications including necessary excavation, foundation in RCC M 20.0 framed structure B. B masonry (11- class in C.M. 1:6) 20 mm cement plaster in CM 1:3 inside and outside painting. Aluminium door and window with glass panels, mosaic tile flooring and skirting and all other allied items, fixtures fastening electrification arrangement water supply arrangement etc complete. The building will have laboratory on upper floor of administrative building and should be so centralized that it should not be attached with any unit but should have complete control of every unit as per laboratory euipment, beautification, telephone and intercom arrangement and wireless system.				
	Cost of 10.5 MLD Plant	**MLD**	10.5	9200000	**96600000.00**
	MJP KONKAN REGION DSR 18-19 Section-I: Treatment plant Item no. 4D Pg-346				
	NOTES				
	a) These Rates are for Civil Works, in M30 grade RCC.				
	b) Water Table is considered at 5 m below ground level.				
	c) Soil bearing capacity considered as 20 T/m² at 1.5 m below ground level.				
	d) OPC has been considered for costing purposes.				
	e) All civil items, electrical, piping, valves, pumps, motors, blowers, etc. are considered as per MJP Schedule of Rates.				
	f) I. No.1,2 includes sludge drying beds instead of sludge centrifuge and DWPE dosing system.				
	g) I. No.1,2,3 includes NaOCI Dosing System instead of Gas Chlorination.				
	h) I. No.1,2,3 do not includes Lab and Lab Equipments.				

Sr. No.	Item Description	Unit	Qty	Rates Rs.	Amount in Rs.
	i) O & M shall be added extra.				
	j) No pilling, dewatering, soil improvement, de silting considerd in the cost.				
	k) Site is cleared flat and levelled. No site development works, filling, dewartering cosidered.				
	l) Peak factor is considered as 2.0 times average flow. For every 25 % increase in pick factor, 10 % extra cost shall be added over the above rates.				
	m) OPC Tor steel considered.				
	n) Tretated water disposal upto 50 m considered.				
	o) N& P reduction not considered.				
	p) HT Electrical works shall be added as per case specific condition.				
	q) Raw sewage pumping works shall be added as per case specofic conditions.				
	r) Cost of I No 1 to 5 do not include HT station, Laband Mechanical dewatering of sludge..				
	s) All the structural steel works / fabrications are to be provided with application of Hot Dip Zinc Coating according to specifications as per IS 4759:1996 (Reaffirmed 2006)				
2	**Rip-Rap at outlet of Effluent Pipe**				
a	Random rubble masonry with hard stone in fourdation and plinth including leveling up with cement Concrete				
	Cement mortar 1:6 (1 cement: 6 coarse sand)	Cum	9	3198.1	28782.9
	BSR-BCD-18; Item-7.1.1, Pg-97				
b	Chain link fabric fencing mesh of size 50x50xmm made of G.I wire of dia. 4mm, pvc coated to outer dia. 5mm.	Sqm	25.8	240.13	6195.354
	BSR-BCD-18; Item-M-8695, Pg-56				
	Total				**96634978.25**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

Cost Summary - Pumping Station

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station IPS A7
A	**Civil Works**	
1	Screen Chamber	4.56
2	Pump House (Wet well and Superstructure)	15.54
3	Manifold Chamber	1.71
4	Valve Chamber	1.51
5	Flowmeter Chamber	1.52
6	Compound Wall	48.28
7	Road	16.16
8	Material Carrying Charges	2.72
	Sub total of Civil Work	92.00
B	**Mechanical Works**	16.48
C	**Electrical Works**	335.74
D	**Instrumentation and Control**	37.41
	Total for Pumping Station	**573.64**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

Sr. No	Pumping Stations	Qty. from Estimate Sheet													RCC, Flooring and Sand Filling						Bricks				Plaster				Total Quantity in MT			Carriage Charges (In Lakh Rs.)			
		Concrete (C:S:A)				Bricks (m3)	Plaster (m2)	Flooring (52 mm thk) M15		Sand Filling	Aggregate for Internal Road Works (m3)				Cement		Sand		Aggregate		Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand								
		M10 (1:3:6)	M15 (1:2:4)	M20 (1:1.5:3)	M30/M25 (1:1:2)	In CM (1:4)	12 mm thick (1:3)	Area (m2)	Volume (m3)	Volume (m3)	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ m3	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Volume (m3)	Wt (MT) 1870kg/ m3	Wt (MT) 1920kg/ m3	MT	MT	MT	Volume (m3)	Wt (MT) 1440kg/ m3	Volume (m3)	Wt (MT) 1840kg/ m3	Sand	Aggregate	Bricks	Sand (9.40 Rs./t.km)	Aggregate (9.40 Rs./t.km)	Bricks (9.40 Rs./t.km)	Total (Rs. In Lakhs)
1	IPS A7																															94.00	94.00	94.00	
	Screen Chamber	5.00			27.00	0.00	0.00		0.00					0.00	7.25	10.44	8.25	15.18	16.50	30.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.18	30.86	0.00	0.01	0.03	0.00	0.04
	Wetwell & Superstructure	2.00			39.00	8.00	79.00	3.00	0.12					0.00	9.97	14.36	10.38	19.10	20.77	38.84	15.36	0.33	1.34	13.69	0.24	0.35	0.71	1.31	21.75	38.84	15.36	0.02	0.04	0.01	0.07
	Manifold Chamber	1.00			10.00	0.00	0.00		0.00					0.00	2.60	3.74	2.80	5.15	5.60	10.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.15	10.47	0.00	0.02	0.05	0.00	0.07
	Valve Chamber	1.00			7.00	0.00	0.00		0.00					0.00	1.85	2.66	2.05	3.77	4.10	7.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.77	7.67	0.00	0.00	0.01	0.00	0.01
	Flow Meter Chamber	1.00			7.00	0.00	0.00		0.00					0.00	1.85	2.66	2.05	3.77	4.10	7.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.77	7.67	0.00	0.02	0.04	0.00	0.06
	Compound Wall	57.12	0.00	179.24		227.31	2352.96		0.00						38.30	55.15	66.02	121.48	132.04	246.91	436.43	9.49	37.95	388.99	7.06	10.17	21.18	38.97	198.40	246.91	436.43	0.19	0.23	0.41	0.83
	Internal Roads and Approch Road		0.00								620.00	279.00	93.00	1855.04	4164.56	5996.97	0.00	0.00	0.00	0.00	0.00	1159.40	4637.60	-5797.00	0.00	0.00	0.00	0.00	4637.60	1855.04	0.00	4.36	1.74	0.00	6.10
	Total	67.12	0.00	179.24	90.00	235.31	2431.96	3.00	0.12	0.00	620.00	279.00	93.00	1855.04	61.82	89.02	91.55	168.45	183.11	342.42	451.80	9.82	39.29	402.69	7.30	10.51	21.89	40.28	248.02	2197.46	451.80	0.23	2.07	0.42	2.72
	Total for IPS A7	10.00	0.00	0.00	90.00	8.00	79.00	3.00	0.12	0.00	0.00	0.00	0.00	0.00	23.52	33.87	25.53	46.98	51.07	95.50	15.36	0.33	1.34	13.69	0.24	0.35	0.71	1.31	49.63	95.50	15.36	0.05	0.09	0.01	**0.15**
	Total for Compound Wall and STP Internal Road	57.12	0.00	179.24	0.00	227.31	2352.96	0.00	0.00	0.00	620.00	279.00	93.00	1855.04	38.30	55.15	66.02	121.48	132.04	246.91	436.43	9.49	37.95	388.99	7.06	10.17	21.18	38.97	198.40	2101.95	436.43	0.19	1.98	0.41	**2.58**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- SCREEN CHAMBER IPS A7

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	up to 1.5 m	Cum	19.00	319.60	6072.00
b)	From 1.5 m to 3.0 m	Cum	19.00	360.60	6851.00
c)	From 3.0 m to 4.5 m	Cum	19.00	401.60	7630.00
d)	From 4.5 m to 6 m	Cum	9.00	442.60	3983.00
e)	From 6 m to 7.5 m	Cum	0.00	483.60	0.00
f)	From 7.5 m to 9.0 m	Cum	0.00	524.60	0.00
g)	From 9.0 m to 10.5 m	Cum		565.60	0.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock (Blasting Prohibited)				
a)	up to 1.5 m	Cum		502.70	0.00
b)	From 1.5 m to 3.0 m	Cum		576.20	0.00
c)	From 3.0 m to 4.5 m	Cum		649.70	0.00
d)	From 4.5 m to 6 m	Cum	1.00	723.20	723.20
e)	From 6 m to 7.5 m	Cum		796.70	0.00
f)	From 7.5 m to 9.0 m	Cum	0.00	870.20	0.00
g)	From 9.0 m to 10.5 m	Cum		943.70	0.00
	BSR-BCD-18-Item 2.9.1; Pg-73 & 2.27.2; Pg.-75				
	Hard rock (blasting prohibited)				
a)	up to 1.5 m	Cum		1033.50	0.00
b)	From 1.5 m to 3.0 m	Cum		1107.00	0.00
c)	From 3.0 m to 4.5 m	Cum	0.00	1180.50	0.00
d)	From 4.5 m to 6 m	Cum	1.00	1254.00	1254.00
e)	From 6 m to 7.5 m	Cum		1327.50	0.00
f)	From 7.5 m to 9.0 m	Cum	0.00	1401.00	0.00
g)	From 9.0 m to 10.5 m	Cum		1474.50	0.00
	BSR-BCD-18-Item 2.9.1 and 2.9.3 pg 73 & 2.27.2 pg 75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	16.00	103.30	1653.00
	BSR-BCD-18-Item 2.26; Pg-75				
4	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	51.00	254.30	12970.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
5	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	92.20	18440.00
	BSR-BCD-18-Item 2.25; Pg-75				
6	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	5.00	4151.40	20757.00
	BSR-BCD-18; Item 4.1.3; Pg-79				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
7	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	27.00	5270.50	142304.00
	BSR-BCD-18; Item 5.33.1;+5.34.1 Pg-83				
	For sulphate resisting cement	MT	10.00	800.00	8000.00
	RUIDP 2017, 3239 & 3237				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT - FE-500**	MT	2.00	76000.00	152000.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
9	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.00	186.30	745.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	152.00	321.30	48838.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balcnies and access platform.	Sqm	4.00	362.60	1450.00
	BSR - BCD-18- Item- 5.9.3, Pg-84				
10	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design (With 20 mm diameter round bar).	each	22.00	240.60	5293.00
	BSR-BCD-18, Item-19.15.2, Pg.-245				
11	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-18; Item-13.70.1; Pg-170	Sq m	3.00	15.90	48.00
12	**Railing:** Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m center to center, complete as per approved drawings including all materi**al, labour. at walkway: Around platform**				
	RUIDP-2017, Item-10.20, Pg.-34	RM	8.00	2040.00	16320.00
13	**230mm thick Random rubble soling below PCC.**	Cum	3.00	191.14	573.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**455904.20**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- SCREEN CHAMBER IPS A7

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
1	Excavation in soft/ ordinary soil					
a)	up to 1.5 m		4.40	2.92	1.50	19.27
b)	From 1.5 m to 3.0 m		4.40	2.92	1.50	19.27
c)	From 3.0 m to 4.5 m		4.40	2.92	1.50	19.27
d)	From 4.5 m to 6.0 m		4.40	2.92	0.74	9.47
e)	From 6.0 m to 7.5 m		4.40	2.92	0.00	0.00
f)	From 7.5 m to 9.0 m		4.40	2.92	0.00	0.00
g)	From 9.0 m to 10.5 m		4.40	2.92		0.00
						67.28
2	Refilling					16.41
3	Disposal		4.40	2.32	4.51	46.01
	PCC					1.06
	Base slab					3.80
	Total					**50.87**
4	PCC: M15		4.20	2.52	0.10	1.06
	Approach, Screen and railing- Haunch		7.64	0.75	0.75	4.30
	Total					**5.36**
5	RCC Grade M -30					
	Footing (Base slab)		4.10	2.32	0.40	3.80
	Benching	2.00	0.45	0.34	0.90	0.14
	Outer walls		11.12	0.30	4.81	16.04
	Inner wall		1.72	0.30	3.81	1.96
	Partition wall		3.30	0.30	4.81	4.76
	RCC Slab		0.50	1.72	0.15	0.13
	Slab for bar screen		1.20	1.72	0.15	0.31
	Grand Total					**27.14**
	Sulphate resisting cement					**9.77**
6	**Shuttering**					
	Footing (Base slab)		12.84		0.40	5.14
	Ramp	0.00	0.75		1.00	0.00
	Outer walls	2	11.12		4.81	106.91
	Inner wall	2	1.72		3.81	13.10
	Partition wall	2	3.30		4.81	31.73
	RCC Slab		0.80	1.72		1.38
	Slab for bar screen		1.80	1.72		3.10
	Grand Total					**161.36**
	Summary					
	Foundations, footings, bases of columns etc. for mass concrete.					3.80
	Walls (any thickness) including attached plasters. Butteresses, plinth and string courses etc.					151.74
	Suspended floors, roofs, landings, balconies and access platform.					4.48
7	Reinforcement- Fe 500 TMT					**2.2**
8	Painting					
	Side wall	2.00	4.10	0.30		2.46
	Front wall	1.00	2.32	0.30		0.70

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units
9	MS/CI foot rests	22				**22.00**
10	Providing and fixing G.I. pipe railing					**8.24**
11	Dewatering					**200.00**
23	Rubble Soling	1	4.50	2.52	0.23	**2.6082**

Qty.
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Sq m

Qty.
Nos.
RM
KL
Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- WETWELL IPS A7

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	Sqm	100.00	579.80	580.00
	BSR-BCD-18- Item 2.32 pg 75				
2	**Earth work in excavation in foundation trenches or drains** (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.				
	All types of Soil				
a)	up to 1.5 m	Cum	22.00	319.60	7031.00
b)	From 1.5 m to 3.0 m	Cum	22.00	360.60	7933.00
c)	From 3.0 m to 4.5 m	Cum	22.00	401.60	8835.00
d)	From 4.5 m to 6.0 m	Cum	20.00	442.60	8852.00
e)	From 6.0 m to 7.5 m	Cum	1.00	483.60	484.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Excavation work** in foundation trenches or drains not exceeding 1.5 m in width or 10 sq m on plan including dressing of sided and ramming of bottoms lift including getting cut the excavated soils as directed, within lead of 50 m.				
	Ordinary Rock				
d)	From 4.5 m to 6.0 m	Cum	1.00	723.20	723.00
e)	From 6.0 m to 7.5 m	Cum	1.00	796.70	797.00
	Hard Rock (Blasting prohibited)				
d)	From 4.5 m to 6.0 m	Cum	1.00	1254.00	1254.00
e)	From 6.0 m to 7.5 m	Cum	1.00	1327.50	1328.00
	BSR-BCD-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
4	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	47.00	103.30	4855.00
	BSR-BCD-18-Item 2.26; Pg-75				
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	56.00	254.30	14241.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	92.20	461000.00
	BSR-BCD-18-Item 2.25; Pg-75				
7	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	2.00	4151.40	8303.00
	BSR-BCD-18; Item 4.1.3; Pg-79				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
8	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
8.1	RCC Grade M-30	Cum	25.00	5270.50	131763.00
	For sulphate resisting cement	MT	9.00	800.00	7200.00
	RUIDP 2017, 3239 & 3237				
	All work above Plinth level up to floor V Level.				
8.2	RCC Grade M -25	Cum	14.00	5859.00	82026.00
	BSR-BCD-18; Item-5.33.2, Pg-88				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	4.00	76000.00	304000.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
10	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.00	186.30	1118.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	117.00	321.30	37592.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	40.00	362.60	14504.00
	BSR - BCD-18- Item- 5.9.3, Pg-84				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	19.00	335.30	6371.00
	BSR - BCD-18- Item- 5.9.5, Pg-84				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	23.00	425.80	9793.00
	BSR - BCD-18- Item- 5.9.6, Pg-84				
11	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	8.00	5739.40	45915.00
	BSR - BCD-18- Item- 6.1.12/1 + 6.3 A, Pg- 93				
12	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarse sand)	Sq m	79.00	153.60	12134.00
	BSR-BCD-18; Item-13.11.1, Pg-167				
13	**Painting:** Distempering with **oil bound washable** distemper of approved brand and manufacture to give an even shade	Sq m	87.00	83.40	7256.00
	New work (two or more coats) over & including priming coat with cement primer.				
	BSR - BCD-18- Item- 13.77.2, P-171				
14	52 mm thick cement concrete flooring with metallic concrete hardener topping under layer 40 mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick metallic concrete hardener consisting of mix 1:2 (1 cement hardener mix:2 stone aggregate 6 mm nominal size) by volume @ 2 liter per 50 kg of cement or as per manufacture specification. This includes cost of cement slurry, etc. but excluding the cost of nosing of steps etc. complete	Sqm	3.00	450.80	1352.00
	BSR-BCD-18; Item-11.4; Pg-144				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
15	**Structural steel** work in single section fixed without connecting plate including cutting, hoisting,fixing in position and applying a priming coat of approved steel primer all complete.	M.T	1.00	68200.00	68200.00
	BSR-BCD-18; Item-10.1; Pg-138				
16	Water proofing: Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	11.00	2553.30	28086.00
	BSR-BCD-18; Item-22.8.1; Pg-257				
17	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	Sqm	5.00	3319.70	16599.00
	BSR-BCD-18; Item-21.10; Pg-254				
18	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	0.00	240.90	0.00
	BSR-BCD-18; Item-19.16; Pg-245				
19	Providing and fixing 50 mm dia G.I. steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 meters high above ground, 2 m c/c, complete as per approved drawings including all material, labour: **Around Opening in the floor platform**	RM	5.00	2040.00	10200.00
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- Rolling shutters of approved make.made of required size of M.S.laths inter locked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete including the cost of providing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. (i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	8.00	2394.00	19152.00
	80x1.25mm MS Laths with 1.25mm thick top cover				
	BSR-BCD-18; Item-10.8.1; Pg-139				
22	Providing and fixing in position **Lightening arrester** set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthling pit at 3.5 meter depth, G.I. strip of size 25mmx5mm thick from earthing plate to top of Over head tank, G.I. Final made of GI bar 25mm dia and 2m long fixed on top of OH tank and connected to GI strip. The earthling set shall comply of IS:3043 complete in all respect as per specification and the direction of the	No.	1.00	12500.00	12500.00
	RUIDP-2017, Item-19.80, Pg.-145				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
23	Providing and fixing **M.S. chequerred plate** flooring of following thickness supported on M.S. angles (25 x 25 x 5 mm size) including welding, cutting and fabricating the plates to the required square or rounding shape, making holes in the plate, including providing and applying 3 coats of anticorrosive paint, etc. complete as directed by Engineer-in-charge. (6 mm Thick)	Sqm	2.00	3226.00	6452.00
	(Item No.6, (a) Section J, MJP Page 366 DSR 2017-18)				
24	230 thick rubble soling: Supplying, filling, spreading & levelling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	Cum	2.00	959.00	1918.00
	BSR-BCD-18; Item-24.5, Pg-266				
25	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI : 12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank	per Litre	2000.00	7.90	**15800.00**
	BSR-BCD-18; Item-18.48, Pg-228				
26	Providing and fixing 2HP centrifugal pump (6-20m head)	No	1.00	10000.00	**10000.00**
	Market Rate				
25	**Overflow Arrangement**				
i	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
a)	up to 1.5 m	Cum	91.00	319.60	29084.00
b)	From 1.5 m to 3.0 m	Cum	16.00	360.60	5770.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
ii	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	96.00	103.30	9917.00
	BSR-BCD-18-Item 2.26; Pg-75				
iii	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	92.20	922.00
	BSR-BCD-18-Item 2.25; Pg-75				
iv	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	2.00	254.30	509.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
v	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended up to date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
	200 mm dia.	m	50.00	2054.00	102700.00
	BSR-BCD-18-Item 18.72.17; Pg-231				
vi	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification.	cum	9.00	217.00	1953.00
	BSR - RCD-18- Item- 12.3, P-222				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
vii	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard drawing and as directed by Engineer in-charge :				
	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centring, shuttering, refilling all complete. Excavation, foot rests and 12mm thick cement plaster at the external surface shall be carried out : with sewer bricks confirming to IS: 4885	Each	1.00	**7052.00**	7052.00
	BSR - BCD-18- Item- 19.9.1.2, P-243				
13	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**1554163.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART

MEASUREMENT SHEET- WETWELL IPS A7

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Site Clearing		0.00	0.00		Sqm	0.00
2	Excavation in soft or ordinary soil						
	Pump House						
a)	up to 1.5 m			4.30	1.50	Cum	21.78
b)	From 1.5 m to 3.0 m			4.30	1.50	Cum	21.78
c)	From 3.0 m to 4.5 m			4.30	1.50	Cum	21.78
d)	From 4.5 m to 6.0 m			4.30	1.50	Cum	21.78
e)	From 6.0 m to 7.5 m			4.30	1.09	Cum	15.79
f)	From 7.5 m to 9.0 m			4.30	0.00	Cum	0.00
g)	From 9.0 m to 10.5 m			4.30	0.00	Cum	0.00
h)	From 10.5 m to 12.0 m			4.30	0.00	Cum	0.00
i)	From 12.0 m to 13.5 m			4.30	0.00	Cum	0.00
j)	From 13.5 m to 15.0 m			4.30	0.00	Cum	0.00
	Total					Cum	**102.91**
3	**Refilling of Earth**					Cum	**46.85**
4	**Disposal of Earth**						
	Base Raft	1					3.76
	Well	1		3.10	6.41	Cum	48.36
	PCC	1		3.90	0.10	Cum	1.19
	Rubble Soling	0		3.90	0.23	Cum	2.75
	Total					Cum	**56.06**
5	**Dewatering of water**					KL	5000.00
6	PCC: Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering- M15						
	Below Base Raft			3.90	0.10	Cum	1.19
	Additional sloped portion in Base Raft						0.82
	Total						**2.01**
7	**Reinforced cement concrete**						
a	M 30: up to Plinth level						
	Base Raft			3.70	0.35	Cum	3.76
	Wall		8.80	0.30	7.01	Cum	18.50
	Floor Slab Beams- Peripheral		8.80	0.30	0.40	Cum	1.06
	Floor Slab Beams	1	7.00	0.30	0.40	Cum	0.84
	Floor Slab			2.50	0.20	Cum	0.98
	For platform		1.50	0.80	0.20	Cum	0.24
	Deduction for Floor Slab opening		-1.50	1.00	0.20	Cum	-0.30
	Total					Cum	**25.08**
	Sulphate resisting cement						**9.03**
b	M 25: Above Plinth level						
	Columns	3	0.30	0.30	5.87	Cum	1.59
	Corbels	3	7.85	0.65	0.45	Cum	6.89
	Lintel Beams		8.80	0.30	0.40	Cum	1.06
	Chajja		4.20	0.45	0.100	Cum	0.19
	Roof Slab Beams- Peripheral		8.80	0.30	0.40	Cum	1.06
	Roof Slab Beams- Circular inner		0.00	0.00	0.00	Cum	0.00
	Roof Slab Beams	0	0.00	0.30	0.40	Cum	0.00
	Roof Slab			3.70	0.13	Cum	1.34
	Parapet wall		0.00	0.15	0.90	Cum	0.00
	Screen Lifting Platform Slab		1.50	0.80	0.20	Cum	0.24
	Ramp		1.50	2.50	0.60	Cum	1.13

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
	Total					Cum	**13.50**
8	**Shuttering**						
a	Foundations, Footings, Bases of Columns, etc for mass concrete						
	Wall- Outer		9.74		7.01	Sqm	68.25
	Wall- Inner		7.85		7.01	Sqm	55.00
	Floor Slab Beams- Peripheral		8.80		1.10	Sqm	9.68
	Floor Slab Beams	1	7.00		1.10	Sqm	7.70
	Floor Slab			2.50		Sqm	4.91
	Ramp		5.50		0.60	Sqm	3.30
	For platform		1.50	0.80		Sqm	1.20
	For Floor Slab opening Sides		5.00		0.20	Sqm	1.00
	Deduction for Floor Slab opening		1.50	1.00		Sqm	1.50
	Total						**153.00**
b	walls (any thickness), including attached pilasters, buttresses, plinth and string courses fillets etc.						
	Columns	3	1.20		5.87	Sqm	21.15
	Corbels	3	1.55		0.45	Sqm	2.09
	Lintel Beams		8.80		1.10	Sqm	9.68
	Chajja		4.20		0.55	Sqm	2.31
	Roof Slab Beams- Peripheral		8.80		1.10	Sqm	9.68
	Roof Slab Beams- Circular inner		0.00		0.00	Sqm	0.00
	Roof Slab Beams	0	0.00		1.10	Sqm	0.00
	Roof Slab			2.50		Sqm	4.91
	Roof Slab Projection		10.68	0.30		Sqm	3.20
	Parapet wall	0	11.13		0.90	Sqm	0.00
	Screen Lifting Platform Slab		1.70	1.00		Sqm	1.70
	Total						**54.72**
	Summary						
	Foundations, footings, bases of columns etc. for mass concrete.					Sqm	6.16
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.					Sqm	117.09
	Suspended floors, roofs, landings, balcnies and access platform.					Sqm	40.41
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.					Sqm	19.36
	Columns,Pillars, Piers, Abutments, Posts and Struts.					Sqm	23.24
9	**Type Item - Brick Work**						
	Brick wall		9.02	0.23	5.87	Cum	12.18
	Deduct opening						
	Rolling Shutter	-1	2.50	3.00	0.23		-1.73
	Windows	-2	1.50	1.20	0.23		-0.83
	Ventilator	-2	0.70	0.90	0.23		-0.29
	Deduct column	-3	0.30	5.87	0.23		-1.22
	Total					Cum	8.11
10	**Plaster work (Inner Face)**						
	Superstructure			7.85	5.87		46.12
	less opening					Sq m	-12.36
	Total					Sq m	**33.76**
11	**Plaster work (Outer Face)**						
	Superstructure			9.74	5.87		57.22
	less opening					Sq m	-12.36
	Total					Sq m	**44.86**
12	**Steel Reinforecement**					MT	4.24

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
13	**Painting:** Distempering with **oil bound was**hable distember of approved brand and manufacture to give an even shade					Sq m	86.73
14	**Cement concrete flooring**						
	Superstructure			4.91		Sq m	4.91
	deduct for opening						-1.50
	Total					Sq m	**3.41**
15	**Aluminium Window, door and ventilator**						
	Windows	2	1.50	1.20		Sqm	3.60
	Ventilator	2	0.70	0.90		Sqm	1.26
	Total					Sqm	**4.86**
16	MS/CI foot step					Nos.	0.00
17	Providing and fixing G.I. pipe railing				5.00	RM	5.00
18	Rolling Shutter	1	2.50	3.00		Sqm	7.50
19	Providing stuctural steel work in single stanchions composed of RSJ, channel, etc,					M.T	1.00
20	Providing and fixing in position copper lightening conductor					No.	1.00
21	**MS Chequerred Plate**						
	6 mm thk plate, 10 mm thk ISMC100 with epoxy painted	1	1.50	1.00		Sqm	1.50
22	Roof Water Proofing		3.70			Sqm	10.75
23	**Rubble Soling:** 230 mm thik rubble soling	1	9.62		0.23	Cum	2.21

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- MANIFOLD CHAMBER IPS A7

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	24.00	319.60	7670.00
b)	From 1.5 m to 3.0 m	Cum	7.00	360.60	2524.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	15.00	103.30	1550.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	16.00	254.30	4069.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220.00
	BSR-BCD-18-Item 2.25; Pg-75				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	4151.40	4151.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	RCC Grade M -25: All works up to plinth level	Cum	10.00	5192.50	51925.00
	BSR-BCD-18; Item-5.33.1, Pg-88				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	76000.0	76000.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.00	186.30	745.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	36.00	321.30	11567.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	2.00	240.90	482.00
	BSR-BCD-18; Item-19.16; Pg-245				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-18; Item-13.70.1; Pg-170	Sq m	3.00	15.90	48.00
11	**230mm thick Random rubble soling below PCC.**	Cum	3.00	191.14	573.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**170524.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- MANIFOLD CHAMBER IPS A7

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		3.90	4.10	1.50	23.99	Cum
b)	From 1.5 m to 3.0 m		3.90	4.10	0.45	7.20	Cum
c)	From 3.0 m to 4.5 m		3.90	4.10	0.00	0.00	Cum
2	Refilling					14.70	Cum
3	Disposal		2.70	2.90	1.50	11.75	Cum
	PCC					1.16	Cum
	Base slab					3.58	Cum
	Total					**16.49**	Cum
4	PCC: M15		3.30	3.50	0.10	1.16	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		3.10	3.30	0.35	3.58	Cum
	Outer walls		10.00	0.30	1.80	5.40	Cum
	Beam		2.10	0.25	0.30	0.16	Cum
	Total					**9.51**	Cum
6	**Precast Cover**	14	1.17	0.30	0.08	**0.37**	Cum
7	Shuttering						
	Footing (Base slab)		12.80		0.35	4.48	Sqm
	Outer walls	2	10.00		1.80	36.00	Sqm
	Beam	1	0.85		2.10	1.79	Sqm
	Total					**42.27**	Sqm
8	Reinforcement- Fe 500 TMT					**1**	MT
9	Painting						
	Side wall	2.00	2.70	0.30		1.62	Sq m
	Front and back wall	2.00	2.90	0.30		1.74	Sq m
	Total					**3.36**	Sqm
9	MS/CI foot rests	2				**2.00**	No.
10	Dewatering					**100.00**	KL
11	Random rubble soilng		3.30	3.50	0.23	2.66	Cum
						244	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS A7

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	21.00	319.60	6712.00
b)	From 1.5 m to 3.0 m	Cum	5.00	360.60	1803.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	13.00	103.30	1343.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	13.00	254.30	3306.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220.00
	BSR-BCD-18-Item 2.25; Pg-75				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	4151.40	4151.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	7.00	5270.50	36894.00
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-87				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	76000.00	76000.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	186.30	559.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	32.00	321.30	10282.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	240.90	723.00
	BSR-BCD-18; Item-19.16; Pg-245				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-18; Item-13.70.1; Pg-170	Sq m	3.00	15.90	48.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**151423.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- BUTTERFLY VALVE CHAMBER IPS A7

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		3.70	3.70	1.50	20.54	Cum
b)	From 1.5 m to 3.0 m		3.70	3.70	0.40	5.48	Cum
c)	From 3.0 m to 4.5 m		3.70	3.70	0.00	0.00	Cum
2	Refilling					13.16	Cum
3	Disposal		2.50	2.50	1.50	9.38	Cum
	PCC					0.96	Cum
	Base slab					2.52	Cum
	Total					**12.86**	Cum
4	PCC: M15		3.10	3.10	0.10	0.96	Cum
5	**RCC Grade M -20**						
	Footing (Base slab)		2.90	2.90	0.30	2.52	Cum
	Outer walls		9.00	0.25	1.80	4.05	Cum
	Total					**6.57**	Cum
6	**Precast Cover**	9	2.14	0.33	0.10	0.63	Cum
7	**Shuttering**						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		1.80	32.40	Sqm
	Total					**35.88**	Sqm
8	**Reinforcement- Fe 500 TMT**					**1**	MT
9	**Painting**						
	Side wall	2.00	2.50	0.30		1.50	Sq m
	Front and back wall	2.00	2.50	0.30		1.50	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Random rubble soilng		3.10	3.10	0.23	2.21	Cum

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- FLOW METER CHAMBER IPS A7

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required. All types of soil				
a)	up to 1.5 m	Cum	20.00	319.60	6392.00
b)	From 1.5 m to 3.0 m	Cum	8.00	360.60	2885.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	Cum	16.00	103.30	1653.00
	BSR-BCD-18-Item 2.26; Pg-75				
3	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	12.00	254.30	3052.00
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
4	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220.00
	BSR-BCD-18-Item 2.25; Pg-75				
5	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15	Cum	1.00	4151.40	4151.00
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	RCC: Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cementcontent as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and including retard setting of concrete, improve workability without impairing strength and admixtures in recommended proportions as per IS: 9103 to accelerate, reinforcement, durability as per direction of Engineer-in-charge. Note:- Cement content considered in this item is @ 330 kg/ cum. Excess or less cement used as per design mix is payable or recoverable separately.				
	All work up to plinth level:				
	RCC Grade M -30	Cum	7.00	5270.50	36894.00
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-87				
7	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	1.00	76000.00	76000.00
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	**centring & Shuttering**				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.00	186.30	559.00
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	32.00	321.30	10282.00
	BSR - BCD-18- Item- 5.9.2, Pg-84				

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
9	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between produced legs having 2mm trade on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification and having manufacturers permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) complete as per design	each	3.00	240.90	723.00
	BSR-BCD-18; Item-19.16; Pg-245				
10	**Painting:** White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-18; Item-13.70.1; Pg-170	Sq m	3.00	15.90	48.00
11	**230mm thick Random rubble soling below PCC.**	Cum	2.00	191.14	382.00
	BSR - RCD-18- Item- M-148, P-35				
	Total				**152241.00**

SEWERAGE SYSTEM FOR GAYA EASTERN PART
MEASUREMENT SHEET- FLOW METER CHAMBER IPS A7

Sr. No.	Description of work	No.	L (m)	B/Dia (m)	D/H (m)	Units	Qty.
1	Excavation in soft/ ordinary soil						
a)	up to 1.5 m		4.20	3.20	1.50	20.16	Cum
b)	From 1.5 m to 3.0 m		4.20	3.20	0.63	8.47	Cum
c)	From 3.0 m to 4.5 m		4.20	3.20	0.00	0.00	Cum
2	Refilling					16.24	Cum
3	Disposal		3.00	2.00	1.50	9.00	Cum
	PCC					0.94	Cum
	Base slab					2.45	Cum
	Total					**12.39**	Cum
4	PCC: M15		3.60	2.60	0.10	0.94	Cum
5	RCC Grade M -20						
	Footing (Base slab)		3.40	2.40	0.30	2.45	Cum
	Outer walls		9.00	0.25	1.80	4.05	Cum
	Total					**6.80**	Cum
6	**Precast Cover**	8	1.64	0.30	0.08	0.30	Cum
7	Shuttering						
	Footing (Base slab)		11.60		0.30	3.48	Sqm
	Outer walls	2	9.00		1.80	32.40	Sqm
	Total					**35.88**	Sqm
8	Reinforcement- Fe 500 TMT					**0.54**	MT
9	Painting						
	Side wall	2.00	3.00	0.30		1.80	Sq m
	Front and back wall	2.00	2.00	0.30		1.20	Sq m
	Total					**3.00**	Sqm
10	MS/CI foot rests	3				**3.00**	No.
11	Dewatering					**100.00**	KL
12	Random rubble soilng		3.60	2.60	0.23	2.15	Cum

SEWERAGE SYSTEM FOR GAYA ESTERN PART
COST ESTIMATE - PUMPING MAIN FROM IPS A7 TO STP

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing **Ductile Iron (DI) ISI marked K-9 grade** S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.				
i	100 mm dia.	m	35.00	**1021.50**	35752.50
	BSR-BCD-18-Item 18.72.15; Pg-231				
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	All types of Soil				
a)	Upto 1.5 m	Cum	32.00	**319.60**	10227.20
b)	From 1.5 m to 3.0 m	Cum	5.00	**360.60**	1803.00
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.				
	BSR-BCD-18-Item 2.26; Pg-75	Cum	31.00	**103.30**	3202.30
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, **M-20 grde reinforced cement concrete**: All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	5.00	**4924.00**	24620.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**				
	BSR-BCD-18; Item-5.22.7E TO H; Pg-86	Kg	109.00	**76.00**	8284.00
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	**92.20**	230500.00
	BSR-BCD-18-Item 2.25; Pg-75				
7	**Centring and shuttering** including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	13.00	**186.30**	2421.90
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
8	**Sand Filling** in Foundation Trenches as per Drawing & Technical Specification	cum	3.00	**217.00**	651.00
	BSR - RCD-18- Item- 12.3, P-222				
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	Rate Analysis : Removal of Unserviceable soil with Disposal	Cum	3.00	**254.30**	762.91
	ROAD RESTORATION AND DISMENTLING WORKS				
10	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead				
	Water bound macadam road	Sq m	21.00	74.90	1572.90
	BSR-BCD-18; Item-15.43.1, Pg-188				

Sr. No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
11	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum	**5.25**	637.00	3344.25
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
12	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum	**3.15**	888.00	2797.20
	SOR-RCD-18; Item-4.12 ; Pg.-76				
				Sub Total	**325939.16**
13	Providing, lowering, laying, aligning, fixing in position at and jointing at all level/depths S&S standard specials with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 such as tees, bends, tapers, caps etc. within trenches in DI pipe line complete including all material, labour, testing and commissioing along with pipe line as per technical specifications and as per direction of Engineer.				
	Specials S&S DI K-9				
	Upto 600mm dia	quintal	0.22	**17389.00**	3825.58
	Above 600mm dia	quintal	0.00	**24798.30**	0.00
	BSR - BCD-18-Item- 18.69.1& 18.69.2, P-231				
			Sub Total A		**329765.00**
14	**Carriage of Material**				
	Sand	t.km	25.00	9.40	235.00
	Aggregate	t.km	51.10	9.40	480.34
	Bricks	t.km	0.00	9.40	0.00
			Sub Total B		**715.00**
	Total Cost (A+B)				**330480.00**

SEWERAGE SYSTEM FOR GAYA CITY
Measurement Sheet -Pumping Main from IPS7 to STP

Calculation for the length of (m)		ID (m)	Thk (mm)	OD (m)	DI mean ID (m)	Excavation Width
	35	0.100	0.00	0.100	0.1	0.600

Sr. No.	Item Description as per BSR	Unit	No./s	L	B	D/H	Qty.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing Ductile Iron (DI) ISI marked K-9 grade S&S pipes as per IS:8329-2000 (amended upto date), with internal cement mortar lining for potable water with rubber ring (EPDM/SBR) joints as per IS: 5382-1985 (excluding special accessories) complete including all material, labour, hydraulic testing and commissioning as per Technical Specifications and as per direction of Engineer.						
i	100 mm dia	M		35.000	0.0000		35.00
2	Earth work in excavation in **foundation trenches** including extra excavation for socket portion (**not exceeding 1.5 m** in width) in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.						
	All types of Soil						
a)	Upto 1.5 m	Cum	1.00	35	0.60	1.50	32.00
b)	From 1.5 m to 3.0 m	Cum	1.00	35	0.60	0.25	5.00
3	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.						
		Cum		37.00		6.00	31.00
4	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, M-20 grde reinforced cement concrete: All work upto plinth level:						
	ii) M-20	Cum					5.00

5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated bars TMT-500**						
		Kg					109.00
6	**Pumping out water** caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL					2500
7	Centring and shuttering including strutting, propping etc. and removal of formwork.						
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m					13.00
8	Sand Filling in Foundation Trenches as per Drawing & Technical Specification	cum	1	35.00	0.60	0.15	3.00
9	**Removal of unserviceable soil** with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.						
		Cum	1	35.00	0.01		3.00
10	Providing and supplying ISI standard **D.I. specials and fittings** with sealing rubber gasket of S.B.R. complete with Cast Iron follower gland and M.S. nut and bolts coated or otherwise protected from rusting and suitable for D.I. pipes including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc. complete.	10% of Pipe cost					
	ROAD RESTORATION AND DISMENTLING WORKS						
11	**Dismantling of flexible pavements** and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. **By Mechanical Means**	cum		0	0.600	0.5	0
	RCD/SOR-14; Item-2.5-II A; Pg-29						
12	**Dismantling of cement concrete pavement** by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately.	cum		0	0.600	0.3	0
	RCD/SOR-14; Item-2.6; Pg-29						
	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	sqm		35	0.600		21.00
	Cement concrete road Restoration						
	Water bound macadam road						

13	Supply and stacking of **Fly ash** conforming to IRC-58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum		0	0.600	0.1	0
	BSR-BCD-14; Item-2.39, Pg-86						
14	Filling with available **fly ash and earth** (excluding rock) in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer – incharge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum		0	0.600	0.1	0
	BSR-BCD-14; Item-2.40, Pg-86						
15	**Cement Concrete Pavement** (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sea lant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing)	cum		0	0.600	0.2	0
	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	cum		35	0.600	0.25	5.25
	Providing, laying, spreading and compacting 150 mm graded stone aggregate to Wet Mix Macadam (WMM) : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	cum		35	0.600	0.15	3.15

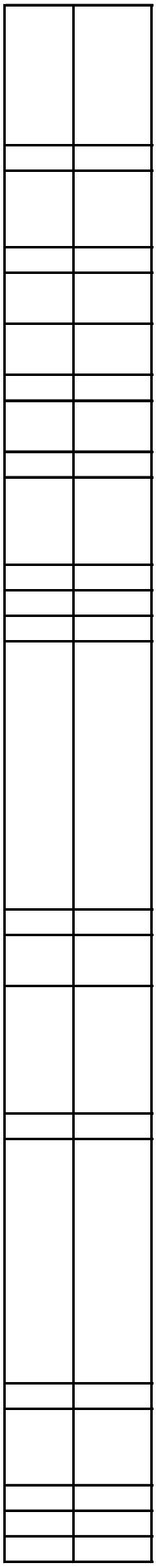
	Reconstruction of Bituminous Asphalt Roads						
16	**Water Bound Macadam:** (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)						
	Grading II: 100 mm thick	cum		0	0.600	0.1	0
	Grading III: 100 mm thick	cum		0	0.600	0.1	0
	BSR-RCD-14-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71						
17	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm		0	0.600		0
	BSR-RCD-14-Item 5.1, Pg-86						
18	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm		0	0.600		0
	BSR-RCD-14-Item 5.2, Pg-86						
19	**Bituminous Macadam** (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	cum		0	0.600	0.04	0
	BSR-RCD-14-Item 5.3 (I), Pg-87						
20	**Bituminous Penetration Macadam** (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm		0	0.600		0
	BSR-RCD-14-Item 5.4 A, Pg-87						

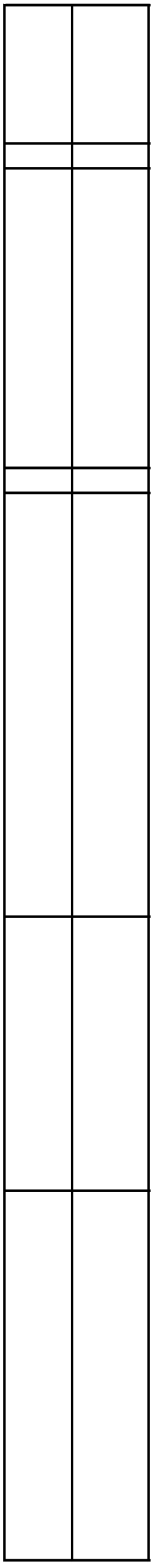
21	**20mm thick Open-Graded Premix Carpet** using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm		0	0.600		0
	SOR-RCD-GoB-14-Item 5.9 B, Pg- 125						

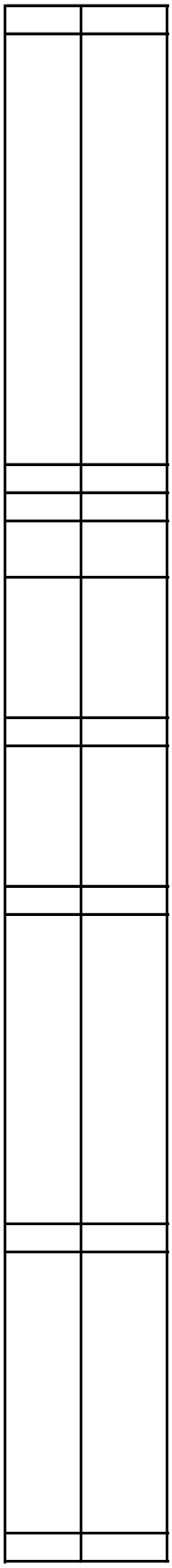
Excavation Depth	Encasement Width
1.750	0.600

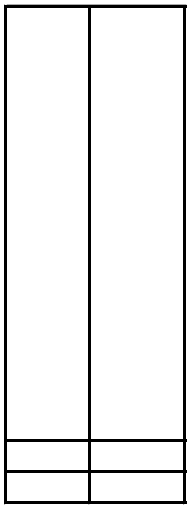
Puping main excavation quantity

26.46 1.26 is the avg depth of IPS 7 PM









Rate Analysis for Soil disposal Soil density=1.

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Stone Boulder tone Boulder densi

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.**	**Cum**	**1**

Rate Analysis for Sand Sand density=1

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1

2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for cement Cement density=

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

Rate Analysis for Aggregates Aggregates density

Sr. No.	Description	Unit	Quantity
1	Loading and Unloading of Stone Boulder/ Stone/aggregates/Sand /Kanker/Moorum Placing Tractor at loading point, loading with front end loader, dumping, turning for return trip, excluding time for haulage and return trip.	Cum	1
2	Cost of Haulage Excluding Loading and Unloading (Surfaced Road Speed with load : 15 km / hour.)	cum.km	8

A	**Carrage of Stone Boulders to filling site all complete and as directed by the Engineer**	tonne	**1**

84 T/m3

Rate (Rs.)	Amount	Reference
173.00	173.00	BSR-RCD 2018 Item 1.1, PG.No. 8
10.16	81.30	BSR-RCD 2018 Item 1.4, PG.No. 8 & 9

254.30

ity=1.84 T/m

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

1 15

210.61

.84 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8

7.83	62.61	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

210.61

1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

γ=1.44 T/m3

Rate (Rs.)	Amount	Reference
148.00	148.00	BSR-RCD 2016 Item 1.1, PG.No. 8
10.00	80.00	BSR-RCD 2016 Item 1.4, PG.No. 8 & 9

228.00

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE-CIVIL WORK- COMPOUND WALL-STP AND IPSA7

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
1	Earth work in excavation in foundation trenches including extra excavation for socket portion in all kinds of ordinary soils such as moorum, sand, sandy silt, clay silt with kankar, brick pieces etc. or in combination including dressing of sides and ramming of bottoms,all lift including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m including dewatering whenever required.				
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75	m^3	1132.92	319.60	362079.75
2	PCC: Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level. 1:2:4 (1 Cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size): M15				
	BSR-BCD-18; Item 4.1.3; Pg-79	m^3	57.12	4151.40	237148.21
3	**Brick work** with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	m^3	227.31	5739.40	1304611
	Superstructure above plinth level up to floor V				
	BSR - BCD-18- Item- 6.1.12/1 + 6.3 A; P-93				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarse sand)				
	BSR-BCD-18;Item-13.11.2; Pg-167	m^2	2352.96	139.90	329179.10
5	Removal of unserviceable soil with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m^2	198.46	270.30	53643.27
	BSR - RCD-18- Item- 1.1, P-8 & Item- 1.4, P-8 & 9				
6	**Filling available** excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	m^3	934.46	103.30	96529.42
	BSR-BCD-18-Item 2.26; Pg-75				
7	RCC: Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete structural elements, excluding the cost of centring, shuttering finishing and reinforcement, required grade of reinforced cement concrete:				
	RCC Grade M -20 Below Plinth	m^3	143.83	4924.00	708232
	RCC Grade M -20 Above Plinth	m^3	35.41	5373.10	190241.32
	BSR-BCD-18; Item-5.33A.1, 5.33A.2.1, Pg-87				
8	**centring & Shuttering**				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	m^2	309.00	186.30	57566.70
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	m^2	243.11	335.30	81514.78
	BSR - BCD-18- Item- 5.9.5, Pg-84				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m^2	566.50	425.80	241215.70
	BSR - BCD-18- Item- 5.9.6, Pg-84				
9	**Reinforcement** for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. **Thermo-Mechanically Treated TMT -500**	MT	14.34	76000.00	1089772.51
	BSR-BCD-18; Item-5.22.7, Pg-86				
10	Painting: White washing with lime to give an ever shade: New work (three or more coats): BSR-BCD-18; Item-13.70.1; Pg-170	m^3	2352.96	15.90	37412.06
				Cost of Compound Wall (without gates)	4789145.46
				Boundary length	140.00
				Cost of 1 m Compound Wall (without gates)	34208.18
11	**Gates:** Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.				
	MJP 2018-19, Section H, Item No 3; Pg- 58.	No.	1	25303.00	25303.00

Sr. No.	Description	Unit	Qty	Rates in Rs.	Amount in Rs.
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.	1	13651.00	13651.00
	MJP 2018-19, Section H, Item No 4; Pg- 58.				
				Cost of Compound Wall	**4828099.46**

A

Boundary Wall length	**580**	m	L= 250
Column spacing	3	m c/c	W= 40
No. of columns total	192.0	Nos.	
No. of Expansion joint	14.0	Nos.	
Total No. of columns	206.0	Nos.	
Column ht	2.0	m	
Col W	0.25	m	
Col D	0.25	m	
Beam W	0.23	m	
Beam D	0.23	m	
Column footing L	1.5	m	
Column footing W	1.5	m	
Footing thk	0.25	m	
Depth of foundation	1	m	
PCC proj & thk	0.075	m	
Working space	0.3	m	

S.No	Description					Quantity	Unit
		No.s	L	B	D		
1	Earth work excavation of foundation for structures as per drawing and technical specification including setting out, construction of shoring and bracing,removal of stumps and other deleterious mattar, dressing of sides and bottom and backfilling with approved material etc. and as per relevent clause of section 300 and 2100 - Ordinary Soil (up to 1.5m)						
	Footing	206.00	2.25	2.25	1.08	1121.09	m^3
	Walls	1.00	116.50	0.58	0.18	11.82	m^3
	Total					**1132.92**	m^3
2	Providing and laying mechanically mixed cement concrete 20 mm maximum size graded crushed stone including cost of centring and shuttering - In plinth and foundation - M - 10 Grade.						
	Footing	206.00	1.65	1.65	0.075	42.06	m3
	Walls	1.00	528.50	0.38	0.075	15.06	m^3
	Total					**57.12**	m^3
3	Brick work with well burnt chimney bricks having crushing strength not less than 25kg/cm2 and water absorption not more than 20% above plinth level including cost of form work						
	Wall	1.00	528.50	0.23	1.870	**227.31**	m^3
4	12 mm thick cement plaster in single coat including finishing even, smooth and curing including cost of form work complete						
	In cement mortar 1:6						
	Two Side Wall	2.00	580.00		2.00	2320.00	
	Column sides	206.00	0.080		2.00	32.96	
	Total					**2352.96**	m^2

S.No	Description					Quantity	Unit
		No.s	**L**	**B**	**D**		
5	Disposal						
	Footing	206.00	1.50	1.50	0.250	115.88	
	Column	206.00	0.25	0.25	0.750	9.66	
	Plinth beam	1.00	528.50	0.23	0.130	15.80	m^3
	All PCC					57.12	
	Total					**198.46**	m^3
6	Back filling: Filling available excavated earth in trenches, plinth sides of foundation in layers not exceeding 20 cm in depth including consolidation of each layer by ramming watering, lead up to 50 m and lift up to 1.5 m in all kinds of soils						
		Total				**934.46**	m^3
7	**RCC**						
	Footing	206.00	1.50	1.50	0.250	115.88	
	Column	206.00	0.25	0.25	2.750	35.41	
	Plinth beam	1.00	528.50	0.23	0.230	27.96	
	Total					**179.24**	m^3
8	**Shuttering**						
	Footing	206.00	6.00		0.250	309.00	
	Column	206.00	1.00		2.750	566.50	
	Plinth beam	1.00	528.50		0.460	243.11	
	Total					**1118.61**	m^2
9	**Reinforcement**					**14.34**	MT
10	Providing and applying one coat of approved colour and shade to new surface including scaffolding brushing and brooming down including two coats of whitewash as base cost etc., complete					**2352.96**	m^3
11	Providing and fixing M.S. gate 2.5 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M - 150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting etc. complete.	No.				1	
12	Proividing and fixing Wicket gate 1.0 M wide for compound with 40 mm dia M.S.black pipe medium class, approved grill work, RCC M-150 side pillars of 25 cm x 40 cm x 2.5 M height, its foundation, finishing, painting, etc. complete.	No.				1	

SEWERAGE SYSTEM FOR GAYA EASTERN PART
COST ESTIMATE- INTERNAL ROAD AND APPROCH ROAD (STP)

Sr. No.	Description	Unit	Qnty.	Rate in Rs.	Amount in Rs.
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : **Construction of granular sub-base** by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.	Cum	620.00	637.00	394940.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting **150 mm graded stone aggregate to Wet Mix Macadam (WMM)** : Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	Cum	279.00	888.00	247752.00
	SOR-RCD-18; Item-4.12; Pg.-76				
3	**Prime coat** (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	Sqm	1860.00	30.30	56358.00
	BSR-RCD-18-Item 5.1, Pg-84				
4	**Tack Coat:** Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical	Sqm	1860.00	11.10	20646.00
	BSR-RCD-18-Item 5.2, Pg-84				
5	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, ransported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm nominal size); thickness 40 mm	Cum	93.00	5406.00	502758.00
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying **Tack Coat with bitumen emulsion grade 60/70 for BUSG** @ 5Kg/10Sqm. area using emulsion pressure distributor on the prepared bituminus/granular surface cleaned with mechanical broom and as per eelevant clauses MOSRTH specification clause No. 503 complete in all respects.	Sqm	1860.00	31.05	57753.00
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying semi dense bituminous concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 to 5 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects. Note: *1. Although the rollers are required only for 3 hours as per norms of output, but the same have to be available at site for six hours as the hot mix plant and paver will take six hours for mixing and paving the output of 450 tonnes considered in this analysis. for grading (10mm nominal size)	Cum	47.00	7142.00	335674.00
	BSR-RCD-2018-Item-5.7 P-84				
				Total	**1615881.00**