

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Grand Cost Summary - Western Part (Cost in Lakh INR)**

Sr. No.	Description	Immediate Requirement (with 1x30MLD STP)	Future Requirement (Addition of 2x30 MLD STP)
<b>I</b>	<b>Collection System</b>		
	Collection System for Zone B1	1644.99	-
	Collection System for Zone B1A	1538.39	-
	Collection System for Zone B2	1515.66	-
	Collection System for Zone B3	2075.36	-
	Collection System for Zone B3A	3469.97	-
	Collection System for Zone B4	1231.74	-
	Collection System for Zone B4A	1118.67	-
	Collection System for Zone B5	3305.86	-
	Collection System for Zone B6	6951.65	-
	<b>Sub-Total</b>	<b>22852.29</b>	-
<b>II</b>	<b>Pumping Station</b>		
	Pumping Station: Pumping Station IPS2	297.18	-
	Pumping Station: Pumping Station IPS2A	367.16	-
	Pumping Station: Pumping Station IPS3	248.63	-
	Pumping Station: Pumping Station IPS4	275.96	-
	Pumping Station: Pumping Station IPS4A	338.26	-
	Pumping Station: Pumping Station IPS5	325.68	-
	Pumping Station: Pumping Station IPS5A	366.95	-
	Pumping Station: Pumping Station IPS6	386.38	-
	Pumping Station: Pumping Station MPS	541.46	340.80
	<b>Sub-Total</b>	<b>3147.66</b>	<b>340.80</b>
<b>III</b>	<b>Pumping Main</b>		
	Pumping Main from IPS2 to Zone B1A (MH 1668)	131.85	-
	Pumping Main from IPS2A to Zone B6 (MH 2554)	320.26	-
	Pumping Main from IPS3 to Zone B3 (MH 7678)	217.24	-
	Pumping Main from IPS4 to IPS4A	147.37	-
	Pumping Main from IPS4A to Zone B6 (MH 18)	660.91	-
	Pumping Main from IPS5 to Zone B5 (MH 3373)	144.15	-
	Pumping Main from IPS5A to Zone B5 (MH 3371)	117.21	-
	Pumping Main from IPS6 to Zone B6 (MH 623)	148.44	-
	Pumping Main from MPS to STP	16.68	26.22
	<b>Sub-Total</b>	<b>1904.11</b>	<b>26.22</b>
<b>IV</b>	<b>Sewage Treatment Plant</b>	<b>2902.53</b>	<b>5464.22</b>
<b>V</b>	<b>Sewer Cleaning Equipment</b>	<b>78.90</b>	-
	<b>Sub-Total 1= (I + II + III + IV+V)</b>	<b>30885.49</b>	<b>5831.24</b>
<b>VI</b>	<b>Price Escalation</b>	<b>1853.13</b>	-
<b>VII</b>	<b>Provisional Sum</b>	<b>750.00</b>	-
<b>VIII</b>	<b>O&amp;M Cost for 2 years (without power)</b>	<b>804.86</b>	-
	<b>Sub-Total 2= (I + II + III + IV+V + VI + VII + VIII)</b>	<b>34293.48</b>	-
<b>IX</b>	<b>O&amp;M Cost for further 5 years (without power)</b>	<b>2147.42</b>	-
	<b>Sub-Total 3= (I + II + III + IV+V + VI + VII + VIII + IX)</b>	<b>36440.90</b>	-
<b>X</b>	<b>Centage charges (upto Rs. 10 Cr. @ 7% + Above Rs.10 Cr to Rs. 100 Cr. @ 5% + Above Rs.100 Cr. @ 1%)</b>	<b>784.40</b>	
		<b>37225.30</b>	
	<b>Say Rs. 372.25 Crores</b>		
<b>XI</b>	<b>Power Cost for O&amp;M for 2 years</b>	<b>420.16</b>	-
<b>XII</b>	<b>Power Cost for O&amp;M for further 5 years</b>	<b>1540.76</b>	-

## SEWERAGE SYSTEM FOR GAYA CITY

### Grand Cost Summary - Western Part (Cost in Lakh INR)

Sr. No.	Description	Immediate Requirement (with 1x30MLD STP)	Future Requirement (Addition of 2x30 MLD STP)
	<b>Part A</b>		
I	Collection System	22852.29	
II	Pumping Station	3147.66	340.80
III	Pumping Main	1904.11	26.22
IV	Sewage Treatment Plant	2902.53	5464.22
V	Price Escalation	1853.13	-
	<b>Sub Total A</b>	<b>32659.72</b>	<b>5831.24</b>
	<b>Part B</b>		
VI	O&M Cost for 2 years (without power)	804.86	-
VII	O&M Cost for further 5 years (without power)	2147.42	-
VIII	Sewer Cleaning Equipment	78.90	-
	<b>Sub Total B</b>	<b>3031.18</b>	<b>-</b>
	<b>Part C</b>		
IX	Provisional Sum	750.00	-
	<b>Sub Total C</b>	<b>750.00</b>	
	<b>Sub Total of Part A + Part B + Part C</b>	<b>36440.90</b>	
	<b>Part D</b>		
X	Centage charges (upto Rs. 10 Cr. @ 7% + Above Rs.10 Cr to Rs. 100 Cr. @ 5% + Above Rs.100 Cr. @ 1%)	774.21	
	<b>Grand Total (Part A + Part B + Part C + Part D)</b>	<b>37215.11</b>	
<b>Say Rs. 361.95 Crores</b>			

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**COST ESTIMATE**

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GRAND SUMMARY SHEET

# **COST ESTIMATE**

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COLLECTION SYSTEM

COST SUMMARY SHEET

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B1**



**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B1A**

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B2**

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B3**

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B3A**

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B4**

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B4A**

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B5**

**COST ESTIMATE**

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COLLECTION SYSTEM

**ZONE B6**



**COST ESTIMATE**

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**PUMPING STATION**

**COST SUMMARY SHEET- PUMPING STATION**

# **COST ESTIMATE**

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**PUMPING STATION**

**COST SUMMARY SHEET- PUMPING MAIN**

**COST ESTIMATE**

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PUMPING STATION

**IPS2**

(CIVIL WORKS)

# **COST ESTIMATE**

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PUMPING STATION

**IPS2**

(MECHANICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS2**

(ELECTRICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS2**

(INSTRUMENTATION WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS2**

(PUMPING MAIN)

**COST ESTIMATE**

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PUMPING STATION

**IPS2A**

(CIVIL WORKS)



**COST ESTIMATE**

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PUMPING STATION

**IPS2A**

(MECHANICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS2A**

(ELECTRICAL WORKS)

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PUMPING STATION

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**IPS2A**

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PUMPING STATION

**IPS3**

(CIVIL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS3**

(MECHANICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS3**

(ELECTRICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS3**

(INSTRUMENTATION WORKS)



**COST ESTIMATE**

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**IPS3**

(PUMPING MAIN)

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PUMPING STATION

**IPS4**

(CIVIL WORKS)

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PUMPING STATION

**IPS4**

(MECHANICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS4**

(ELECTRICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS4**

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PUMPING STATION

**IPP4**

(PUMPING MAIN)

**COST ESTIMATE**

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PUMPING STATION

**IPS4A**

(CIVIL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS4A**

(MECHANICAL WORKS)



# **COST ESTIMATE**

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PUMPING STATION

**IPS4A**

(ELECTRICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS4A**

(INSTRUMENTATION WORKS)

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PUMPING STATION

**IPS4A**

(PUMPING MAIN)

**COST ESTIMATE**

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PUMPING STATION

**IPS5**

(CIVIL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS5**

(MECHANICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS5**

(ELECTRICAL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS5**

(INSTRUMENTATION WORKS)

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**IPS5**

(PUMPING MAIN)



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**IPS5A**

(CIVIL WORKS)

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**IPS5A**

(PUMPING MAIN)

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PUMPING STATION

**IPS6**

(CIVIL WORKS)

**COST ESTIMATE**

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PUMPING STATION

**IPS6**

(MECHANICAL WORKS)

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(ELECTRICAL WORKS)



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PUMPING STATION

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(INSTRUMENTATION WORKS)

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PUMPING STATION

**MPS**

(PUMPING MAIN)

## **RATE ANALYSIS**

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## **COST ESTIMATE**

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MATERIAL CARRIAGE CHARGES

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Cost Summary - Collection System in GMC Area**

Cost in Rs. Lakh

Sr. No.	Description	Estimated Cost	Carriage Cost	Total Cost
	<b>Collection System</b>			
1	Sewage Collection System for Zone B1 (IPS2)	1622.63	22.36	1644.99
2	Sewage Collection System for Zone B1A (IPS2A)	1513.80	24.59	1538.39
3	Sewage Collection System for Zone B2 (IPS3)	1489.10	26.56	1515.66
4	Sewage Collection System for Zone B3 (IPS4)	2042.34	33.02	2075.36
5	Sewage Collection System for Zone B3A (IPS4A)	3417.13	52.85	3469.97
6	Sewage Collection System for Zone B4 (IPS5)	1215.99	15.75	1231.74
7	Sewage Collection System for Zone B4 A (IPS5A)	1104.46	14.21	1118.67
8	Sewage Collection System for Zone B5 (IPS6)	3262.45	43.41	3305.86
9	Sewage Collection System for Zone B6 (IPS1)	6872.68	78.97	6951.65
	<b>Total for Collection System</b>	<b>22540.58</b>	<b>311.71</b>	<b>22852.29</b>

**SEWAGE COLLECTION SYSTEM IN ZONE B1 (IPS2)  
COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	<b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
B) 2	<b>EXCAVATION AND REFILLING</b> Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	30498.82	360.70	11000924.01
b)	From 1.5 m to 3.0 m	cum	10445.38	407.00	4251268.38
c)	From 3.0 m to 4.5 m	cum	4171.83	453.30	1891089.54
d)	From 4.5 m to 6 m	cum	998.45	499.60	498825.10
	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 out the excavated soil and disposal of surplus excavated soils as directed, within a lead of 50 m .				
I) a)	<b>Ordinary Rock</b> From 4.5 m to 6 m	cum	199.69	651.70	130137.84
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II) a)	<b>Hard Rock (Blasting Prohibited)</b> From 4.5 m to 6.0 m	cum	149.77	1251.20	187388.90
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	<b>Filling available</b> 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	28458.97	116.50	3315469.83
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Pumping out water</b> 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	<b>Removal of unserviceable soil</b> with Disposal above 8 Km etc. complete and as per direction of engineer in charge.	cum	17655.50	262.50	4634569.84
	BSR - RCD-18- Item- 3.11, P-45 & RA				
C) I)	<b>PIPE MATERIAL</b> Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	19632.10	636.51	12496027.97
	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 <b>RCC pipes NP4 class</b> (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	999.40	677.51	677103.49
	250 mm internal diameter	M	464.80	947.89	440579.27
	300 mm internal diameter	M	317.20	1238.77	392937.84
	350 mm internal diameter	M	371.70	1865.65	693462.11
	400 mm internal diameter	M	13.20	2128.03	28090.00
	450 mm internal diameter	M	122.60	2590.41	317584.27
	500 mm internal diameter	M	541.80	2962.28	1604963.30
	600 mm internal diameter	M	212.40	3960.04	841112.50
	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				
7	Property connection (House connection)				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	49822.00	240.50	11982191.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
8	Providing and placing in position precast <b>RCC in vertical post of size 40x90x1500 mm depth at each House service connection</b> 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	227.00	8677.50	1969792.50
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48 + 30% increase				
<b>D) MANHOLES</b>					
9	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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		7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m		4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
1)	Upto 1.225 m depth to invert	No.	252.000	11972.27	3017010.81
2)	Upto 1.50 m depth to invert	No.	223.00	13735.33	3062977.81
3)	Upto 1.65 m depth to invert	No.	52.00	15179.83	789351.18
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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		13772.90	
	<b>Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :</b>	M		6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	15.00	19084.98	286274.67
2)	Upto 2.00 m depth to invert	No.	102.00	22035.67	2247638.25
3)	Upto 2.30 m depth to invert	No.	60.00	24820.10	1489205.89
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD-20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	55.00	49363.68	2715002.41
2)	Upto 3.00 m depth to invert	No.	31.00	56387.03	1747997.89
3)	Upto 3.50 m depth to invert	No.	55.00	66586.38	3662251.09
4)	Upto 4.00 m depth to invert	No.	50.00	76785.74	3839286.92
5)	Upto 4.25 m depth to invert	No.	15.00	83241.91	1248628.71
6)	Upto 4.50 m depth to invert	No.	16.00	88124.42	1409990.65
7)	Upto 5.00 m depth to invert	No.	43.00	98470.42	4234228.03
8)	Upto 5.50 m depth to invert	No.	18.00	108816.42	1958695.61
9)	Upto 6.00 m depth to invert	No.	2.00	120741.69	241483.39
E)	<b>Bedding</b>				
12	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum	3670.70	805.00	2954912.48
	BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8				
F)	<b>TIMBERING AND BARRACADING</b>				
13	<b>Close timbering</b> 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	44643.00	119.40	5330374.20
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	23558.16	124.60	2935346.49
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	8722.68	137.50	1199368.23
d)	Depth more than 4.5 m and upto 6.0 m	sqm	1593.09	145.50	231794.01
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	3925.85	1593.10	6254265.42
	BSR-BCD-20; Item-2.19, Pg-95				
15	<b>Open timbering</b> 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	2108.48	61.40	129460.93
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	196.29	817.90	160547.48
	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	45350.40	84.00	3809433.60
	RUIDP SOR 17 Item-4.26, Pg-13				
G)	<b>ROAD RESTORATION AND DISMANTLING WORKS</b>				
18	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	1947.39	342.00	666005.94
	RCD/SOR-18; Item-2.5-II A; Pg-29				
19	<b>Dismantling of cement concrete pavement</b> 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	8169.67	1520.00	12417895.06
	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	4595.24	84.50	388297.78
	BSR-BCD-20; Item-15.43.1, Pg-225				
	<b>Cement concrete road Restoration</b>				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
21	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	1306.87	10.00	13068.73
	BSR-BCD-20; Item-2.39, Pg-97				
22	Filling with available <b>fly ash and earth</b> (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	1089.06	116.50	126875.61
	BSR-BCD-20; Item-2.40, Pg-97				
23	<b>Cement Concrete Pavement</b> (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	2178.12	4461.00	9716602.24
	<b>Restoration of WMM Road</b>				
	RCD/SOR-18; Item-6.2; Pg-138				
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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	1148.81	637.00	731791.97
	SOR-RCD-18; Item-4.2 (iii); Pg-66				
25	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	689.29	896.00	617600.26
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
26	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	226.06	904.00	204359.14
	<b>Grading III:</b> 100 mm thick	cum	226.06	949.00	214531.89
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	<b>Prime coat</b> (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	2260.61	30.30	68496.48
	BSR-RCD-18-Item 5.1, Pg-84				
28	<b>Tack Coat:</b> 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	2260.61	11.10	25092.77
	BSR-RCD-18-Item 5.2, Pg-84				
29	<b>Bituminous Macadam</b> (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	90.42	5406.00	488834.31
	BSR-RCD-18-Item 5.3 (I), Pg-84				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
30	<b>Bituminous Penetration Macadam</b> (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 BSR-RCD-18-Item 5.4 A, Pg-84	sqm	2260.61	246.00	556110.06
31	<b>20mm thick Open-Graded Premix Carpet</b> 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. SOR-RCD-GoB-18-Item 5.10 (j), Pg- 85	sqm	2260.61	110.00	248667.10
32	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	306.12	435.50	133313.17
	In Cement Mortar	cum	306.12	922.50	282391.27
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead. BSR-BCD-20; Item-15.25, Pg-224	sqm	1020.38	100.10	102140.44
34	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead:				
	1:3:6 or richer mix	cum	113.38	911.40	103330.89
	1:4:8 or leaner mix	cum	113.38	563.20	63853.36
	BSR-BCD-18; Item-15.2.1, Pg-185, BSR-BCD-20; Item-15.2.2, Pg-185				
35	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	cum	226.75	1324.40	300310.35

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	BSR-BCD-20; Item-15.3, Pg-371				
36	<b>Installation of laboratory</b> 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	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	km	9.18	11264.00	103359.59
	Analysis				
38	Construction of 450 mm internal dia circular Road side Chamber in all types of soil with 225mm thick BB masonry 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.	114.00	10102.00	1151628.00
	Rate Analysis				
39	Providing <b>PVC-U pipes as per IS 15328 drop connection</b> 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:				
<b>A)</b>	280 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	29.42	17700.00	520734.00
ii)	Upto 1.5 m drop	No.	31.90	19105.00	609449.50
iii)	upto 2 m drop	No.	32.23	20510.00	661037.30
iv)	upto 2.5 m drop	No.	40.83	21915.00	894789.45
v)	upto 3.0 m drop	No.	43.80	23320.00	1021416.00
vi)	upto 3.5 m drop	No.	35.01	24725.00	865622.25
	SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90				
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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.				
	SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93				
	In all types of soils				
i)	200 mm internal diameter	M	747	7180	5363460.00
ii)	250 mm internal diameter	M	20	7420	148400.00
iii)	300 mm internal diameter	M	43	10600	455800.00
iv)	350 mm internal diameter	M	35	12150	425250.00
v)	400 mm internal diameter	M	7	13700	95900.00
vi)	450 mm internal diameter	M	49	15450	757050.00
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 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.				



Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	SOR-RUIDP-17; Item-17.79, Pg.-92				
	In all types of soils				
i)	600 mm internal diameter	M	7	18200	127400.00
<b>42</b>	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in <b>trenchless technology</b> , 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.-94				
	In all types of soils				
i)	Upto 4.0 Meter	Nos	49	48400	2371600.00
ii)	Upto 5.0 Meter	Nos	37	96800	3581600.00
iii)	Upto 6.0 Meter	Nos	6	145200	871200.00
iv)	Upto 7.0 Meter	Nos	2	193600	387200.00
				<b>Sub Total A</b>	<b>162263259</b>
<b>43</b>	<b>Carriage of Material</b>				
	Sand	t.km	29270.70	9.4	275145
	Aggregate	t.km	156028.00	9.4	1466663
	Bricks	t.km	52584.10	9.4	494291
				<b>Sub Total B</b>	<b>2236098</b>
	<b>Total Cost (A+B)</b>				<b>164499357</b>

**BRICK MANHOLE****Rate analysis for Excavation, External plaster and Foot rest**

MANHOLE DATA					EXCAVATION				Cement Plaster Internal 1:3	Cement Plaster External Surface	Foot rest	Rate for excavation - BSR-BCD-20- Item 2.8.1; Pg- 72 & 2.27.1; Pg.-75	Rate for plaster - 12 mm thick (1:3) - BSR-BCD- 20-Item 13.11.1; Pg- 167	Providing orange colour safety foot rest - BSR-BCD-20- 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	Excavatio n Qty, in Cum	Total Excavation Qty Cum							
<b>A</b>	252.00	910.00	0.91	1.225	1.55	1.76	3.77	950.27	2.83	4.56	4.00	407	157.4	290.5	3414.67
	223.00	910.00	0.91	1.50	1.83	1.76	4.44	990.11	3.46	5.58	4.00	407	157.4	290.5	3848.12
	52.00	910.00	0.91	1.68	2.01	1.76	4.88	253.65	3.88	6.26	5.00	407	157.4	290.5	4422.34
<b>B</b>	15.00	1220.00	1.22	1.68	2.01	2.07	6.75	101.21	4.70	7.07	5.00	407	157.4	290.5	5312.08
	102.00	1220.00	1.22	2.00	2.33	2.07	7.82	798.09	5.59	8.42	6.00	407	157.4	290.5	6252.95
	60.00	1220.00	1.22	2.30	2.63	2.07	8.83	530.04	6.43	9.68	7.00	407	157.4	290.5	7153.16
<b>C</b>	55.00	1520.00	1.52	2.65	3.03	2.84	19.16	1053.94	9.79	15.13	8.00	453.3	157.4	290.5	13391.50
	31.00	1520.00	1.52	3.00	3.38	2.84	21.38	662.77	11.46	18.04	9.00	453.3	157.4	290.5	15144.86
	55.00	1520.00	1.52	3.50	3.88	2.84	24.55	1350.08	13.85	22.19	11.00	453.3	157.4	290.5	17815.66
	50.00	1520.00	1.52	4.00	4.38	2.84	27.71	1385.72	16.24	26.35	13.00	453.3	157.4	290.5	20486.47
	15.00	1520.00	1.52	4.25	4.63	2.84	29.30	439.47	17.43	28.42	14.00	499.6	157.4	290.5	23178.37
	16.00	1520.00	1.52	4.50	4.88	2.84	30.88	494.11	18.63	30.50	14.00	499.6	157.4	290.5	24296.60
	43.00	1520.00	1.52	5.00	5.38	2.84	34.05	1464.11	21.01	34.66	16.00	499.6	157.4	290.5	27114.05
	18.00	1520.00	1.52	5.50	5.88	2.84	37.22	669.90	23.40	38.81	18.00	499.6	157.4	290.5	29931.50
	2.00	1520.00	1.52	6.00	6.38	2.84	40.38	80.77	25.79	42.97	19.00	545.9	157.4	290.5	34328.22

**RATE ANALYSIS FOR GRANULAR BEDDING**

<b>Sr. No.</b>	<b>Description of item</b>	<b>Unit</b>	<b>Rate in Rs. (BSR-18)</b>
1)	Cost of 20 mm aggregates	Cum	604.91
	Add Contractors Profit 10%		60.49
	Add Overhead Charges 10%		66.54
	BSR-BCD-18; Sr. No.-0295; Pg.-7/45 & 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	731.94
2)	Labour for laying Jointing	10%	805.14
		<b>Say Rs.</b>	<b>805.00</b>

Rate Analysis for Road Side Chamber					
Sr. No.	Description Of Item	Unit	Quantity	Rate in Rs. (BSR-18)	Amount (Rs.)
<b>1</b>	<b>Excavation :</b>				
	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
<b>a)</b>	Upto 1.5 m	cum	2.12	360.70	765.69
	BSR-BCD-18-Item 2.8.1; Pg-72				
<b>2</b>	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering-all work up to plinth level.				
	<b>M - 10</b>	cum	0.32	3387.10	1090.86
	<b>M - 15</b>	cum	0.01	3832.50	22.86
	<b>M - 20</b>	cum	0.08	4380.40	350.92
	BSR-BCD-18; Sr. No.-4.1.5,4.1.3 and 4.1.2; Pg-79				
<b>3</b>	<b>Filling available</b> 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				
<b>4</b>	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				
<b>5</b>	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
<b>6</b>	<b>Disposal of Excavated Earth</b>				
	<b>Removal of unserviceable soil</b> 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				
<b>7</b>	<b>SFRC Frame Cover</b>				
	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				
<b>8</b>	<b>Miscellaneous Items :</b>				
	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
	<b>TOTAL =</b>				<b>10101.58</b>
	<b>Rate per Road Side Chamber =</b>				<b>10102.00</b>

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

S. No.	Particulars	No.	Qty.	Unit	Total Qty.	Rate	Amount Rs.
1	<b>REPAIRING THE DOF WATER SUPPLY PIPE LINES, ELECTRICAL CABLE UTILITY LINES DURING THE EXCAVATION &amp; LAYING OF DRAINAGE PIPE ETC.</b>						
	<b>Total No. of properties in 1.00 Km length in city Area Consider property connection at 30 mtr distance</b>	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	<b>COST OF MATERIAL</b>						
	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
	<b>Total cost of Material</b>						<b>9,889.50</b>
	vii) Add 2 % Misc. Material charges						197.79
1.2	<b>COST OF LABOUR</b>						
	i) Plumber			No	1.00	323.00	323.00
	ii) Helper			No	1.00	254.00	254.00
	<b>Total cost of Labour</b>						<b>577.00</b>
1.3	<b>COST OF CABLE</b>						
	Consider 100 mtr cable replacement for 1.00 Km			LS			600.00
	<b>Total cost of Cable</b>						<b>600.00</b>
	<b>TOTAL</b>						<b>11,264.29</b>
						<b>Say Rs.</b>	<b>11,264.00</b>

**SEWAGE COLLECTION SYSTEM IN ZONE B1A (IPS2A)  
COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	<b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
B)	<b>EXCAVATION AND REFILLING</b>				
2	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	27238.05	360.70	9824766.00
b)	From 1.5 m to 3.0 m	cum	11090.04	407.00	4513645.00
c)	From 3.0 m to 4.5 m	cum	4287.69	453.30	1943609.00
d)	From 4.5 m to 6 m	cum	1556.44	499.60	777600.00
e)	From 6 m to 7.5 m	cum	304.78	545.90	166378.00
	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 soils as directed, within a lead of 50 m .				
I)	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	cum	311.29	651.70	202867.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II)	<b>Hard Rock (Blasting Prohibited)</b>				
a)	From 6.0 m to 7.5 m	cum	233.47	1500.50	350317.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	<b>Filling available</b> 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	27345.88	116.50	3185795.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Pumping out water</b> 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	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	16826.34	262.50	4416915.00
	BSR - RCD-18- Item- 3.11, P-45 & RA				
C)	<b>PIPE MATERIAL</b>				
I)	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	20233.10	636.51	12878570.00
	250 mm internal diameter	M	132.20	875.89	115793.00
	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 <b>RCC pipes NP4 class</b> (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	310.10	677.51	210096.00
	250 mm internal diameter	M	514.50	947.89	487689.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	300 mm internal diameter	M	139.40	1238.77	172685.00
	350 mm internal diameter	M	955.70	1865.65	1783002.00
	400 mm internal diameter	M	1438.20	2128.03	3060533.00
	450 mm internal diameter	M	37.50	2590.41	97140.00
	600 mm internal diameter	M	34.80	3960.04	137809.00
	700 mm internal diameter	M	117.00	4906.30	574037.00
	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				
7	Property connection (House connection)				
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	30362.00	240.50	7302061.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
8	Providing and placing in position precast <b>RCC in vertical post</b> of size 40x90x1500 mm depth <b>at each House service connection</b> in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centring complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	cum	239.00	8677.50	2073923.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
D)	<b>MANHOLES</b>				
9	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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 conforming to IS: 4885	each		7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m		4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
1)	Upto 1.225 m depth to invert	No.	237.000	11972.27	2837427.00
2)	Upto 1.50 m depth to invert	No.	208.00	13735.33	2856948.00
3)	Upto 1.65 m depth to invert	No.	58.00	15179.83	880430.00
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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	Each		13772.90	

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	<b>Extra depth</b> for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :	M		6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	14.00	19084.98	267190.00
2)	Upto 2.00 m depth to invert	No.	99.00	22035.67	2181531.00
3)	Upto 2.30 m depth to invert	No.	74.00	24820.10	1836687.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	52.00	49363.68	2566911.00
2)	Upto 3.00 m depth to invert	No.	42.00	56387.03	2368255.00
3)	Upto 3.50 m depth to invert	No.	30.00	66586.38	1997592.00
4)	Upto 4.00 m depth to invert	No.	27.00	76785.74	2073215.00
5)	Upto 4.25 m depth to invert	No.	25.00	83241.91	2081048.00
6)	Upto 4.50 m depth to invert	No.	14.00	88124.42	1233742.00
7)	Upto 5.00 m depth to invert	No.	17.00	98470.42	1673997.00
8)	Upto 5.50 m depth to invert	No.	15.00	108816.42	1632246.00
9)	Upto 6.00 m depth to invert	No.	12.00	120741.69	1448900.00
10)	Upto 6.5 m depth to invert	No.	7.00	127008.19	889057.00
11)	Upto 7.00 m depth to invert	No.	11.00	133358.60	1466945.00
	<b>E) Bedding</b>				
12	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum	3999.57	776.01	3103709.00
	BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8				
	<b>F) TIMBERING AND BARRACADING</b>				
13	<b>Close timbering</b> 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	46743.00	119.40	5581114.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	23355.71	124.60	2910121.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	8564.26	137.50	1177586.00
d)	Depth more than 4.5 m and upto 6.0 m	sqm	2863.96	145.50	416706.00
e)	Depth more than 6.0 m and upto 7.5 m	sqm	488.28	153.50	74952.00
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	4100.76	1593.10	6532921.00
	BSR-BCD-20; Item-2.19, Pg-95				
15	<b>Open timbering</b> 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	2338.73	61.40	143598.00
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	205.04	817.90	167701.00
	BSR-BCD-20; Item-2.23, Pg-95				



Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
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	47825.00	84.00	4017300.00
	RUIDP SOR 17 Item-4.26, Pg-13				
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
18	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	2471.25	342.00	845168.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
19	<b>Dismantling of cement concrete pavement</b> 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	5123.28	1520.00	7787384.00
	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	7906.02	84.50	668059.00
	BSR-BCD-20; Item-15.43.1, Pg-225				
	<b>Cement concrete road Restoration</b>				
21	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	854.26	10.00	8543.00
	BSR-BCD-20; Item-2.39, Pg-97				
22	Filling with available <b>fly ash and earth</b> (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	711.89	116.50	82935.00
	BSR-BCD-20; Item-2.40, Pg-97				
23	<b>Cement Concrete Pavement</b> (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	1423.77	4461.00	6351447.00
	<b>Restoration of WMM Road</b>				
	RCD/SOR-18; Item-6.2; Pg-138				
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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	1976.51	637.00	1259034.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
25	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	1185.90	896.00	1062569.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
26	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	394.66	904.00	356775.00
	<b>Grading III:</b> 100 mm thick	cum	394.66	949.00	374535.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	<b>Prime coat</b> (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	3946.63	30.30	119583.00
	BSR-RCD-18-Item 5.1, Pg-84				
28	<b>Tack Coat:</b> 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	3946.63	11.10	43808.00
	BSR-RCD-18-Item 5.2, Pg-84				
29	<b>Bituminous Macadam</b> (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	157.87	5406.00	853419.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	<b>Bituminous Penetration Macadam</b> (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	3946.63	246.00	970871.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	<b>20mm thick Open-Graded Premix Carpet</b> 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	3946.63	110.00	434129.00
	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85				
32	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	322.82	435.50	140588.00
	In Cement Mortar	cum	322.82	922.50	297800.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead. BSR-BCD-20; Item-15.25, Pg-224	sqm	1076.06	100.10	107714.00
34	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead: 1:3:6 or richer mix 1:4:8 or leaner mix BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222	cum cum	119.56 119.56	911.40 563.20	108969.00 67338.00
35	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead: BSR-BCD-20; Item-15.3, Pg-371	cum	239.13	1324.40	316697.00
36	<b>Installation of laboratory</b> 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 LS	L.S.	1.00	500000.00	500000.00
37	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe Analysis	km	9.18	11264.00	103360.00
38	Construction of 450 mm internal dia circular Road side Chamber in all types of soil with 225mm thick BB masonry 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. Rate Analysis	No.	120.00	10102.00	1212240.00
39	Providing <b>PVC-U pipes as per IS 15328 drop connection</b> 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: <b>A)</b> 280 mm dia i) For 0.6 m to 1.0 m drop ii) Upto 1.5 m drop iii) upto 2 m drop iv) upto 2.5 m drop v) upto 3.0 m drop vi) upto 3.5 m drop vii) upto 4.0 m drop viii) upto 4.5 m drop SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90	No.	29.80 31.87 17.59 17.86 40.47 19.36 26.40 19.14	17700.00 19105.00 20510.00 21915.00 23320.00 24725.00 26130.00 27535.00	527460.00 608876.00 360771.00 391402.00 943760.00 478676.00 689832.00 527020.00
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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. SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93 In all types of soils i) 200 mm internal diameter ii) 250 mm internal diameter iii) 300 mm internal diameter	M M M	619 30 18	7180 7420 10600	4444420.00 222600.00 190800.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
iv)	350 mm internal diameter	M	94	12150	1142100.00
v)	400 mm internal diameter	M	136	13700	1863200.00
vi)	450 mm internal diameter	M	8	15450	123600.00
vii)	500 mm internal diameter	M	8	17200	137600.00
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 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.				
	SOR-RUIDP-17; Item-17.79, Pg.-92				
	In all types of soils				
i)	600 mm internal diameter	M	10	18200	182000.00
ii)	700 mm internal diameter	M	10	19100	191000.00
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 <b>trenchless technology</b> , 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.-94				
	In all types of soils				
i)	Upto 4.0 Meter	Nos	36	48400	1742400.00
ii)	Upto 5.0 Meter	Nos	9	96800	871200.00
iii)	Upto 6.0 Meter	Nos	7	145200	1016400.00
iv)	Upto 7.0 Meter	Nos	2	193600	387200.00
				<b>Sub Total A</b>	<b>151380091</b>
43	<b>Carriage of Material</b>				
	Sand	t.km	24300.40	9.4	228424.00
	Aggregate	t.km	186823.30	9.4	1756139.00
	Bricks	t.km	50495.80	9.4	474661.00
				<b>Sub Total B</b>	<b>2459224</b>
	<b>Total Cost (A+B)</b>				<b>153839315</b>

**SEWAGE COLLECTION SYSTEM IN ZONE B2 (IPS3)  
COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	<b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
B) 2	<b>EXCAVATION AND REFILLING</b> Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	26809.99	360.70	9670363.00
b)	From 1.5 m to 3.0 m	cum	12928.40	407.00	5261857.00
c)	From 3.0 m to 4.5 m	cum	3887.60	453.30	1762247.00
d)	From 4.5 m to 6 m	cum	1950.06	499.60	974249.00
e)	From 6 m to 7.5 m	cum	519.66	545.90	283685.00
	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 soils as directed, within a lead of 50 m .				
I) 1	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	cum	390.01	651.70	254171.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II) 1	<b>Hard Rock (Blasting Prohibited)</b>				
a)	From 6.0 m to 7.5 m	cum	292.51	1251.20	365987.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	<b>Filling available</b> 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	29297.65	116.50	3413176.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	20000.00	102.60	2052000.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
6	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	16278.39	262.50	4273078.00
	BSR - RCD-18- Item- 3.11, P-45 & RA				
C) 1	<b>PIPE MATERIAL</b>				
I) 1	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	21606.50	636.51	13752753.00
	250 mm internal diameter	M	253.30	875.89	221863.00
	500 mm internal diameter	M	91.60	2862.28	262185.00
	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) 1	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP4 class</b> (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	972.10	677.51	658607.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	250 mm internal diameter	M	1136.70	947.89	1077467.00
	300 mm internal diameter	M	171.40	1238.77	212325.00
	350 mm internal diameter	M	210.00	1865.65	391787.00
	400 mm internal diameter	M	168.80	2128.03	359211.00
	450 mm internal diameter	M	274.30	2590.41	710549.00
	500 mm internal diameter	M	335.10	2962.28	992660.00
	600 mm internal diameter	M	300.30	3960.04	1189200.00
	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				
7	Property connection (House connection)				
	Providing, laying and jointing follwing <b>P.V.C.-U pipes</b> 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	20890.00	240.50	5024045.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
8	Providing and placing in position precast <b>RCC in verical post of size 40x90x1500 mm depth at each House service connection</b> 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	255.00	8677.50	2212763.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
D)	<b>MANHOLES</b>				
9	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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			7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>			4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
1)	Upto 1.225 m depth to invert	No.	181.000	11972.27	2166980.00
2)	Upto 1.50 m depth to invert	No.	212.00	13735.33	2911889.00
3)	Upto 1.65 m depth to invert	No.	79.00	15179.83	1199207.00
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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		13772.90	

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	<b>Extra depth</b> for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :	M		6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	9.00	19084.98	171765.00
2)	Upto 2.00 m depth to invert	No.	105.00	22035.67	2313745.00
3)	Upto 2.30 m depth to invert	No.	85.00	24820.10	2109708.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	82.00	49363.68	4047822.00
2)	Upto 3.00 m depth to invert	No.	49.00	56387.03	2762964.00
3)	Upto 3.50 m depth to invert	No.	33.00	66586.38	2197351.00
4)	Upto 4.00 m depth to invert	No.	31.00	76785.74	2380358.00
5)	Upto 4.25 m depth to invert	No.	6.00	83241.91	499451.00
6)	Upto 4.50 m depth to invert	No.	7.00	88124.42	616871.00
7)	Upto 5.00 m depth to invert	No.	21.00	98470.42	2067879.00
8)	Upto 5.50 m depth to invert	No.	9.00	108816.42	979348.00
9)	Upto 6.00 m depth to invert	No.	11.00	120741.69	1328159.00
10)	Upto 6.50 m depth to invert	No.	25.00	127008.19	3175205.00
11)	Upto 7.00 m depth to invert	No.	9.00	133358.60	1200227.00
	<b>E) Bedding</b>				
12	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum	4142.97	805.00	3335092.00
	BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8				
	<b>F) TIMBERING AND BARRACADING</b>				
13	<b>Close timbering</b> 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	58458.30	119.40	6979921.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	27916.59	124.60	3478407.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	8437.29	137.50	1160127.00
d)	Depth more than 4.5 m and upto 6.0 m	sqm	3928.95	145.50	571662.00
e)	Depth more than 6.0 m and upto 7.5 m	sqm	857.26	153.50	131589.00
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	4979.92	1593.10	7933509.00
	BSR-BCD-20; Item-2.19, Pg-95				
15	<b>Open timbering</b> 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	3054.17	61.40	187526.00
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	249.00	817.90	203654.00
	BSR-BCD-20; Item-2.23, Pg-95				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
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	51040.20	84.00	4287377.00
	RUIDP SOR 17 Item-4.26, Pg-13				
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
18	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	2236.62	342.00	764924.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
19	<b>Dismantling of cement concrete pavement</b> 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	3865.56	1520.00	5875651.00
	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	10177.55	84.50	860003.00
	BSR-BCD-20; Item-15.43.1, Pg-225				
	<b>Cement concrete road Restoration</b>				
21	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	723.99	10.00	7240.00
	BSR-BCD-20; Item-2.39, Pg-97				
22	Filling with available <b>fly ash and earth</b> (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	603.33	116.50	70288.00
	BSR-BCD-20; Item-2.40, Pg-97				
23	<b>Cement Concrete Pavement</b> (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	1206.66	4461.00	5382892.00
	<b>Restoration of WMM Road</b>				
	RCD/SOR-18; Item-6.2; Pg-138				
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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	2544.39	637.00	1915923.79
	SOR-RCD-18; Item-4.2 (iii); Pg-66				



Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
25	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	1526.63	896.00	1367863.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
26	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	378.81	904.00	342440.00
	<b>Grading III:</b> 100 mm thick	cum	378.81	949.00	359486.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	<b>Prime coat</b> (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	3788.05	30.30	114778.00
	BSR-RCD-18-Item 5.1, Pg-84				
28	<b>Tack Coat:</b> 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	3788.05	11.10	42047.00
	BSR-RCD-18-Item 5.2, Pg-84				
29	<b>Bituminous Macadam</b> (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	151.52	5406.00	819128.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	<b>Bituminous Penetration Macadam</b> (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	3788.05	246.00	931860.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	<b>20mm thick Open-Graded Premix Carpet</b> 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	3788.05	110.00	416686.00
	SOR-RCD-GoB-18-Item 5.10 (j), Pg- 85				
32	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	344.52	435.50	150039.00
	In Cement Mortar	cum	344.52	922.50	317821.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead. BSR-BCD-20; Item-15.25, Pg-224	sqm	1148.40	100.10	114955.00
34	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead: 1:3:6 or richer mix 1:4:8 or leaner mix BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222	cum	127.60	911.40	116295.00
		cum	127.60	563.20	71865.00
35	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead: BSR-BCD-20; Item-15.3, Pg-371	cum	255.20	1324.40	337988.00
36	<b>Installation of laboratory</b> 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 LS	L.S.	1.00	500000.00	500000.00
37	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe Rate Analysis	km	9.18	11264.00	103360.00
38	Construction of 450 mm internal dia circular <b>Road side Chamber</b> in all types of soil with 225mm thick BB masonry 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. Rate Analysis	No.	128.00	10102.00	1293056.00
39	Providing <b>PVC-U pipes as per IS 15328 drop connection</b> 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) 280 mm dia i) For 0.6 m to 1.0 m drop ii) Upto 1.5 m drop iii) upto 2 m drop SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90	No.	3.29	17700.00	58233.00
		No.	6.66	19105.00	127239.00
		No.	1.77	20510.00	36303.00
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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. SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93 In all types of soils i) 200 mm internal diameter ii) 250 mm internal diameter iii) 300 mm internal diameter iv) 350 mm internal diameter v) 400 mm internal diameter vi) 450 mm internal diameter vii) 500 mm internal diameter	M	555	7180	3984900.00
		M	65	7420	482300.00
		M	20	10600	212000.00
		M	22	12150	267300.00
		M	9	13700	123300.00
		M	32	15450	494400.00
		M	19	17200	326800.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
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.				
	SOR-RUIDP-17; Item-17.79, Pg.-92				
	In all types of soils				
i)	600 mm internal diameter	M	5	18200	91000.00
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 <b>trenchless technology</b> , 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.-94				
	In all types of soils				
i)	Upto 4.0 Meter	Nos	21	48400	1016400.00
ii)	Upto 5.0 Meter	Nos	13	96800	1258400.00
iii)	Upto 6.0 Meter	Nos	5	145200	726000.00
iv)	Upto 7.0 Meter	Nos	9	193600	1742400.00
				<b>Sub Total A</b>	<b>149030335</b>
43	<b>Carriage of Material</b>				
	Sand	t.km	24332.10	9.4	228722.00
	Aggregate	t.km	204495.10	9.4	1922254.00
	Bricks	t.km	53678.70	9.4	504580.00
				<b>Sub Total B</b>	<b>2655556</b>
	<b>Total Cost (A+B)</b>				<b>151685891</b>

**SEWAGE COLLECTION SYSTEM IN ZONE B3 (IPS4)  
COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
<b>A)</b>	<b>Clearing jungle</b> 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.				
<b>1</b>					
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
<b>B)</b>	<b>EXCAVATION AND REFILLING</b>				
<b>2</b>	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	36638.41	360.70	13215473.00
b)	From 1.5 m to 3.0 m	cum	17075.15	407.00	6949587.00
c)	From 3.0 m to 4.5 m	cum	4960.33	453.30	2248520.00
d)	From 4.5 m to 6 m	cum	2411.89	499.60	1204982.00
e)	From 6 m to 7.5 m	cum	305.43	545.90	166734.00
	SOR-BCD-20; It.-2.8.1; Pg.-93 and 2.27.1 Pg-96				
<b>3</b>	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 soils as directed, within a lead of 50 m .				
<b>I)</b>	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	cum	543.46	651.70	354176.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
<b>II)</b>	<b>Hard Rock (Blasting Prohibited)</b>				
a)	From 6.0 m to 7.5 m	cum	407.60	1251.20	509987.00
	SOR-BCD-18; It.-2.9.3; Pg.-73 and 2.27.2 Pg-75				
<b>4</b>	<b>Filling available</b> 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	36922.93	116.50	4301521.00
	BSR-BCD-20-Item 2.26; Pg-96				
<b>5</b>	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	25000.00	102.60	2565000.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
<b>6</b>	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	24468.29	262.50	6422925.00
	BSR - RCD-18- Item- 3.11, P-45 & RA				
<b>C)</b>	<b>PIPE MATERIAL</b>				
<b>I)</b>	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	32980.80	636.51	20992609.00
	300 mm internal diameter	M	147.50	1188.77	175344.00
	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				
<b>II)</b>	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP4 class</b> (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.				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	200 mm internal diameter	M	899.80	677.51	609623.00
	250 mm internal diameter	M	682.50	947.89	646935.00
	300 mm internal diameter	M	387.80	1238.77	480395.00
	350 mm internal diameter	M	306.00	1865.65	570889.00
	600 mm internal diameter	M	374.80	3960.04	1484223.00
	700 mm internal diameter	M	777.70	4906.30	3815630.00
	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				
7	Property connection (House connection)				
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	19586.00	240.50	4710433.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
8	Providing and placing in position precast <b>RCC in vertical post</b> of size 40x90x1500 mm depth <b>at each House service connection</b> in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centring complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	cum	366.00	8677.50	3175965.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
D)	<b>MANHOLES</b>				
9	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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 conforming to IS: 4885	each		7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m		4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
1)	Upto 1.225 m depth to invert	No.	287.000	11972.27	3436040.00
2)	Upto 1.50 m depth to invert	No.	366.00	13735.33	5027130.00
3)	Upto 1.65 m depth to invert	No.	92.00	15179.83	1396544.00
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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	Each		13772.90	

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	<b>Extra depth</b> for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :	M		6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	20.00	19084.98	381700.00
2)	Upto 2.00 m depth to invert	No.	147.00	22035.67	3239243.00
3)	Upto 2.30 m depth to invert	No.	104.00	24820.10	2581290.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	104.00	49363.68	5133823.00
2)	Upto 3.00 m depth to invert	No.	71.00	56387.03	4003479.00
3)	Upto 3.50 m depth to invert	No.	70.00	66586.38	4661047.00
4)	Upto 4.00 m depth to invert	No.	46.00	76785.74	3532144.00
5)	Upto 4.25 m depth to invert	No.	5.00	83241.91	416210.00
6)	Upto 4.50 m depth to invert	No.	14.00	88124.42	1233742.00
7)	Upto 5.00 m depth to invert	No.	10.00	98470.42	984704.00
8)	Upto 5.50 m depth to invert	No.	17.00	108816.42	1849879.00
9)	Upto 6.00 m depth to invert	No.	24.00	120741.69	2897801.00
10)	Upto 6.50 m depth to invert	No.	12.00	127008.19	1524098.00
11)	Upto 7.0 m depth to invert	No.	1.00	133358.60	133359.00
	<b>E) Bedding</b>				
12	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum	5980.76	805.00	4814515.00
	BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8				
	<b>F) TIMBERING AND BARRACADING</b>				
13	<b>Close timbering</b> 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	77411.70	119.40	9242957.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	36729.52	124.60	4576498.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	9364.64	137.50	1287638.00
d)	Depth more than 4.5 m and upto 6.0 m	sqm	4012.33	145.50	583793.00
e)	Depth more than 6.0 m and upto 7.5 m	sqm	403.54	153.50	61943.00
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	6396.09	1593.10	10189605.00
	BSR-BCD-20; Item-2.19, Pg-95				
15	<b>Open timbering</b> 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	4068.22	61.40	249789.00
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	319.80	817.90	261568.00
	BSR-BCD-20; Item-2.23, Pg-95				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
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	73113.80	84.00	6141559.00
	RUIDP SOR 17 Item-4.26, Pg-13				
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
18	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	2998.83	342.00	1025600.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
19	<b>Dismantling of cement concrete pavement</b> 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	7705.23	1520.00	11711953.00
	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	4004.48	84.50	338379.00
	BSR-BCD-20; Item-15.43.1, Pg-225				
	<b>Cement concrete road Restoration</b>				
21	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage, loading , unloading & stacking up to any lead (measured stacks will be reduced by 20% for payment).	Cum	2311.19	10.00	23112.00
	BSR-BCD-20; Item-2.39, Pg-97				
22	Filling with available <b>fly ash and earth</b> (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	1925.99	116.50	224378.00
	BSR-BCD-20; Item-2.40, Pg-97				
23	<b>Cement Concrete Pavement</b> (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	3851.98	4461.00	17183683.00
	<b>Restoration of WMM Road</b>				
	RCD/SOR-18; Item-6.2; Pg-138				
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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	1001.12	637.00	637713.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
25	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	600.67	896.00	538202.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
26	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	535.52	904.00	484114.00
	<b>Grading III:</b> 100 mm thick	cum	535.52	949.00	508212.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	<b>Prime coat</b> (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	5355.24	30.30	162264.00
	BSR-RCD-18-Item 5.1, Pg-84				
28	<b>Tack Coat:</b> 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	5355.24	11.10	59443.00
	BSR-RCD-18-Item 5.2, Pg-84				
29	<b>Bituminous Macadam</b> (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	214.21	5406.00	1158017.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	<b>Bituminous Penetration Macadam</b> (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	5355.24	246.00	1317389.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	<b>20mm thick Open-Graded Premix Carpet</b> 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	5355.24	110.00	589076.00
	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85				
32	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	493.52	435.50	214927.00
	In Cement Mortar	cum	493.52	922.50	455270.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				



Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead. BSR-BCD-20; Item-15.25, Pg-224	sqm	1645.06	100.10	164671.00
34	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead: 1:3:6 or richer mix 1:4:8 or leaner mix BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222	cum cum	182.78 182.78	911.40 563.20	166590.00 102944.00
35	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead: BSR-BCD-20; Item-15.3, Pg-371	cum	365.57	1324.40	484160.00
36	<b>Installation of laboratory</b> 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 LS	L.S.	1.00	500000.00	500000.00
37	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe Analysis	km	9.18	11264.00	103360.00
38	Construction of 450 mm internal dia circular <b>Road side Chamber</b> in all types of soil with 300mm thick RR masonry 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. Rate Analysis	No.	183.00	10102.00	1848666.00
39	Providing <b>PVC-U pipes as per IS 15328 drop connection</b> 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:				
<b>A)</b>	280 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	35.00	17700.00	619500.00
ii)	Upto 1.5 m drop	No.	53.00	19105.00	1012565.00
iii)	upto 2 m drop	No.	35.00	20510.00	717850.00
iv)	upto 2.5 m drop	No.	38.00	21915.00	832770.00
v)	upto 3.0 m drop	No.	14.00	23320.00	326480.00
vi)	upto 3.5 m drop	No.	16.00	24725.00	395600.00
vii)	upto 4.0 m drop	No.	4.00	26130.00	104520.00
viii)	upto 4.5 m drop	No.	12.00	27535.00	330420.00
	SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90				
<b>B)</b>	315 mm dia				
i)	upto 2 m drop	No.	1.51	31950.00	48245.00
	SOR-RUIDP-17; Item-17.66.5., and Item 17.67.5 to 17.67.5 Pg.-90				
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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. SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	In all types of soils				
i)	200 mm internal diameter	M	389	7180	2793020.00
ii)	250 mm internal diameter	M	10	7420	74200.00
iii)	300 mm internal diameter	M	10	10600	106000.00
iv)	350 mm internal diameter	M	10	12150	121500.00
<b>41</b>	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 NHA 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.				
	SOR-RUIDP-17; Item-17.79, Pg.-92				
	In all types of soils				
i)	600 mm internal diameter	M	15	18200	273000.00
ii)	700 mm internal diameter	M	15	19100	286500.00
<b>42</b>	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in <b>trenchless technology</b> , with proper protection at three sides with shoring sheets/ wooden planks and ISMB's, maintaining during pushing/ pulling 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.-94				
	In all types of soils				
i)	Upto 4.0 Meter	Nos	11	48400	532400.00
ii)	Upto 5.0 Meter	Nos	6	96800	580800.00
iii)	Upto 6.0 Meter	Nos	4	145200	580800.00
iv)	Upto 7.0 Meter	Nos	1	193600	193600.00
				<b>Sub Total A</b>	<b>204407692</b>
<b>43</b>	<b>Carriage of Material</b>				
	Sand	t.km	45104.70	9.4	423984.00
	Aggregate	t.km	236927.80	9.4	2227121.00
	Bricks	t.km	69229.00	9.4	650753.00
				<b>Sub Total B</b>	<b>3301858</b>
	<b>Total Cost (A+B)</b>				<b>207709550</b>

**SEWAGE COLLECTION SYSTEM IN ZONE B3A (IPS4 A)  
COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
<b>A)</b>	<b>1</b> <b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
<b>B)</b>	<b>EXCAVATION AND REFILLING</b>				
<b>2</b>	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	69494.40	360.70	25066631.00
b)	From 1.5 m to 3.0 m	cum	24622.23	407.00	10021247.00
c)	From 3.0 m to 4.5 m	cum	5590.80	453.30	2534308.00
d)	From 4.5 m to 6 m	cum	1913.05	499.60	955762.00
e)	From 6 m to 7.5 m	cum	397.77	545.90	217145.00
	SOR-BCD-20; It.-2.8.1; Pg.-93 and 2.27.1 Pg-96				
<b>3</b>	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 soils as directed, within a lead of 50 m .				
<b>I)</b>	<b>Ordinary Rock</b>				
a)	From 6 m to 7.5 m	cum	462.17	651.70	301193.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
<b>II)</b>	<b>Hard Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	cum	346.62	1251.20	433696.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
<b>4</b>	<b>Filling available</b> 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	57766.03	116.50	6729743.00
	BSR-BCD-20-Item 2.26; Pg-96				
<b>5</b>	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	25000.00	102.60	2565000.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
<b>6</b>	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	44252.22	262.50	11616209.00
	BSR - RCD-18- Item- 3.11, P-45 & RA				
<b>C)</b>	<b>PIPE MATERIAL</b>				
<b>I)</b>	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	53697.40	636.51	34178932.00
	250 mm internal diameter	M	1773.40	875.89	1553303.00
	300 mm internal diameter	M	197.20	1188.77	234425.00
	500 mm internal diameter	M	815.30	2862.28	2333617.00
	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				
<b>II)</b>	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP4 class</b> (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.				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	200 mm internal diameter	M	836.70	677.51	566873.00
	250 mm internal diameter	M	379.40	947.89	359629.00
	300 mm internal diameter	M	828.40	1238.77	1026197.00
	350 mm internal diameter	M	1163.40	1865.65	2170497.00
	450 mm internal diameter	M	526.50	2590.41	1363851.00
	500 mm internal diameter	M	130.20	2962.28	385689.00
	900 mm internal diameter	M	943.40	6536.81	6166827.00
	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				
<b>7</b>	<b>Property connection (House connection)</b>				
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	75200.00	240.50	18085600.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
<b>8</b>	Providing and placing in position precast <b>RCC in vertical post</b> of size 40x90x1500 mm depth <b>at each House service connection</b> 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	613.00	8677.50	5319308.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
<b>D)</b>	<b>MANHOLES</b>				
<b>9</b>	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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 conforming to IS: 4885	each		7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m		4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
1)	Upto 1.225 m depth to invert	No.	544.000	11972.27	6512912.00
2)	Upto 1.50 m depth to invert	No.	736.00	13735.33	10109200.00
3)	Upto 1.65 m depth to invert	No.	237.00	15179.83	3597620.00
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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	Each		13772.90	
	<b>Extra depth</b> for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :	M		6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
	1) Upto 1.68m depth to invert	No.	36.00	19084.98	687059.00
	2) Upto 2.00 m depth to invert	No.	298.00	22035.67	6566629.00
	3) Upto 2.30 m depth to invert	No.	160.00	24820.10	3971216.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
	1) Upto 2.65 m depth to invert	No.	162.00	49363.68	7996916.00
	2) Upto 3.00 m depth to invert	No.	84.00	56387.03	4736510.00
	3) Upto 3.50 m depth to invert	No.	64.00	66586.38	4261529.00
	4) Upto 4.00 m depth to invert	No.	55.00	76785.74	4223216.00
	5) Upto 4.25 m depth to invert	No.	12.00	83241.91	998903.00
	6) Upto 4.50 m depth to invert	No.	8.00	88124.42	704995.00
	7) Upto 5.00 m depth to invert	No.	15.00	98470.42	1477056.00
	8) Upto 5.50 m depth to invert	No.	11.00	108816.42	1196981.00
	9) Upto 6.00 m depth to invert	No.	4.00	120741.69	482967.00
12	Construction of <b>RCC Circular Manhole</b> 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.				
	Rate Analysis				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	<b>For sewer dia - 900 mm</b>				
1)	Upto 5.5 m depth to invert	No.	5.00	109304.42	546522.00
2)	Upto 6 m depth to invert	No.	17.00	118596.65	2016143.00
3)	Upto 6.5 m depth to invert	No.	11.00	132272.88	1455002.00
4)	Upto 7.0 m depth to invert	No.	2.00	141561.45	283123.00
E)	<b>Bedding</b>				
13	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> ) BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8	cum	10330.33	805.00	8315912.00
F)	<b>TIMBERING AND BARRACADING</b>				
14	<b>Close timbering</b> 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	118075.80	119.40	14098251.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	49820.96	124.60	6207691.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	9793.88	137.50	1346659.00
d)	Depth more than 4.5 m and upto 6.0 m	sqm	2673.56	145.50	389003.00
e)	Depth more than 6.0 m and upto 7.5 m	sqm	440.91	153.50	67679.00
	BSR-BCD-20; Item-2.16, Pg-94				
15	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured) BSR-BCD-20; Item-2.19, Pg-95	sqm	9040.26	1593.10	14402031.00
16	<b>Open timbering</b> 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	6825.48	61.40	419085.00
	BSR-BCD-20; Item-2.20, Pg-95				
17	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured) BSR-BCD-20; Item-2.23, Pg-95	sqm	452.01	817.90	369701.00
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.) RUIDP SOR 17 Item-4.26, Pg-13	m	122582.60	84.00	10296938.00
G)	<b>ROAD RESTORATION AND DISMANTLING WORKS</b>				
19	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b> RCD/SOR-18; Item-2.5-II A; Pg-29	cum	5643.02	342.00	1929913.00
20	<b>Dismantling of cement concrete pavement</b> 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. RCD/SOR-18; Item-2.6; Pg-29	cum	17305.29	1520.00	26304036.00
21	Dismantling including stacking of serviceable material and disposal of unserviceable material within 50 metres lead Water bound macadam road BSR-BCD-20; Item-15.43.1, Pg-225	Sq m	6594.64	84.50	557247.00
	<b>Cement concrete road Restoration</b>				
22	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage, loading , unloading & stacking up to any lead (measured stacks will be reduced by 20% for payment). BSR-BCD-20; Item-2.39, Pg-97	Cum	3962.24	10.00	39622.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
23	Filling with available <b>fly ash and earth</b> (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	3301.87	116.50	384668.00
	BSR-BCD-20; Item-2.40, Pg-97				
24	<b>Cement Concrete Pavement</b> (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	6603.74	4461.00	29459275.00
	<b>Restoration of WMM Road</b> RCD/SOR-18; Item-6.2; Pg-138				
25	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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	1648.66	637.00	1050196.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
26	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	989.20	896.00	886320.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
27	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	881.95	904.00	797281.00
	<b>Grading III:</b> 100 mm thick	cum	881.95	949.00	836969.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
28	<b>Prime coat</b> (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	8819.48	30.30	267230.00
	BSR-RCD-18-Item 5.1, Pg-84				
29	<b>Tack Coat:</b> 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	8819.48	11.10	97896.00
	BSR-RCD-18-Item 5.2, Pg-84				
30	<b>Bituminous Macadam</b> (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	352.78	5406.00	1907124.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
31	<b>Bituminous Penetration Macadam</b> (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	8819.48	246.00	2169592.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
32	<b>20mm thick Open-Graded Premix Carpet</b> 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	8819.48	110.00	970143.00
	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85				
33	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	827.43	435.50	360347.00
	In Cement Mortar	cum	827.43	922.50	763307.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				
34	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	sqm	2758.11	100.10	276087.00
	BSR-BCD-20; Item-15.25, Pg-224				
35	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead:				
	1:3:6 or richer mix	cum	306.46	911.40	279304.00
	1:4:8 or leaner mix	cum	306.46	563.20	172596.00
	BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222				
36	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	cum	612.91	1324.40	811742.00
	BSR-BCD-20; Item-15.3, Pg-371				
37	<b>Installation of laboratory</b> 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	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	km	9.18	11264.00	103360.00
	Analysis				
39	Construction of 450 mm internal dia circular <b>Road side Chamber</b> in all types of soil with 300mm thick RR masonry 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.	307.00	10102.00	3101314.00
	Rate Analysis				



Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
40	Providing <b>PVC-U pipes as per IS 15328 drop connection</b> 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)	280 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	58.00	17700.00	1026600.00
ii)	Upto 1.5 m drop	No.	51.00	19105.00	974355.00
iii)	upto 2 m drop	No.	54.00	20510.00	1107540.00
iv)	upto 2.5 m drop	No.	41.00	21915.00	898515.00
v)	upto 3.0 m drop	No.	16.00	23320.00	373120.00
vi)	upto 3.5 m drop	No.	26.00	24725.00	642850.00
vii)	upto 4 m drop	No.	14.00	26130.00	365820.00
viii)	upto 4.5 m drop	No.	18.00	27535.00	495630.00
	SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90				
B)	315 mm dia				
i)	upto 1m drop	No.	1.00	27700.00	27700.00
	SOR-RUIDP-17; Item-17.66.5, Pg.-90				
41	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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.				
	SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93				
	In all Types of soils				
i)	200 mm internal diameter	M	861	7180	6181980.00
ii)	250 mm internal diameter	M	17	7420	126140.00
iii)	350 mm internal diameter	M	16	12150	194400.00
iv)	500 mm internal diameter	M	16	17200	275200.00
42	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.				
	SOR-RUIDP-17; Item-17.79.1.4, Pg.-92				
	In all types of soils				
i)	900 mm internal diameter	M	20	23800	476000.00
43	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in <b>trenchless technology</b> , 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 tackels required as per specification and the direction of the Engineer				
	SOR-RUIDP-17; Item-17.82 Pg.-94	Nos			

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	In all Types of soils				
i)	Upto 4.0 Meter	Nos	11	48400	532400.00
ii)	Upto 5.0 Meter	Nos	3	96800	290400.00
iii)	Upto 6.0 Meter	Nos	4	145200	580800.00
iv)	Upto 7.0 Meter	Nos	6	193600	1161600.00
				<b>Sub Total A</b>	<b>341712500</b>
<b>44</b>	<b>Carriage of Material</b>				
	Sand	t.km	72608.20	9.4	682517.00
	Aggregate	t.km	400298.60	9.4	3762807.00
	Bricks	t.km	89294.90	9.4	839372.00
				<b>Sub Total B</b>	<b>5284696</b>
	<b>Total Cost (A+B)</b>				<b>346997196</b>

**SEWAGE COLLECTION SYSTEM IN ZONE B4 (IPS5)  
COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	<b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
B)	<b>EXCAVATION AND REFILLING</b>				
2	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	23111.22	360.70	8336215.00
b)	From 1.5 m to 3.0 m	cum	7453.43	407.00	3033548.00
c)	From 3.0 m to 4.5 m	cum	2178.20	453.30	987380.00
d)	From 4.5 m to 6 m	cum	503.11	499.60	251352.00
e)	From 6 m to 7.5 m	cum	4.94	545.90	2699.00
	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 soils as directed, within a lead of 50 m .				
I)	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	cum	100.62	651.70	65575.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II)	<b>Hard Rock (Blasting Prohibited)</b>				
a)	From 6.0 m to 7.5 m	cum	75.47	1251.20	94423.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	<b>Filling available</b> 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	20085.18	116.50	2339923.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Pumping out water</b> 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	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	13160.78	262.50	3454705.00
	BSR - RCD-18- Item- 3.11, P-45 & RA				
C)	<b>PIPE MATERIAL</b>				
I)	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	14271.50	636.51	9083952.00
	250 mm internal diameter	M	368.40	875.89	322678.00
	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 <b>RCC pipes NP4 class</b> (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	253.80	677.51	171952.00
	250 mm internal diameter	M	188.60	947.89	178772.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	350 mm internal diameter	M	1216.00	1865.65	2268630.00
	400 mm internal diameter	M	153.20	2128.03	326014.00
	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				
7	Property connection (House connection)				
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	39460.00	240.50	9490130.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
8	Providing and placing in position precast <b>RCC in vertical post</b> of size 40x90x1500 mm depth <b>at each House service connection</b> 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	329.00	8677.50	2854898.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
D)	<b>MANHOLES</b>				
9	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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		7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m		4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
1)	Upto 1.225 m depth to invert	No.	147.000	11972.27	1759923.00
2)	Upto 1.50 m depth to invert	No.	176.00	13735.33	2417417.00
3)	Upto 1.65 m depth to invert	No.	55.00	15179.83	834891.00
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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			13772.90	
	<b>Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :</b>			6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	12.00	19084.98	229020.00
2)	Upto 2.00 m depth to invert	No.	118.00	22035.67	2600209.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
3)	Upto 2.30 m depth to invert	No.	42.00	24820.10	1042444.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	50.00	49363.68	2468184.00
2)	Upto 3.00 m depth to invert	No.	25.00	56387.03	1409676.00
3)	Upto 3.50 m depth to invert	No.	36.00	66586.38	2397110.00
4)	Upto 4.00 m depth to invert	No.	36.00	76785.74	2764287.00
5)	Upto 4.25 m depth to invert	No.	9.00	83241.91	749177.00
6)	Upto 4.50 m depth to invert	No.	3.00	88124.42	264373.00
7)	Upto 5.00 m depth to invert	No.	8.00	98470.42	787763.00
8)	Upto 5.50 m depth to invert	No.	14.00	108816.42	1523430.00
9)	Upto 6.00 m depth to invert	No.	3.00	120741.69	362225.00
10)	Upto 6.50 m depth to invert	No.	1.00	127008.19	127008.00
	<b>E) Bedding</b>				
12	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum	2632.23	805.00	2118946.00
	BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8				
	<b>F) TIMBERING AND BARRACADING</b>				
13	<b>Close timbering</b> 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	35857.80	119.40	4281421.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	16215.61	124.60	2020466.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	4383.35	137.50	602711.00
d)	Depth more than 4.5 m and upto 6.0 m	sqm	986.14	145.50	143483.00
e)	Depth more than 6.0 m and upto 7.5 m	sqm	5.88	153.50	903.00
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	2872.44	1593.10	4576083.00
	BSR-BCD-20; Item-2.19, Pg-95				
15	<b>Open timbering</b> 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	1964.22	61.40	120603.00
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	143.62	817.90	117468.00
	BSR-BCD-20; Item-2.23, Pg-95				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
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	32903.00	84.00	2763852.00
	RUIDP SOR 17 Item-4.26, Pg-13				
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
18	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	1750.75	342.00	598758.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
19	<b>Dismantling of cement concrete pavement</b> 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	6381.30	1520.00	9699576.00
	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	2332.29	84.50	197079.00
	BSR-BCD-20; Item-15.43.1, Pg-225				
	<b>Cement concrete road Restoration</b>				
21	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage, loading , unloading & stacking up to any lead (measured stacks will be reduced by 20% for payment).	Cum	999.37	10.00	9994.00
	BSR-BCD-20; Item-2.39, Pg-97				
22	Filling with available <b>fly ash and earth</b> (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 – in charge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	832.81	116.50	97023.00
	BSR-BCD-20; Item-2.40, Pg-97				
23	<b>Cement Concrete Pavement</b> (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	1665.62	4461.00	7430349.00
	<b>Restoration of WMM Road</b>				
	RCD/SOR-18; Item-6.2; Pg-138				
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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	583.07	637.00	371417.00
	SOR-RCD-18; Item-4.2 (iii); Pg-66				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
25	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	349.84	896.00	313460.00
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
26	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	220.72	904.00	199533.00
	<b>Grading III:</b> 100 mm thick	cum	220.72	949.00	209465.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	<b>Prime coat</b> (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	2207.22	30.30	66879.00
	BSR-RCD-18-Item 5.1, Pg-84				
28	<b>Tack Coat:</b> 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	2207.22	11.10	24500.00
	BSR-RCD-18-Item 5.2, Pg-84				
29	<b>Bituminous Macadam</b> (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	88.29	5406.00	477289.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	<b>Bituminous Penetration Macadam</b> (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	2207.22	246.00	542976.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	<b>20mm thick Open-Graded Premix Carpet</b> 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	2207.22	110.00	242794.00
	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85				
32	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	222.10	435.50	96722.00
	In Cement Mortar	cum	222.10	922.50	204883.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead. BSR-BCD-20; Item-15.25, Pg-224	sqm	740.32	100.10	74106.00
34	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead: 1:3:6 or richer mix 1:4:8 or leaner mix BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222	cum cum	82.26 82.26	911.40 563.20	74969.00 46327.00
35	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead: BSR-BCD-20; Item-15.3, Pg-371	cum	164.52	1324.40	217884.00
36	<b>Installation of laboratory</b> 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 LS	L.S.	1.00	500000.00	500000.00
37	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe Rate Analysis	km	9.18	11264.00	103360.00
38	Construction of 450 mm internal dia circular <b>Road side Chamber</b> in all types of soil with 225mm thick BB masonry 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. Rate Analysis	No.	165.00	10102.00	1666830.00
39	Providing <b>PVC-U pipes as per IS 15328 drop connection</b> 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:				
<b>A)</b>	280 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	12.85	17700.00	227445.00
ii)	Upto 1.5 m drop	No.	19.79	19105.00	378088.00
iii)	upto 2 m drop	No.	17.56	20510.00	360156.00
iv)	upto 2.5 m drop	No.	24.44	21915.00	535603.00
v)	upto 3 m drop	No.	11.35	23320.00	264682.00
vi)	upto 3.5 m drop	No.	19.39	24725.00	479418.00
vii)	upto 4.0 m drop	No.	4.20	26130.00	109746.00
<b>B)</b>	315 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	0.62	27700.00	17174.00
	SOR-RUIDP-17; Item-17.66.4 to 17.66.5 & Item 17.67.4 to 17.67.5 & Item Pg.-90				
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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. SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93 In all types of soils				
i)	200 mm internal diameter	M	438	7180	3144840.00



Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
ii)	250 mm internal diameter	M	26	7420	192920.00
iii)	350 mm internal diameter	M	119	12150	1445850.00
iv)	400 mm internal diameter	M	15	13700	205500.00
<b>41</b>	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in <b>trenchless technology</b> , 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-17.79, Pg.-92				
	In all types of soils				
i)	Upto 4.0 Meter	Nos	50	48400	2420000.00
ii)	Upto 5.0 Meter	Nos	27	96800	2613600.00
iii)	Upto 6.0 Meter	Nos	14	145200	2032800.00
iv)	Upto 7.0 Meter	Nos	2	193600	387200.00
				<b>Sub Total A</b>	<b>121598864</b>
<b>42</b>	<b>Carriage of Material</b>				
	Sand	t.km	21635.40	9.4	203373.00
	Aggregate	t.km	109486.10	9.4	1029169.00
	Bricks	t.km	36404.90	9.4	342206.00
				<b>Sub Total B</b>	<b>1574748</b>
	<b>Total Cost (A+B)</b>				<b>123173612</b>

**SEWAGE COLLECTION SYSTEM IN ZONE B4A (IPS 5A)  
COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	<b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
B)	<b>EXCAVATION AND REFILLING</b>				
2	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	19359.97	360.70	6983141.00
b)	From 1.5 m to 3.0 m	cum	7860.23	407.00	3199113.00
c)	From 3.0 m to 4.5 m	cum	1652.31	453.30	748992.00
d)	From 4.5 m to 6 m	cum	567.46	499.60	283504.00
e)	From 6 m to 7.5 m	cum	230.73	545.90	125953.00
	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 soils as directed, within a lead of 50 m .				
I)	<b>Ordinary Rock</b>				
a)	From 6 m to 7.5 m	cum	46.15	651.70	30073.00
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II)	<b>Hard Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	cum	34.61	1251.20	43302.00
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	<b>Filling available</b> 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	15412.43	116.50	1795548.00
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	20000.00	102.60	2052000.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
6	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	14258.26	262.50	3742794.00
	BSR - RCD-18- Item- 3.11, P-45 & RA				
C)	<b>PIPE MATERIAL</b>				
I)	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	12600.70	636.51	8020472.00
	250 mm internal diameter	M	536.40	875.89	469827.00
	300 mm internal diameter	M	14.50	1188.77	17237.00
	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 <b>RCC pipes NP4 class</b> (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	255.70	677.51	173239.00
	250 mm internal diameter	M	135.80	947.89	128723.00
	300 mm internal diameter	M	801.20	1238.77	992503.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	350 mm internal diameter	M	117.50	1865.65	219214.00
	400 mm internal diameter	M	712.30	2128.03	1515796.00
	450 mm internal diameter	M	24.40	2590.41	63206.00
	600 mm internal diameter	M	31.50	3960.04	124741.00
	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				
7	Property connection (House connection)				
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	21540.00	240.50	5180370.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
8	Providing and placing in position precast <b>RCC in vertical post</b> of size 40x90x1500 mm depth <b>at each House service connection</b> in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centring complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	cum	305.00	8677.50	2646638.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
D)	<b>MANHOLES</b>				
9	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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		7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m		4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				
1)	Upto 1.225 m depth to invert	No.	135.00	11972.27	1616256.00
2)	Upto 1.50 m depth to invert	No.	148.00	13735.33	2032828.00
3)	Upto 1.65 m depth to invert	No.	37.00	15179.83	561654.00
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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		13772.90	
	<b>Extra depth</b> for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :	M		6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	7.00	19084.98	133595.00
2)	Upto 2.00 m depth to invert	No.	78.00	22035.67	1718782.00
3)	Upto 2.30 m depth to invert	No.	70.00	24820.10	1737407.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	66.00	49363.68	3258003.00
2)	Upto 3.00 m depth to invert	No.	46.00	56387.03	2593803.00
3)	Upto 3.50 m depth to invert	No.	32.00	66586.38	2130764.00
4)	Upto 4.00 m depth to invert	No.	19.00	76785.74	1458929.00
5)	Upto 4.25 m depth to invert	No.	17.00	83241.91	1415113.00
6)	Upto 4.50 m depth to invert	No.	4.00	88124.42	352498.00
7)	Upto 5.00 m depth to invert	No.	3.00	98470.42	295411.00
8)	Upto 5.5 m depth to invert	No.	2.00	108816.42	217633.00
9)	Upto 6.00 m depth to invert	No.	3.00	120741.69	362225.00
10)	Upto 6.5 m depth to invert	No.	7.00	127008.19	889057.00
11)	Upto 7.0 m depth to invert	No.	8.00	133358.60	1066869.00
<b>E)</b>	<b>Bedding</b>				
12	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum	2462.22	805.00	1982085.00
	BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8				
<b>F)</b>	<b>TIMBERING AND BARRACADING</b>				
13	<b>Close timbering</b> 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	34181.40	119.40	4081259.00
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	17368.19	124.60	2164077.00
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	3327.79	137.50	457571.00
d)	Depth more than 4.5 m and upto 6.0 m	sqm	1571.48	145.50	228650.00
	BSR-BCD-20; Item-2.16, Pg-94				
14	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) <b>if required to be left permanently in position</b> (Face area of timber permanently left to be measured)	sqm	2822.44	1593.10	4496434.00
	BSR-BCD-20; Item-2.19, Pg-95				
15	<b>Open timbering</b> 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	1681.32	61.40	103233.00
	BSR-BCD-20; Item-2.20, Pg-95				
16	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) <b>if required to be left permanently in position</b> (Face area of timber permanently left to be measured)	sqm	84.07	817.90	68758.00
	BSR-BCD-20; Item-2.23, Pg-95				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
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	30460.00	84.00	2558640.00
	RUIDP SOR 17 Item-4.26, Pg-13				
<b>G)</b>	<b>ROAD RESTORATION AND DISMANTLING WORKS</b>				
18	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	840.89	342.00	287583.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
	<b>Restoration of New bituminous road</b>				
19	<b>Dismantling of cement concrete pavement</b> 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	5121.94	1520.00	7785343.00
	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	981.46	84.50	45147.16
	BSR-BCD-20; Item-15.43.1, Pg-225				
	Cement Concrete Road Restoration				
21	<b>Supply and stacking of Fly ash</b> conforming to IRC- 58 at site, excluding carriage, loading , unloading & stacking up to any lead (measured stacks will be reduced by 20% for payment).	Cum	1200.96	10.00	12010.00
	BSR-BCD-20; Item-2.39, Pg-97				
22	<b>Filling with available fly ash and earth</b> (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	1000.80	116.50	116593.00
	BSR-BCD-20; Item-2.40, Pg-97				
23	<b>Cement Concrete Pavement</b> (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	2001.60	4461.00	8929138.00
	<b>Restoration of WMM Road</b>				
	RCD/SOR-18; Item-6.2; Pg-138				
24	<b>Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base</b> 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	245.37	637.00	156298.00
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
25	Providing, laying, spreading and compacting 150 mm graded stone aggregate to <b>Wet Mix Macadam (WMM)</b> : 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	147.22	896.00	131908.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
26	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	97.53	904.00	88164.00
	<b>Grading III:</b> 100 mm thick	cum	97.53	949.00	92552.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	<b>Prime coat</b> (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	975.26	30.30	29550.00
	BSR-RCD-18-Item 5.1, Pg-84				
28	<b>Tack Coat:</b> 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	975.26	11.10	10825.00
	BSR-RCD-18-Item 5.2, Pg-84				
29	<b>Bituminous Macadam</b> (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	39.01	5406.00	210890.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	<b>Bituminous Penetration Macadam</b> (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	975.26	246.00	239914.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	<b>20mm thick Open-Graded Premix Carpet</b> 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	975.26	110.00	107279.00
	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85				
32	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	205.61	435.50	89541.00
	In Cement Mortar	cum	205.61	922.50	189671.00
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	sqm	685.35	100.10	68604.00
	BSR-BCD-22; Item-15.25, Pg-224				
34	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead:				
	1:3:6 or richer mix	cum	76.15	911.40	69403.00
	1:4:8 or leaner mix	cum	76.15	563.20	42888.00
	BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222				
35	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	cum	152.30	1324.40	201706.00
	BSR-BCD-20; Item-15.3, Pg-371				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
36	<b>Installation of laboratory</b> 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	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	km	3.05	11264.00	34310.00
	Analysis				
38	Construction of 450 mm internal dia circular <b>Road side Chamber</b> in all types of soil with 225mm thick BB masonry 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.	153.00	10102.00	1545606.00
	Analysis				
39	Providing PVC-U pipes as per IS 15328 <b>drop connection</b> 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 wall, making required channels complete as per standard design and specifications and/ or as the directed of the Engineer:				
<b>A)</b>	280 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	10	17700.00	170097.00
ii)	Upto 1.5 m drop	No.	19	19105.00	360893.00
iii)	upto 2 m drop	No.	14	20510.00	286525.00
iv)	upto 2.5 m drop	No.	9	21915.00	197016.00
	SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90				
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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.				
	SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93				
	In all Types of soil				
i)	200 mm internal diameter	M	387	7180	2778660.00
ii)	250 mm internal diameter	M	31	7420	230020.00
iii)	300 mm internal diameter	M	105	10600	1113000.00
iv)	350 mm internal diameter	M	12	12150	145800.00
iv)	400 mm internal diameter	M	68	13700	931600.00
iv)	450 mm internal diameter	M	10	15450	154500.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
41	Providing, laying and jointing RCC NP4 pipe with cement mortar joints by <b>trenchless method</b> adopting any suitable technology below ground at required depth under running traffic condition as per the direction of NHA) 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.				
	SOR-RUIDP-17; Item-17.79, Pg.-92				
	In all Types of soil				
i)	600 mm internal diameter	M	10	18200	182000.00
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 <b>trenchless technology</b> , 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.-94				
	In all Types of soil				
i)	Upto 4 m dia	Nos	44	48400	2129600.00
i)	Upto 5 m dia	Nos	18	96800	1742400.00
i)	Upto 6 m dia	Nos	17	145200	2468400.00
				<b>Sub Total A</b>	<b>110446104</b>
43	<b>Carriage of Material</b>				
	Sand	t.km	22899.50	9.4	215255.00
	Aggregate	t.km	91979.30	9.4	864605.00
	Bricks	t.km	36263.30	9.4	340875.00
				<b>Sub Total B</b>	<b>1420735</b>
	<b>Total Cost (A+B)</b>				<b>111866839</b>



**SEWAGE COLLECTION SYSTEM IN ZONE B5 (IPS 6)**  
**COST ESTIMATE**

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	<b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
B)	<b>EXCAVATION AND REFILLING</b>				
2	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	69741.16	360.70	25155636.68
b)	From 1.5 m to 3.0 m	cum	21022.49	407.00	8556153.20
c)	From 3.0 m to 4.5 m	cum	5817.86	453.30	2637234.03
d)	From 4.5 m to 6 m	cum	2300.65	499.60	1149406.92
e)	From 6 m to 7.5 m	cum	5409.58	545.90	2953087.13
	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 soils as directed, within a lead of 50 m .				
J)	<b>Ordinary Rock</b>				
a)	From 6 m to 7.5 m	cum	1081.92	651.70	705084.04
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
II)	<b>Hard Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	cum	811.44	1251.20	1015269.08
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	<b>Filling available</b> 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	45645.60	116.50	5317712.44
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	20000.00	102.60	2052000.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
6	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	58646.14	262.50	15394610.49
	BSR - RCD-18- Item- 3.11, P-45 & RA				
C)	<b>PIPE MATERIAL</b>				
I)	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	40136.70	636.51	25547410.92
	250 mm internal diameter	M	662.80	875.89	580539.89
	300 mm internal diameter	M	482.90	1188.77	574057.03
	500 mm internal diameter	M	310.20	2862.28	887879.26
	600 mm internal diameter	M	893.00	3640.04	3250555.72
	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 <b>RCC pipes NP4 class</b> (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.				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
	200 mm internal diameter	M	365.60	677.51	247697.66
	250 mm internal diameter	M	517.30	947.89	490343.50
	300 mm internal diameter	M	838.60	1238.77	1038832.52
	350 mm internal diameter	M	1150.60	1865.65	2146616.89
	450 mm internal diameter	M	1330.60	2590.41	3446799.55
	500 mm internal diameter	M	29.80	2962.28	88275.94
	600 mm internal diameter	M	345.80	3960.04	1369381.83
	900 mm internal diameter	M	140.10	6536.81	915807.08
	1000 mm internal diameter	M	99.40	7416.57	737207.06
	1100 mm internal diameter	M	402.70	8728.33	3514898.49
	1200 mm internal diameter	M	331.20	11592.08	3839296.90
	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				
<b>7</b>	<b>Property connection (House connection)</b>				
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	97976.00	240.50	23563228.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
<b>8</b>	Providing and placing in position precast <b>RCC in vertical post</b> of size 40x90x1500 mm depth <b>at each House service connection</b> 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	480.00	8677.50	4165200.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
<b>D)</b>	<b>MANHOLES</b>				
<b>9</b>	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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 conforming to IS: 4885	each		7034.60	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m		4834.92	
	<b>For Sewer Diameter - upto 400 mm dia</b>				
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				
1)	Upto 1.225 m depth to invert	No.	466.00	11972.27	5579075.55
2)	Upto 1.50 m depth to invert	No.	660.00	13735.33	9065315.51
3)	Upto 1.65 m depth to invert	No.	186.00	15179.83	2823448.45
<b>10</b>	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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	Each		13772.90	
	<b>Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :</b>	M		6280.70	
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	33.00	19084.98	629804.28

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
2)	Upto 2.00 m depth to invert	No.	205.00	22035.67	4517312.18
3)	Upto 2.30 m depth to invert	No.	148.00	24820.10	3673374.52
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m		15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	95.00	49363.68	4689549.62
2)	Upto 3.00 m depth to invert	No.	87.00	56387.03	4905671.49
3)	Upto 3.50 m depth to invert	No.	76.00	66586.38	5060565.14
4)	Upto 4.00 m depth to invert	No.	52.00	76785.74	3992858.39
5)	Upto 4.25 m depth to invert	No.	20.00	83241.91	1664838.28
6)	Upto 4.50 m depth to invert	No.	19.00	88124.42	1674363.90
7)	Upto 5.00 m depth to invert	No.	25.00	98470.42	2461760.48
12	Construction of <b>RCC Circular Manhole</b> 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.				
	Rate Analysis				
	<b>For Sewer Dia - 900 mm</b>				
1)	Upto 4.5 m depth to invert	No.	7.00	94474.03	661318.22
2)	Upto 5 m depth to invert	No.	5.00	103911.81	519559.07
	<b>For Sewer Dia-1000 mm to 1100 mm</b>				
1)	Upto 5 m depth to invert	No.	3.00	118347.67	355043.01
2)	Upto 5.5 m depth to invert	No.	14.00	128915.53	1804817.42
3)	Upto 6.0 m depth to invert	No.	3.00	139302.84	417908.52
	<b>For Sewer Dia - 1200 mm</b>				
1)	Upto 5 m depth to invert	No.	2.00	136383.79	272767.58
1)	Upto 5.5 m depth to invert	No.	6.00	148433.46	890600.76
2)	Upto 6.0 m depth to invert	No.	4.00	186266.08	745064.32
E)	<b>Bedding</b>				
13	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum	9107.06	805.00	7331186.44
	BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8				
F)	<b>TIMBERING AND BARRACADING</b>				
14	<b>Close timbering</b> in trenches including strutting. Shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
a)	Depth not exceeding 1.5 m	sqm	93171.00	119.40	11124617.40
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	40510.23	124.60	5047574.16
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	9122.80	137.50	1254385.00
d)	Depth more than 4.5 m and upto 6.0 m	sqm	2536.92	145.50	369121.86
	BSR-BCD-20; Item-2.16, Pg-94				
15	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) <b>if required to be left permanently in position</b> (Face area of timber permanently left to be measured)	sqm	7267.05	1593.10	11577133.05
	BSR-BCD-20; Item-2.19, Pg-95				
16	<b>Open timbering</b> 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	5266.08	61.40	323337.15
	BSR-BCD-20; Item-2.20, Pg-95				
17	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) <b>if required to be left permanently in position</b> (Face area of timber permanently left to be measured)	sqm	263.30	817.90	215356.24
	BSR-BCD-20; Item-2.23, Pg-95				
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	96074.60	84.00	8070266.40
	RUIDP SOR 17 Item-4.26, Pg-13				
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
19	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	5207.06	342.00	1780815.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
	<b>Restoration of New bituminous road</b>				
20	<b>Dismantling of cement concrete pavement</b> 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	19132.92	1520.00	29082037.49
	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	374.60	84.50	31653.70
	BSR-BCD-20; Item-15.43.1, Pg-225				
	Cement Concrete Road Restoration				
22	<b>Supply and stacking of Fly ash</b> conforming to IRC- 58 at site, excluding carriage, loading , unloading & stacking up to any lead (measured stacks will be reduced by 20% for payment).	Cum	3796.83	10.00	37968.32
	BSR-BCD-20; Item-2.39, Pg-97				
23	<b>Filling with available fly ash and earth</b> (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 – in charge, including compacting each layer by rolling/ rramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum	3164.03	116.50	368609.15
	BSR-BCD-20; Item-2.40, Pg-97				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
24	<b>Cement Concrete Pavement</b> (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	6328.05	4461.00	28229448.89
	<b>Restoration of WMM Road</b>				
	RCD/SOR-18; Item-6.2; Pg-138				
25	<b>Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : Construction of granular sub-base</b> 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	93.65	637.00	59655.05
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
26	Providing, laying, spreading and compacting 150 mm graded stone aggregate to <b>Wet Mix Macadam (WMM)</b> : 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	56.19	896.00	50346.24
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
27	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	720.05	904.00	650926.10
	<b>Grading III:</b> 100 mm thick	cum	720.05	949.00	683328.40
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
28	<b>Prime coat</b> (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	7200.51	30.30	218175.45
	BSR-RCD-18-Item 5.1, Pg-84				
29	<b>Tack Coat:</b> 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	7200.51	11.10	79925.66
	BSR-RCD-18-Item 5.2, Pg-84				
30	<b>Bituminous Macadam</b> (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	288.02	5406.00	1557038.28
	BSR-RCD-18-Item 5.3 (I), Pg-84				
31	<b>Bituminous Penetration Macadam</b> (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	7200.51	246.00	1771325.46
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
32	<b>20mm thick Open-Graded Premix Carpet</b> 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	7200.51	110.00	792056.10
	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85				
33	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	648.50	435.50	282423.30
	In Cement Mortar	cum	648.50	922.50	598244.52
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				
34	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	sqm	2161.68	100.10	216384.02
	BSR-BCD-20; Item-15.25, Pg-224				
35	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead:				
	1:3:6 or richer mix	cum	240.19	911.40	218905.98
	1:4:8 or leaner mix	cum	240.19	563.20	135273.04
	BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; Item-15.2.2, Pg-222				
36	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	cum	480.37	1324.40	636206.00
	BSR-BCD-20; Item-15.3, Pg-371				
37	<b>Installation of laboratory</b> 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	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	km	9.61	11264.00	108218.43
	Analysis				
39	Construction of 450 mm internal dia circular <b>Road side Chamber</b> in all types of soil with 300mm thick RR masonry 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.	240.00	10102.00	2424480.00
	Analysis				
40	Providing PVC-U pipes as per IS 15328 <b>drop connection</b> 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 wall, making required channels complete as per standard design and specifications and/ or as the directed of the Engineer:				
<b>A)</b>	280 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	54	17700.00	955800.00
ii)	Upto 1.5 m drop	No.	50	19105.00	955250.00
iii)	upto 2 m drop	No.	46	20510.00	943460.00
iv)	upto 2.5 m drop	No.	46	21915.00	1008090.00
vi)	upto 3.0 m drop	No.	41	23320.00	956120.00
vii)	upto 3.5 m drop	No.	10	24725.00	247250.00

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
<b>B)</b>	315 mm dia				
ii)	Upto 1.5 m drop	No.	1.0	29825.00	29825.00
	SOR-RUIDP-17; Item-17.66.4 to 17.66.5 & Item 17.67.4 to 17.67.5 & Item Pg.-90				
<b>41</b>	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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.				
	SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93				
	In all Types of soil				
i)	200 mm internal diameter	M	543.9	7180	3905202.00
ii)	250 mm internal diameter	M	8	7420	59360.00
iii)	300 mm internal diameter	M	16.5	10600	174900.00
iv)	450 mm internal diameter	M	12	15450	185400.00
v)	500 mm internal diameter	M	7.4	17200	127280.00
<b>42</b>	Providing, laying and jointing RCC NP4 pipe with cement mortar joints by <b>trenchless method</b> 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 & 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, Pg.-92				
	In all Types of soil				
i)	600 mm internal diameter	M	7.3	18200	132860.00
ii)	900 mm internal diameter	M	10	23800	238000.00
iii)	1000 mm internal diameter	M	10	24600	246000.00
iv)	1100 mm internal diameter	M	16	27600	441600.00
v)	1200 mm internal diameter	M	8	30400	243200.00
<b>43</b>	Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS/HDPE/RCC pipe in <b>trenchless technology</b> , with proper protection at three sides with shoring sheets/ wooden planks and ISMB's, maintaining during pushing/ pulling 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.-94				
	In all Types of soil				
i)	Upto 4 m dia	Nos	6.00	48400	290400.00
i)	Upto 5 m dia	Nos	8.00	96800	774400.00
i)	Upto 6 m dia	Nos	5.00	145200	726000.00
				<b>Sub Total A</b>	<b>326244808</b>
<b>44</b>	<b>Carriage of Material</b>				
	Sand	t.km	66902.10	9.4	628879.74
	Aggregate	t.km	314752.80	9.4	2958676.32
	Bricks	t.km	80206.80	9.4	753943.92
				<b>Sub Total B</b>	<b>4341500</b>
	<b>Total Cost (A+B)</b>				<b>330586308</b>

SEWAGE COLLECTION SYSTEM IN ZONE B6 (MPS)					
COST ESTIMATE					
Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
A) 1	<b>Clearing jungle</b> 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.				
	SOR-BCD-20; It.-2.32; Pg.-96	sqm	5000.00	6.55	32750.00
B) 2	<b>EXCAVATION AND REFILLING</b> Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	cum	110761.64	360.70	39951723.91
b)	From 1.5 m to 3.0 m	cum	47512.47	407.00	19337575.29
c)	From 3.0 m to 4.5 m	cum	28210.83	453.30	12787971.33
d)	From 4.5 m to 6 m	cum	19581.36	499.60	9782846.64
e)	From 6 m to 7.5 m	cum	4545.10	545.90	2481171.54
	SOR-BCD-20; It.-2.8.1; Pg.-93 and 2.27.1 Pg-96				
	<b>Ordinary Rock and hard Rock</b>				
3	Excavation work in foundation trenches including extra excavation for socket portion but not exceeding 1.5 m in width including dressing of sides and ramming of bottoms lift up to 1,5m, including getting cut the excavated soil and disposal of surplus excavated soils as directed, within a lead of 50 m.				
	Ordinary Rock				
a)	From 6 m to 7.5 m	cum	909.02	651.70	592408.68
	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96				
	Hard rock (blasting prohibited)				
a)	From 6 m to 7.5 m	cum	681.77	1251.20	853024.87
	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96				
4	<b>Filling available</b> 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	82316.44	116.50	9589865.33
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	22500.00	102.60	2308500.00
	BSR-BCD-20-Item 2.25; Pg-96				
	Disposal of Excavated Earth				
6	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	cum	128294.97	262.50	33677428.58
	BSR - RCD-18- Item- 3.11, P-45 & RA				
C) 1)	<b>PIPE MATERIAL</b> Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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	57417.30	636.51	36546685.62
	250 mm internal diameter	M	802.30	875.89	702726.55
	600 mm internal diameter	M	17.60	3640.04	64064.70
	900 mm internal diameter	M	260.40	6006.81	1564173.32
	1800 mm internal diameter	M	201.20	20331.62	4090721.94
	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				



Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
II)	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP4 class</b> (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	815.30	677.51	552373.90
	250 mm internal diameter	M	863.80	947.89	818787.38
	300 mm internal diameter	M	1264.60	1238.77	1566548.54
	350 mm internal diameter	M	721.70	1865.65	1346439.61
	450 mm internal diameter	M	434.20	2590.41	1124756.02
	500 mm internal diameter	M	216.30	2962.28	640741.16
	600 mm internal diameter	M	315.80	3960.04	1250580.63
	900 mm internal diameter	M	1225.40	6536.81	8010206.97
	1000 mm internal diameter	M	292.10	7416.57	2166380.10
	1400 mm internal diameter	M	607.80	14478.60	8800093.08
	1600 mm internal diameter	M	2412.80	18044.11	43536828.61
	1800 mm internal diameter	M	2367.60	23431.62	55476703.51
	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				
<b>7</b>	<b>Property connection (House connection)</b>				
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)				
1)	110 mm dia	m	189670.00	240.50	45615635.00
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase				
<b>8</b>	Providing and placing in position precast <b>RCC in vertical post</b> 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	702.00	8677.50	6091605.00
	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48+30% Increase				
<b>D)</b>	<b>MANHOLES</b>				
<b>9</b>	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :				
	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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 paid for separately) : with sewer bricks conforming to IS: 4885			7034.60	
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis			4834.92	
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>				
	<b>For Sewer Diameter - upto 400 mm dia</b>				
1)	Upto 1.225 m depth to invert	No.	670.00	11972.27	8021417.63
2)	Upto 1.50 m depth to invert	No.	872.00	13735.33	11977204.73
3)	Upto 1.65 m depth to invert	No.	241.00	15179.83	3658339.12
	BSR-BCD'20; Item-19.9 and 19.10-Pg-294&295 + Rate Analysis				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
10	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :				
	<b>1.68 m deep with SFRC Cover and frame</b> (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 paid for separately) : with sewer bricks conforming to IS:4885			13772.90	
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis			6280.70	
	<b>Extra depth</b> for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :				
	<b>For Sewer Diameter - upto 700 mm dia</b>				
1)	Upto 1.68m depth to invert	No.	32.00	19084.98	610719.30
2)	Upto 2.00 m depth to invert	No.	310.00	22035.67	6831057.44
3)	Upto 2.30 m depth to invert	No.	163.00	24820.10	4045676.00
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis				
11	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :				
	<b>2.30 m deep with SFRC Cover and frame</b> (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 paid for separately) :with sewer bricks conforming to IS:4885				
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis			30702.20	
	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :			15057.10	
	<b>For Sewer Diameter - upto 800 mm dia</b>				
1)	Upto 2.65 m depth to invert	No.	136.00	49363.68	6713460.50
2)	Upto 3.00 m depth to invert	No.	96.00	56387.03	5413154.74
3)	Upto 3.50 m depth to invert	No.	92.00	66586.38	6125947.28
4)	Upto 4.00 m depth to invert	No.	71.00	76785.74	5451787.42
5)	Upto 4.25 m depth to invert	No.	38.00	83241.91	3163192.74
6)	Upto 4.50 m depth to invert	No.	6.00	88124.42	528746.50
7)	Upto 5.00 m depth to invert	No.	16.00	98470.42	1575526.71
8)	Upto 5.50 m depth to invert	No.	25.00	108816.42	2720410.56

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
12	Construction of <b>RCC Circular Manhole</b> 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.				
	Rate Analysis				
	<b>For Sewer Dia 900 mm</b>				
1)	Upto 2.3 m depth to invert	No.	1.00	61394.27	61394.27
2)	Upto 3.0 m depth to invert	No.	1.00	73098.58	73098.58
3)	Upto 3.5 m depth to invert	No.	2.00	80045.29	160090.58
4)	Upto 4.0 m depth to invert	No.	7.00	87587.20	613110.40
5)	Upto 4.5 m depth to invert	No.	13.00	94474.03	1228162.41
6)	Upto 5.0 m depth to invert	No.	16.00	103911.81	1662589.01
7)	Upto 5.5 m depth to invert	No.	10.00	109304.42	1093044.15
8)	Upto 6 m depth to invert	No.	5.00	118596.65	592983.23
9)	Upto 6.5 m depth to invert	No.	1.00	132272.88	132272.88
	<b>For Sewer Dia 1000 mm to 1100 mm</b>				
1)	Upto 5.5 m depth to invert	No.	2.00	128915.53	257831.06
2)	Upto 6 m depth to invert	No.	5.00	139302.84	696514.20
3)	Upto 6.5 m depth to invert	No.	3.00	150074.44	450223.32
	<b>For Sewer Dia 1400 mm</b>				
1)	Upto 5.5 m depth to invert	No.	1.00	165912.80	165912.80
2)	Upto 6 m depth to invert	No.	12.00	179319.02	2151828.24
3)	Upto 6.5 m depth to invert	No.	7.00	192725.26	1349076.82
4)	Upto 7.0 m depth to invert	No.	1.00	205861.55	205861.55
	<b>For Sewer Dia 1600 mm</b>				
1)	Upto 5.0 m depth to invert	No.	10.00	208822.01	2088220.08
2)	Upto 5.5 m depth to invert	No.	16.00	220286.65	3524586.34
3)	Upto 6 m depth to invert	No.	19.00	304203.13	5779859.47
4)	Upto 6.5 m depth to invert	No.	20.00	318613.02	6372260.40
5)	Upto 7.0 m depth to invert	No.	10.00	333015.07	3330150.70
	<b>For Sewer Dia 1800 mm</b>				
1)	Upto 3.0 m depth to invert	No.	1.00	158214.90	158214.90
2)	Upto 3.5 m depth to invert	No.	2.00	171068.17	342136.34
3)	Upto 4.0 m depth to invert	No.	4.00	184911.20	739644.81
4)	Upto 4.5 m depth to invert	No.	3.00	197398.69	592196.06
5)	Upto 5.0 m depth to invert	No.	12.00	209737.89	2516854.73
6)	Upto 5.5 m depth to invert	No.	15.00	221252.82	3318792.23
7)	Upto 6.0 m depth to invert	No.	7.00	301932.61	2113528.25
8)	Upto 6.5 m depth to invert	No.	2.00	312920.94	625841.89
	Rate Analysis				
E)	<b>Bedding</b>				
13	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> ) BSR-BCD-20; Sr. No.-1.1; Pg.-89+Item-0295, Pg.-8	cum	23123.84	805.00	18614689.55
	<b>F) TIMBERING AND BARRACADING</b>				
14	<b>Close timbering</b> 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	140275.20	119.40	16748858.88
b)	Depth exceeding 1.5 m but not exceeding 3 m	sqm	70528.96	124.60	8787907.92
c)	Depth exceeding 3.0 m but not exceeding 4.5 m	sqm	29471.16	137.50	4052285.05
d)	Depth more than 4.5 m and upto 6.0 m	sqm	16680.28	145.50	2426981.03
e)	Depth more than 6.0 m and upto 7.5 m	sqm	3665.07	153.50	562588.86
	BSR-BCD-20; Item-2.16, Pg-94				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
14	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured) BSR-BCD-20; Item-2.19, Pg-95	sqm	13031.03	1593.10	20759739.95
15	<b>Open timbering</b> 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 BSR-BCD-20; Item-2.20, Pg-95	sqm	6974.62	61.40	428241.94
16	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured) BSR-BCD-20; Item-2.23, Pg-95	sqm	348.73	817.90	285227.26
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. RUIDP SOR 17 Item-4.26, Pg-13	m	140472.40	84.00	11799681.60
<b>G) ROAD RESTORATION AND DISMENTLING WORKS</b>					
18	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b> RCD/SOR-18; Item-2.5-II A; Pg-29	cum	5178.02	342.00	1770883.87
19	<b>Dismantling of cement concrete pavement</b> 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. RCD/SOR-18; Item-2.6; Pg-29	cum	39613.92	1520.00	60213160.68
20	Dismantling <b>Water bound macadam road</b> including stacking of serviceable material and disposal of unserviceable material within 50 metres lead BSR-BCD-20; Item-15.43.1, Pg-225 <b>Cement Concrete Road Restoration</b>	Sq m	782.55	84.50	66125.48
21	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage, loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment). BSR-BCD-20; Item-2.39, Pg-97	Cum	5586.77	10.00	55867.72
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. BSR-BCD-20; Item-2.40, Pg-97	Cum	4655.64	116.50	542382.41
23	<b>Cement Concrete Pavement</b> (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 <b>WMM Road Restoration</b> RCD/SOR-18; Item-6.2; Pg-138	cum	9311.29	4461.00	41537646.85

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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	cum	195.64	637.00	124621.09
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
25	Providing, laying, spreading and compacting 150 mm graded stone aggregate to <b>Wet Mix Macadam (WMM)</b> : 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	117.38	896.00	105174.72
	SOR-RCD-18; Item-4.12 ; Pg.-76				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
26	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	413.49	904.00	373792.25
	<b>Grading III:</b> 100 mm thick	cum	413.49	949.00	392399.16
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-72, BSR-RCD-18-Item 4.9 A(iii) a, Pg-72				
27	<b>Prime coat</b> (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	4134.87	30.30	125286.56
	BSR-RCD-18-Item 5.1, Pg-84				
28	<b>Tack Coat:</b> 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	4134.87	11.10	45897.06
	BSR-RCD-18-Item 5.2, Pg-84				
29	<b>Bituminous Macadam</b> (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	165.39	5406.00	894124.29
	BSR-RCD-18-Item 5.3 (I), Pg-84				
30	<b>Bituminous Penetration Macadam</b> (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	4134.87	246.00	1017178.02
	BSR-RCD-18-Item 5.4 A, Pg-84				
31	<b>20mm thick Open-Graded Premix Carpet</b> 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	4134.87	110.00	454835.70
	SOR-RCD-GoB-18-Item 5.10 (i), Pg- 85				
32	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.				
	In Lime Mortar	cum	948.19	435.50	412936.18
	In Cement Mortar	cum	948.19	922.50	874704.08
	BSR-BCD-20; Item-15.9.1, Pg-222, BSR-BCD-20; Item-15.9.2, Pg-222				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	sqm	3160.63	100.10	316378.96
	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	351.18	911.40	320066.36
	1:4:8 or leaner mix	cum	351.18	563.20	197785.14
	BSR-BCD-20; Item-15.2.1, Pg-222, BSR-BCD-20; 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	702.36	1324.40	930208.23
	BSR-BCD-20; Item-15.3, Pg-371				
36	<b>Installation of laboratory</b> 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	<b>Utility Shifting:</b> Repairing the damaged of water supply pipe line, electrical cable, Utility lines during the excavation & laying of drainage pipe	km	7.02	11264.00	79114.06
	Analysis				
38	Construction of 450 mm internal dia circular <b>Road side Chamber</b> in all types of soil with 300mm thick RR masonry 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.	351.00	10102.00	3545802.00
	Analysis				
39	Providing <b>PVC-U pipes as per IS 15328 drop connection</b> 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 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 wall, making required channels complete as per standard design and specifications and/ or as the directed of the Engineer:				
<b>A)</b>	280 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	66.00	17700.00	1168200.00
ii)	Upto 1.5 m drop	No.	99.00	19105.00	1891395.00
iii)	upto 2 m drop	No.	56.00	20510.00	1148560.00
iv)	upto 2.5 m drop	No.	73.00	21915.00	1599795.00
v)	upto 3.0 m drop	No.	44.00	23320.00	1026080.00
vi)	upto 3.5 m drop	No.	76.00	24725.00	1879100.00
vii)	upto 4 m drop	No.	56.00	26130.00	1463280.00
viii)	upto 4.5 m drop	No.	5.00	27535.00	137675.00
	SOR-RUIDP-17; Item-17.66.4 and Item 17.67.4 to 17.67.4 Pg.-89,90				
<b>B)</b>	315 mm dia				
i)	For 0.6 m to 1.0 m drop	No.	1.00	27700.00	27700.00
ii)	Upto 1.5 m drop	No.	3.00	29825.00	89475.00
iii)	upto 2 m drop	No.	2.00	31950.00	63900.00
<b>IV)</b>	upto 3 m drop	No.	3.00	36200.00	108600.00
	SOR-RUIDP-17; Item-17.66.4 to 17.66.5 & Item 17.67.4 to 17.67.5 & Item Pg.-90				

Sr. No.	Description of work	Units	Qty.	Rate in Rs.	Amount in Rs.
40	Providing and laying RCC NP4 pipe jointing with cement mortar joints by <b>trenchless method</b> 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.				
	SOR-RUIDP-17; Item-17.81.1 to 17.81.5.Pg.-93				
	In all Types of soil				
i)	200 mm internal diameter	M	1097	7180	7876460.00
ii)	250 mm internal diameter	M	15	7420	111300.00
iii)	300 mm internal diameter	M	7	10600	74200.00
iv)	350 mm internal diameter	M	12	12150	145800.00
v)	450 mm internal diameter	M	15	15450	231750.00
vi)	500 mm internal diameter	M	5	17200	86000.00
41	Providing, laying and jointing RCC NP4 pipe with cement mortar joints by <b>trenchless method</b> adopting any suitable technology below ground at required depth under running traffic condition as per the direction of NHA 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 & 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, Pg.-92				
	In all Types of soil				
i)	900 mm internal diameter	M	7	23800	166600.00
ii)	1000 mm internal diameter	M	8	24600	196800.00
iii)	1400 mm internal diameter	M	22	36100	794200.00
iv)	1600 mm internal diameter	M	5	39600	198000.00
v)	1800 mm internal diameter	M	6	48700	292200.00
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 <b>trenchless technology</b> , with proper protection at three sides with shoring sheets/ wooden planks and ISMB's, maintaining during pushing/ pulling 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.-94				
	In all Types of soil				
i)	Upto 4.0 depth	Nos	24.00	48400	1161600.00
ii)	Upto 5.0 depth	Nos	17.00	96800	1645600.00
iii)	Upto 6.0 depth	Nos	15.00	145200	2178000.00
iv)	Upto 7.0 depth	Nos	8.00	193600	1548800.00
				<b>Sub Total A</b>	<b>687267881</b>
43	<b>Carriage of Material</b>				
	Sand	t.km	109356.20	9.4	1027948.28
	Aggregate	t.km	625804.00	9.4	5882557.60
	Bricks	t.km	104946.40	9.4	986496.16
				<b>Sub Total B</b>	<b>7897002</b>
	<b>Total Cost (A+B)</b>				<b>695164883</b>

**SEWERAGE SYSTEM FOR GAYA CITY****Cost Summary - Pumping Station****Cost in Rs. Lakh**

Sr. No.	Name of Sub-work	Pumping Station		
		IPS2	IPS2A	IPS3
<b>A</b>	<b>Civil Works</b>			
1	Screen Chamber	7.11		8.29
2	Pump House (Wet well and Superstructure)	59.05		52.34
3	Manifold Chamber	6.79		5.82
4	Butterfly Valve Chamber	2.30		2.32
5	Flowmeter Valve Chamber	2.22		2.22
6	D.G. Room	15.66		15.66
7	Diesel Storage Room	7.22		7.22
8	Store Room	5.74		5.74
9	Metering Room	9.70		9.70
10	Internal Roads	2.48		2.35
11	Compound Wall	11.43		10.97
12	Material Carrying Charges	1.61		1.54
13	Hiring of vehicle	36.00		
<b>B</b>	<b>Mechanical Works</b>	33.40		33.58
<b>C</b>	<b>Electrical Works</b>	42.60		54.96
<b>D</b>	<b>Instrumentation and Control</b>	35.53		35.53
<b>e</b>	<b>Site Development</b>	20.30		
	<b>Total for Pumping Station</b>	<b>299.14</b>		<b>248.24</b>



**SEWERAGE SYSTEM FOR GAYA CITY****Cost Summary - Pumping Station**

Sr. No.	Name of Sub-work	Cost in Rs. Lakh	
		IPS2	IPS3
<b>A</b>	<b>Civil Works</b>		
1	Screen Chamber	7.11	8.29
2	Pump House (Wet well and Superstructure)	59.05	52.34
3	Manifold Chamber	6.79	5.82
4	Butterfly Valve Chamber	2.30	2.32
5	Flowmeter Valve Chamber	2.22	2.22
6	D.G. Room	15.66	15.66
7	Diesel Storage Room	7.22	7.22
8	Store Room	5.74	5.74
9	Metering Room	9.70	9.70
10	Internal Roads	2.48	2.35
11	Compound Wall	11.43	10.97
12	Material Carrying Charges	1.61	1.54
13	Hiring of vehicle	36.00	
<b>B</b>	<b>Mechanical Works</b>	33.40	33.58
<b>C</b>	<b>Electrical Works</b>	42.60	54.96
<b>D</b>	<b>Instrumentation and Control</b>	35.53	35.53
<b>e</b>	<b>Site Development</b>	20.30	
	<b>Total for Pumping Station</b>	<b>299.14</b>	<b>248.24</b>

SEWERAGE SYSTEM FOR GAYA CITY  
I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations

Table 1: Material Statement for Pumping Station 1 (IPS2). Columns include Pumping Stations, Concrete (C:S:A), Bricks, Plaster, Flooring, Aggregate for Internal Road Works, RCC, Bricks, and Plaster. Rows list various components like Screen Chamber, Wetwell & Superstructure, etc., with a total row at the bottom.

Table 2: Material Statement for Pumping Station 2 (IPS3). Columns include Pumping Stations, Concrete (C:S:A), Bricks, Plaster, Flooring, Aggregate for Internal Road Works, RCC, Bricks, and Plaster. Rows list various components like Screen Chamber, Wetwell & Superstructure, etc., with a total row at the bottom.

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS2**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	36.86	360.70	13294
b)	From 1.5 m to 3.0 m	Cum	36.86	407.00	15000
c)	From 3.0 m to 4.5 m	Cum	36.86	453.30	16706
d)	From 4.5 m to 6 m	Cum	23.83	499.60	11907
e)	From 6 m to 7.5 m	Cum			
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	124.71	116.50	14529
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	9.68	262.50	2542
	BSR - RCD-18- Item- 3.11, P-45				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.00	20400
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	9.93	3953.40	39247
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	44.09	5018.60	221269
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	3.53	68500.00	241612
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.20	203.00	1462
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	233.77	356.40	83316
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	5.75	412.20	2370
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	27.00	290.50	7844
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	8.20	17.80	146
12	<b>Railing:</b> 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 material, labour. <b>at walkway: Around platform</b>				
	RUIDP-2017, Item-10.20, Pg.-34	RM	9.40	2,040.00	19176
	<b>Total</b>				<b>710820</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS3**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	36.86	360.70	13294
b)	From 1.5 m to 3.0 m	Cum	36.86	407.00	15000
c)	From 3.0 m to 4.5 m	Cum	36.86	453.30	16706
d)	From 4.5 m to 6 m	Cum	36.86	499.60	18413
e)	From 6 m to 7.5 m	Cum	12.29	545.90	6706
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg-96				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	1.23	901.00	1107
b)	From 7.5 m to 9.0 m	Cum	0.00	984.10	0
c)	From 9.0 m to 10.5 m				
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
	<b>Hard rock (blasting prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.61	1500.50	922
b)	From 7.5 m to 9.0 m	Cum	0.00	1583.60	0
c)	From 9.0 m to 10.5 m				
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
3	<b>Filling available</b> 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	57.80	116.50	6734
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	101.90	262.50	26750
	BSR - RCD-18- Item- 3.11, P-45				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.00	20400
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	9.93	3953.40	39247
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	50.67	5018.60	254300
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.05	68500.00	277680
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.20	203.00	1462
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	277.65	356.40	98954
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	5.75	412.20	2370
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	33.00	290.50	9587
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	8.20	17.80	146
12	<b>Railing:</b> 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 material, labour. <b>at walkway: Around platform</b>				
	RUIDP-2017, Item-10.20, Pg.-34	RM	9.40	2,040.00	19176
	<b>Total</b>				<b>828954</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS2**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	1114.40	654.70	7296
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	104.10	360.70	37549
b)	From 1.5 m to 3.0 m	Cum	104.10	407.00	42369
c)	From 3.0 m to 4.5 m	Cum	104.10	453.30	47189
d)	From 4.5 m to 6.0 m	Cum	104.10	499.60	52008
e)	From 6.0 m to 7.5 m	Cum	104.10	545.90	56828
f)	From 7.5 m to 9.0 m	Cum	62.46	592.20	36989
g)	From 9.0 m to 10.5 m	Cum			
h)	From 10.5 m to 12.0 m	Cum			
i)	From 12.0 m to 13.5 m				
j)	From 13.5 m to 15.0 m				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	10.41	901.00	9379
b)	From 7.5 m to 9.0 m	Cum	12.49	984.10	12293
c)	From 9.0 m to 10.5 m	Cum	0.00	1067.20	0
d)	From 10.5 m to 12.0 m				
e)	From 12.0 m to 13.5 m				
f)	From 13.5 m to 15.0 m				
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	5.21	1500.50	7810
b)	From 7.5 m to 9.0 m	Cum	6.25	1583.60	9891
c)	From 9.0 m to 10.5 m	Cum	0.00	1666.70	0
d)	From 10.5 m to 12.0 m				
e)	From 12.0 m to 13.5 m				
f)	From 13.5 m to 15.0 m				
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	69.67	116.50	8117
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	513.29	262.50	134739
	BSR - RCD-18- Item- 3.11, P-45				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.00	510000
	BSR-BCD-20-Item 2.25; Pg-96				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>PCC:</b> 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	33.29	3953.40	131609
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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:				
8.1	<b>RCC Grade M-30</b>	Cum	147.74	5018.60	741448
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	<b>RCC Grade M -25</b>	Cum	49.08	5704.70	279987
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	21.65	68500.00	1483039
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	35.53	203.00	7212
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	440.83	356.40	157113
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	239.47	412.20	98710
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	150.75	362.90	54707
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	106.46	470.60	50100
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	31.32	5840.00	182890
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	311.55	157.40	49038
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distemping with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	451.88	97.20	43923
	BSR - BCD-20- Item- 13.77, P-206				



Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	34.27	456.50	15644
	BSR-BCD-20; Item-11.4; Pg-174				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-168				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	83.32	809.00	67406
	BSR-BCD-20; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	29.00	290.50	8425
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening in the floor platform</b>	RM	17.80	2040.00	36312
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make. made of required size of M.S. laths inter locked together through their intire 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) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	29.00	290.50	8425
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequered plate</b> 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	16.00	4513.56	72217
	(Item No.6, Section M, MJP Page 266 DSR 2012-13)				
24	<b>230 thick rubble soling:</b> Supplying, filling, spreading & leveling 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	15.96	1235.90	19725
	BSR-BCD-20; Item-24.5, Pg-320				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.00	1020
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>5904812</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS3**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	1036.00	654.70	6783
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	93.32	360.70	33661
b)	From 1.5 m to 3.0 m	Cum	93.32	407.00	37981
c)	From 3.0 m to 4.5 m	Cum	93.32	453.30	42302
d)	From 4.5 m to 6.0 m	Cum	93.32	499.60	46623
e)	From 6.0 m to 7.5 m	Cum	64.08	545.90	34981
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
h)	From 10.5 m to 12.0 m	Cum			
i)	From 12.0 m to 13.5 m	Cum			
j)	From 13.5 m to 15.0 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	6.41	901.00	5774
b)	From 7.5 m to 9.0 m	Cum	0.00	984.10	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1067.20	0
d)	From 10.5 m to 12.0 m	Cum	0.00	1150.30	0
e)	From 12.0 m to 13.5 m	Cum	0.00	1233.40	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1316.50	0
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	3.20	1500.50	4808
b)	From 7.5 m to 9.0 m	Cum	0.00	1583.60	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1666.70	0
d)	From 10.5 m to 12.0 m	Cum	0.00	1749.80	0
e)	From 12.0 m to 13.5 m	Cum	0.00	1832.90	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1916.00	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	54.73	116.50	6376
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	382.63	262.50	100440
	BSR - RCD-18- Item- 3.11, P-45				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.00	510000

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR-BCD-20-Item 2.25; Pg-96				
7	<b>PCC:</b> 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	27.89	3953.40	110260
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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-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:				
8.1	<b>RCC Grade M-30</b>	Cum	121.36	5018.60	609057
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				
	All work above Plinth level upto floor V Level.				
8.2	<b>RCC Grade M -25</b>	Cum	43.72	5704.70	249409
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	18.16	68500.00	1243878
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	33.17	203.00	6733
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	347.16	356.40	123729
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	207.54	412.20	85548
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	130.83	362.90	47478
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	94.97	470.60	44693
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	30.08	5840.00	175654
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	295.87	157.40	46570
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	413.78	97.20	40219
	BSR - BCD-20- Item- 13.77, P-206				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	29.18	456.50	13321
	BSR-BCD-20; Item-11.4; Pg-174				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-168				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	75.43	809.00	61023
	BSR-BCD-20; Item-22.8; Pg-310				
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	22.05	3635.80	80169
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	24.00	290.50	6972
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening</b> in the floor platform	RM	17.00	2040.00	34680
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioiving 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	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	24.00	290.50	6972
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequerred plate</b> 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	15.00	4513.56	67703
	(Item No.6, Section M, MJP Page 266 DSR 2012-13)				
24	<b>230 thick rubble soling:</b> Supplying, filling, spreading & leveling 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	14.31	1235.90	17686
	BSR-BCD-20; Item-24.5, Pg-320				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.00	1020
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>5234286</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- MANIFOLD CHAMBER IPS2**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	74.99	360.70	27049
b)	From 1.5 m to 3.0 m	Cum	74.99	407.00	30521
c)	From 3.0 m to 4.5 m	Cum	20.00	453.30	9066
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	45.18	116.50	5263
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	124.80	262.50	32760
	BSR - RCD-18- Item- 3.11, P-45				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.00	10200
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	4.56	3953.40	18028
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	41.12	5704.70	234577
	BSR-BCD-20; Item-5.33.2, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	3.29	68500.00	225338
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.31	203.00	1687
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	179.20	356.40	63867

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	35.95	412.20	14819
	BSR - BCD-20- Item- 5.9.3, Pg-84				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	8.28	362.90	3005
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	49.00	17.80	872
	<b>Total</b>				<b>679376</b>



**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- MANIFOLD CHAMBER IPS3**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	63.66	360.70	22962
b)	From 1.5 m to 3.0 m	Cum	63.66	407.00	25910
c)	From 3.0 m to 4.5 m	Cum	16.98	453.30	7697
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	40.56	116.50	4725
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	103.74	262.50	27232
	BSR - RCD-18- Item- 3.11, P-45				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	3.84	3953.40	15181
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	35.18	5704.70	200691
	BSR-BCD-20; Item-5.33.2, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.81	68500.00	192786
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.44	203.00	1510
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	158.90	356.40	56632

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	29.84	412.20	12300
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	4.02	362.90	1459
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	41.44	17.80	738
	<b>Total</b>				<b>582407</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS2**

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	23.63	360.70	8523
b)	From 1.5 m to 3.0 m	Cum	23.63	407.00	9617
c)	From 3.0 m to 4.5 m	Cum	6.30	453.30	2856
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.58	116.50	2631
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.98	262.50	8132
	BSR - RCD-18- Item- 3.11, P-45				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.34	3953.00	5297
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	15.03	4952.60	74438
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.20	63500.00	76352
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.08	203.00	828
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	80.50	356.40	28690

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.75	17.80	263
	<b>Total</b>				<b>230211</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS3**

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	23.63	360.70	8523
b)	From 1.5 m to 3.0 m	Cum	23.63	407.00	9617
c)	From 3.0 m to 4.5 m	Cum	6.30	453.30	2856
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.58	116.50	2631
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.98	262.50	8132
	BSR - RCD-18- Item- 3.11, P-45				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.34	3953.40	5298
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	15.03	4689.20	70479
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.20	68500.00	82364
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.08	203.00	828
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	80.50	356.40	28690

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.75	17.80	263
	<b>Total</b>				<b>232265</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- FLOW METER CHAMBER IPS2**

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	22.05	360.70	7953
b)	From 1.5 m to 3.0 m	Cum	22.05	407.00	8974
c)	From 3.0 m to 4.5 m	Cum	5.88	453.30	2665
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.24	116.50	2591
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	27.74	262.50	7282
	BSR - RCD-18- Item- 3.11, P-45				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.24	3953.40	4902
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	14.36	4689.20	67337
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.15	68500.00	78693
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.02	203.00	816
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	79.10	356.40	28191

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	13.70	17.80	244
	<b>Total</b>				<b>222232</b>



**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- FLOW METER CHAMBER IPS3**

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	22.05	360.70	7953
b)	From 1.5 m to 3.0 m	Cum	22.05	407.00	8974
c)	From 3.0 m to 4.5 m	Cum	5.88	453.30	2665
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.24	116.50	2591
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	27.74	262.50	7282
	BSR - RCD-18- Item- 3.11, P-45				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.24	3953.40	4902
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	14.36	4689.20	67337
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.15	68500.00	78693
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.02	203.00	816
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	79.10	356.40	28191

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	13.70	17.80	244
	<b>Total</b>				<b>222232</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS2**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	202.55	360.70	73061
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	23.64	3953.40	93466
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	158.24	116.50	18435
	BSR-BCD-20-Item 2.26; Pg-104				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.31	262.50	11632
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	28.90	4952.60	143140
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	76000.00	307108
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	38.40	203.00	7795
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.90	45979
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	110.88	362.90	40238
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade BSR - BCD-20- Item- 13.77, P-206	Sqm	462.46	90.00	41621
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	2394.00	28728
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	740.00	3330
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>15,65,734</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- SITE DEVELOPMENT**

<b>Sr. No.</b>	<b>Item Description as per BSR</b>	<b>Unit</b>	<b>Qty</b>	<b>Rate Rs.</b>
<b>1</b>	Bailing out of water stagnated in the low level area before construction of pumping station by using diesel pumpsets and disposing the stagnated water to the nearest drains by laying temporary pipes for disposing etc complete,	KL	11500.00	102.60
	BSR-BCD-20-Item 2.25 ; Pg-96			
<b>2</b>	Raising the ground level of the Pumping station by filling with excavated earth including cost of earth, conveyance of earth and compaction in layers	Cum	7300.00	116.50
	BSR-BCD-20; Item 2.26; Pg-96			
				<b>Total</b>

Amount (Rs.)
1179900
850450
<b>20,30,350</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS3**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	202.55	360.70	73061
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	23.64	3953.40	93466
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	158.24	116.50	18435
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.31	262.50	11632
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	28.90	4952.60	143140
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	76000.00	307108
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	38.40	203.00	7795
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.90	45979
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	110.88	362.90	40238
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
9	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade BSR - BCD-20- Item- 13.77, P-206	Sqm	462.46	90.00	41621
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	2394.00	28728
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	740.00	3330
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>15,65,734</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS2**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	67.52	360.70	24353.7
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	10.45	3953.40	41328.8
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	50.17	116.50	5845.3
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	17.34	262.50	4553
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	8.90	4952.60	44073.2
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.13	5704.70	114829.9
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	2.01	76000.00	152980.4
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	30.74	412.20	12669
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	64.26	362.90	23320
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	362.90	10364
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	18.78	5840.00	109678.7
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	249.56	157.40	39280.7
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	249.56	90.00	22460.4
	BSR - BCD-20- Item- 13.77, P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	9130.0
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	2394.00	14364.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	20.00	2553.30	51066.0
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	7.73	217.00	1677.0
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>7,21,549</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS3**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	67.52	360.70	24353.7
	BSR-BCD-20-Item 2.8.1; Pg-72 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	10.45	3953.40	41328.8
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	50.17	116.50	5845.3
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	17.34	262.50	4553
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	8.90	4952.60	44073.2
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.13	5704.70	114829.9
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	2.01	76000.00	152980.4
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	30.74	412.20	12669
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	64.26	362.90	23320
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	362.90	10364
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	18.78	5840.00	109678.7
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	249.56	157.40	39280.7
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	249.56	90.00	22460.4
	BSR - BCD-20- Item- 13.77, P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	9130.0
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	2394.00	14364.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	20.00	2553.30	51066.0
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	7.73	217.00	1677.0
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>7,21,549</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS2**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	67.52	360.70	24354
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	8.89	3953.40	35162
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	51.73	116.50	6027
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	15.78	262.50	4143
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	8.90	4952.60	44073
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	13.87	5704.70	79104
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.39	76000.00	105385
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.20	9206

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	54.81	362.90	19891
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	362.90	10364
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.88	5840.00	98589
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	220.40	157.40	34691
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	220.40	90.00	19836
	BSR - BCD-20- Item- 13.77, P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	13.50	456.50	6163
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	13.50	2553.30	34470
	BSR-BCD-20; Item-22.8; Pg-310				
<b>13</b>	<b>Marble chips skirting</b> (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	2.25	802.00	1805
	BSR-BCD-20; Item-11.12; Pg-175				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	5.51	217.00	1195
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>5,74,032</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS3**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	Cum	67.52	360.70	24354
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	8.89	3953.40	35162
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	51.73	116.50	6027
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	15.78	262.50	4143
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	8.90	4952.60	44073
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	13.87	5704.70	79104
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.39	76000.00	105385
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.20	9206

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	54.81	362.90	19891
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	362.90	10364
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.88	5840.00	98589
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	220.40	157.40	34691
	BSR-BCD-20; Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	220.40	90.00	19836
	BSR - BCD-20- Item- 13.77, P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	13.50	456.50	6163
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	13.50	2553.30	34470
	BSR-BCD-20; Item-22.8; Pg-310				
<b>13</b>	<b>Marble chips skirting</b> (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	2.25	802.00	1805
	BSR-BCD-20; Item-11.12; Pg-175				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	5.51	217.00	1195
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>5,74,032</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS2**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	75.69	360.70	27301
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	12.38	3953.40	48943
3	<b>Filling available</b> 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	52.98	116.50	6172
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.71	262.50	5961
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	14.45	4952.60	71570
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.20	5704.70	149463
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.62	76000.00	199120
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	19.20	203.00	3898
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	39.63	412.20	16333
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	86.60	362.90	31427
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	55.44	362.90	20119
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	31.41	5840.00	183434
	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	369.45	157.40	58151
	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	369.45	90.00	33251
	BSR - BCD-20- Item- 13.77, 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	28.16	534.00	15037
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	7.65	3635.80	27814
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioividing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	28.16	2102.80	59215
	BSR-BCD-20; Item-25.8; Pg-324				
14	<b>Marble chips skirting</b> (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 poweder mix: 7 barbie chips) by volume.	Sqm	3.24	802.00	2598
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.50	217.00	2279
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>9,70,387</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS3**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	75.69	360.70	27301
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	12.38	3953.40	48943
3	<b>Filling available</b> 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	52.98	116.50	6172
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.71	262.50	5961
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	14.45	4952.60	71570
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.20	5704.70	149463
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.62	76000.00	199120
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	19.20	203.00	3898
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	39.63	412.20	16333
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	86.60	362.90	31427
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	55.44	362.90	20119
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	31.41	5840.00	183434
	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	369.45	157.40	58151
	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	369.45	90.00	33251
	BSR - BCD-20- Item- 13.77, 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	28.16	534.00	15037
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	7.65	3635.80	27814
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	28.16	2102.80	59215
	BSR-BCD-20; Item-25.8; Pg-324				
14	<b>Marble chips skirting</b> (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 powderer mix: 7 barbie chips) by volume.	Sqm	3.24	802.00	2598
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.50	217.00	2279
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>9,70,387</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS2**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	95.00	637.00	60515
	SOR-RCD-20; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	42.75	896.00	38304
	SOR-RCD-18; Item-4.12 (iii); Pg.-77				
3	<b>Prime coat</b> (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	285.00	30.30	8636
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	285.00	11.10	3164
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	14.25	5406.00	77036
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case - II : Type B)	Sqm	285.00	44.00	12540
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	7.13	6743.00	48078
	BSR-RCD-2018-Item-5.7 P-84				
				<b>Total</b>	<b>248273</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS3**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	90.00	637.00	57330
	SOR-RCD-18; Item-4.2 (iii); Pg.-66				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	40.50	896.00	36288
	SOR-RCD-18; Item-4.12 (iii); Pg.-77				
3	<b>Prime coat</b> (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	270.00	30.30	8181
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	270.00	11.10	2997
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	13.50	5406.00	72981
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case - II : Type B)	Sqm	270.00	44.00	11880
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	6.75	6743.00	45515
	BSR-RCD-2018-Item-5.7 P-84				
				<b>Total</b>	<b>235172</b>

SEWERAGE SYSTEM FOR GAYA TOWN					
COST ESTIMATE- COMPOUND WALL- IPS2					
Sr.	Description	Unit	Qty	Rate (Rs)	Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	m <sup>3</sup>	258.81	360.70	93353.70
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	m <sup>3</sup>	13.13	3953.40	51894.45
3	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	m <sup>3</sup>	53.27	5840.00	311084
	Superstructure above plinth level upto 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 coarsed sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	m <sup>2</sup>	549.92	146.00	80288.32
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	45.47	262.50	11935.95
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	213.34	116.50	24854.38
	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	m <sup>3</sup>	26.44	4689.20	123971
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	14.63	5194.80	75998.83
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-108				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	70.50	203.00	14311.50
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	m <sup>2</sup>	56.97	362.90	20674.78
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	129.25	470.60	60825.05
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	3.29	68500	225049
	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	m <sup>3</sup>	549.92	17.80	9788.58
	Cost of Compound Wall (without gates)				1104029
	Boundary length				136
	Cost of 1 m Compound Wall (without gates)				8142
11	<b>Gates:</b> 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	No.	1	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	13651.00	13651.00
	<b>Cost of Compound Wall (with gates)</b>				<b>1142983</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- COMPOUND WALL- IPS3**

Sr.	Description	Unit	Qty	Rate (Rs)	Amount
1	Earth work in excavation in <b>foundation trenches</b> 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	m <sup>3</sup>	247.82	360.70	89387.43
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	m <sup>3</sup>	12.57	3953.40	49705.36
3	<b>Brick work</b> 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	m <sup>3</sup>	51.07	5840.00	298274.35
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	m <sup>2</sup>	527.20	146.00	76971.20
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	43.55	262.50	11430.64
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	204.27	116.50	23797.60
	BSR-BCD-20-Item 2.26; Pg-96				
7	<b>RCC:</b> 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 <sup>3</sup>	25.31	4689.20	118695.38
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	14.02	5194.80	72811.62
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-108				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for. Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	67.50	203.00	13702.50
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	m <sup>2</sup>	54.63	362.90	19823.41
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	123.75	470.60	58236.75
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	3.15	68500	215521.55
	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	m <sup>3</sup>	527.20	17.80	9384.16
	Cost of Compound Wall (without gates)				1057742
	Boundary length				130
	Cost of 1 m Compound Wall (without gates)				8136
11	<b>Gates:</b> 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	No.	1	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	13651.00	13651.00
	<b>Cost of Compound Wall (with gates)</b>				<b>1096696</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- HIRING OF VEHICLE**

Sr.	Description	Unit	Qty
1	Provision for supply of hired vehicle of minimum 1200 cc engine capacity for the use of Design and Supervision Consultant and PIU for the entire period of execution.- 2 Nos for 36 Months	Nos.	72.00
	LS		
			<b>Cost of hiring charges c</b>

Rate (Rs)	Amount (Rs)
50000.00	3600000.00
<b>of vehicles</b>	<b>3600000</b>



**SEWERAGE SYSTEM FOR GAYA CITY****Cost Summary - Pumping Station****Cost in Rs. Lakh**

Sr. No.	Name of Sub-work	Cost in Rs. Lakh		
		IPS2A	IPS5	IPS5A
<b>A</b>	<b>Civil Works</b>			
1	Screen Chamber	13.55	9.50	11.10
2	Pump House (Wet well and Superstructure)	86.08	78.16	79.57
3	Manifold Chamber	12.67	12.17	11.82
4	Butterfly Valve Chamber	5.10	5.10	5.10
5	Flowmeter Valve Chamber	3.88	3.88	3.88
6	D.G. Room	16.92	16.92	16.92
7	Diesel Storage Room	7.25	8.31	8.96
8	Store Room	6.46	6.46	6.46
9	Metering Room	11.56	11.56	11.56
10	Internal Roads (3m wide)	2.76	2.11	3.92
11	Compound Wall	61.03	45.27	87.64
12	Material Carrying Charges	2.46	2.13	2.84
<b>B</b>	<b>Mechanical Works</b>	50.50	50.51	45.03
<b>C</b>	<b>Electrical Works</b>	49.84	38.51	38.51
<b>D</b>	<b>Instrumentation and Control</b>	37.00	35.53	35.20
	<b>Total for Pumping Station</b>	367.06	326.12	368.51

Note: Enhancements in rate for BSR 2012-13 and 2013-14 are considered 7.31% and 6.16% respectively.

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS2A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	0.00	319.60	0
b)	From 1.5 m to 3.0 m	Cum	46.44	360.60	16746
c)	From 3.0 m to 4.5 m	Cum	46.44	401.60	18650
d)	From 4.5 m to 6 m	Cum	46.44	442.60	20554
e)	From 6 m to 7.5 m	Cum	11.46	483.60	5540
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
	<b>Hard rock (blasting prohibited)</b>				
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-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
3	<b>Filling available</b> 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	13.71	116.50	1597
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	183.50	262.50	48170
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.00	102000
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	11.93	3953.40	47154
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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-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	84.49	5018.60	424029
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	10.13	4380.40	44352
	BSR-BCD-20; Item-4.1.2, Pg-99				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	6.76	68500.00	463013
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	10.30	203.00	2091
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	353.53	356.40	125998
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	6.50	412.20	2679
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	37.00	290.50	10749
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	9.50	17.80	169
12	<b>Railing:</b> 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 material, labour. <b>at walkway: Around platform</b>				
	RUIDP-2017, Item-10.20, Pg.-34	RM	10.40	2,040.00	21216
	<b>Total</b>				<b>1354707</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS5**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	35.91	401.70	14425
c)	From 3.0 m to 4.5 m	Cum	35.91	442.70	15897
d)	From 4.5 m to 6 m	Cum			
e)	From 6 m to 7.5 m	Cum			
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.00	901.00	0
b)	From 7.5 m to 9.0 m	Cum	0.00	984.10	0
c)	From 9.0 m to 10.5 m				
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
	<b>Hard rock (blasting prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.00	1500.50	0
b)	From 7.5 m to 9.0 m	Cum	0.00	1583.60	0
c)	From 9.0 m to 10.5 m				
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
3	<b>Filling available</b> 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	6.18	116.50	720
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	113.37	262.50	29761
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.00	102000
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	8.67	3953.40	34286
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	59.40	5018.60	298109
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	2.25	4380.40	9856
	BSR-BCD-20; Item-4.1.2, Pg-99				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.75	68500.00	325516
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.90	203.00	1807
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	244.96	356.40	87304
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	4.60	412.20	1896
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	31.00	290.50	9006
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	8.10	17.80	144
12	<b>Railing:</b> 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 material, labour. <b>at walkway: Around platform</b>				
	RUIDP-2017, Item-10.20, Pg.-34	RM	9.40	2,040.00	19176
	<b>Total</b>				<b>949903</b>



**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS5A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	0.00	360.00	0
b)	From 1.5 m to 3.0 m	Cum	35.91	401.00	14400
c)	From 3.0 m to 4.5 m	Cum	35.91	442.00	15872
d)	From 4.5 m to 6 m	Cum	35.91	483.00	17345
e)	From 6 m to 7.5 m	Cum	6.22	524.00	3259
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.62	862.60	537
b)	From 7.5 m to 9.0 m	Cum	0.00	936.10	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1009.60	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
	<b>Hard rock (blasting prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.31	1462.60	455
b)	From 7.5 m to 9.0 m	Cum	0.00	1535.60	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1609.10	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
3	<b>Filling available</b> 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	9.90	116.50	1153
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	139.96	262.50	36740
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	8.67	3953.40	34276
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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-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	69.78	5018.60	350198
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	2.25	4380.40	9856
	BSR-BCD-20; Item-4.1.2, Pg-99				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	5.58	68500.00	382394
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.90	203.00	1807
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	296.86	356.40	105801
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	4.60	412.30	1897
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	40.00	290.50	11620
	BSR-BCD-18; Item-19.16; Pg-296				
11	<b>Painting:</b> White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-18; Item-13.70.1; Pg-206	Sq m	8.10	17.80	144
12	<b>Railing:</b> 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 material, labour. at walkway: Around platform				
	RUIDP-2017, Item-10.20, Pg.-34	RM	9.40	2,040.00	19176
	<b>Total</b>				<b>1109530</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS2A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	1156.00	654.70	7568
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	127.42	401.70	51185
c)	From 3.0 m to 4.5 m	Cum	127.42	442.70	56409
d)	From 4.5 m to 6.0 m	Cum	127.42	483.70	61633
e)	From 6.0 m to 7.5 m	Cum	127.42	524.70	66857
f)	From 7.5 m to 9.0 m	Cum	127.42	565.70	72081
g)	From 9.0 m to 10.5 m	Cum	127.42	606.70	77306
h)	From 10.5 m to 12.0 m	Cum	32.28	647.70	20908
i)	From 12.0 m to 13.5 m				
j)	From 13.5 m to 15.0 m				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	12.74	862.60	10991
b)	From 7.5 m to 9.0 m	Cum	25.48	1535.60	39133
c)	From 9.0 m to 10.5 m	Cum	38.23	524.10	20034
d)	From 10.5 m to 12.0 m				
e)	From 12.0 m to 13.5 m				
f)	From 13.5 m to 15.0 m				
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	6.37	862.60	5496
b)	From 7.5 m to 9.0 m	Cum	12.74	1535.60	19567
c)	From 9.0 m to 10.5 m	Cum	25.48	524.10	13356
d)	From 10.5 m to 12.0 m				
e)	From 12.0 m to 13.5 m				
f)	From 13.5 m to 15.0 m				
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	228.30	116.50	26597
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	823.34	262.50	216127
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10000.00	102.60	1026000

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR-BCD-20-Item 2.25; Pg-96				
7	<b>PCC:</b> 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	37.82	3953.40	149500
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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:				
8.1	<b>RCC Grade M-30</b>	Cum	218.67	5018.60	1097417
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	<b>RCC Grade M -25</b>	Cum	54.25	5704.70	309480
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	30.02	68500.00	2056452
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	40.25	203.00	8170
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	727.17	356.40	259164
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	281.05	412.20	115849
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	168.09	362.90	61000
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	106.46	470.60	50100
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	36.37	5840.00	212428
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	355.51	157.40	55957
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	519.33	97.20	50479
	BSR - BCD-20- Item- 13.77.2, P-206				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	45.62	456.50	20826
	BSR-BCD-20; Item-11.4; Pg-370				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-370				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	100.29	2553.30	256070
	BSR-BCD-20; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	33.00	290.50	9587
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening in the floor platform</b>	RM	19.40	2040.00	39576
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	33.00	290.50	9587
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequered plate</b> 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	18.00	4080.00	73440
	(Item No.6, Section J, MJP Page 366 DSR 2018-19)				
24	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	127.23	4380.40	557318
	BSR-BCD-20; Item-4.1.2, Pg-99				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45 & RA				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>8608079</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS5**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	996.80	654.70	6526
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	110.85	401.70	44528
c)	From 3.0 m to 4.5 m	Cum	110.85	442.70	49073
d)	From 4.5 m to 6.0 m	Cum	110.85	483.70	53618
e)	From 6.0 m to 7.5 m	Cum	110.85	524.70	58163
f)	From 7.5 m to 9.0 m	Cum	110.85	565.70	62708
g)	From 9.0 m to 10.5 m	Cum	110.85	606.70	67253
h)	From 10.5 m to 12.0 m	Cum	48.77	647.70	31588
i)	From 12.0 m to 13.5 m	Cum			
j)	From 13.5 m to 15.0 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	11.09	862.60	9562
b)	From 7.5 m to 9.0 m	Cum	22.17	936.10	20753
c)	From 9.0 m to 10.5 m	Cum	33.26	1009.60	33574
d)	From 10.5 m to 12.0 m	Cum	19.51	1083.10	21129
e)	From 12.0 m to 13.5 m	Cum	0.00	1156.60	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1230.10	0
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	5.54	1462.10	8104
b)	From 7.5 m to 9.0 m	Cum	11.09	1535.60	17022
c)	From 9.0 m to 10.5 m	Cum	22.17	1609.10	35674
d)	From 10.5 m to 12.0 m	Cum	14.63	1682.60	24618
e)	From 12.0 m to 13.5 m	Cum	0.00	1756.10	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1829.60	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	193.97	116.50	22598
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	630.75	262.50	165572
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10000.00	102.60	1026000
	BSR-BCD-20-Item 2.25; Pg-96				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>PCC:</b> 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	32.29	3953.40	127653
	BSR-BCD-20-; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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:				
8.1	<b>RCC Grade M-30</b>	Cum	184.92	5018.60	928040
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	<b>RCC Grade M -25</b>	Cum	50.61	5704.70	288715
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	25.91	68500.00	1774719
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	37.15	203.00	7542
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	606.93	356.40	216310
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	251.61	412.20	103714
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	155.95	362.90	56594
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	106.46	470.60	50100
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	32.83	5840.00	191751
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	324.71	157.40	51109
	BSR-BCD-20-; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	471.91	97.20	45870
	BSR - BCD-20- Item- 13.77.2, P-206				



Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	37.51	456.50	17123
	BSR-BCD-20; Item-11.4; Pg-370				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-370				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	88.25	2553.30	225329
	BSR-BCD-20; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	30.00	290.50	8715
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening</b> in the floor platform	RM	18.28	2040.00	37291
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding 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	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	30.00	290.50	8715
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequered plate</b> 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	16.60	4080.00	67728
	(Item No.6, Section J, MJP Page 366 DSR 2018-19)				
24	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	97.39	4380.40	426607
	BSR-BCD-20; Item-4.1.2, Pg-99				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45 & RA				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>7816119</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS5A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	952.00	654.70	6233
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	110.85	401.70	44528
c)	From 3.0 m to 4.5 m	Cum	110.85	442.70	49073
d)	From 4.5 m to 6.0 m	Cum	110.85	483.70	53618
e)	From 6.0 m to 7.5 m	Cum	110.85	524.70	58163
f)	From 7.5 m to 9.0 m	Cum	110.85	565.70	62708
g)	From 9.0 m to 10.5 m	Cum	110.85	606.70	67253
h)	From 10.5 m to 12.0 m	Cum	101.98	647.70	66052
i)	From 12.0 m to 13.5 m	Cum			
j)	From 13.5 m to 15.0 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	11.09	862.60	9562
b)	From 7.5 m to 9.0 m	Cum	22.17	936.10	20753
c)	From 9.0 m to 10.5 m	Cum	33.26	1009.60	33574
d)	From 10.5 m to 12.0 m	Cum	40.79	1083.10	44182
e)	From 12.0 m to 13.5 m	Cum	0.00	1156.60	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1230.10	0
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	5.54	1462.10	8104
b)	From 7.5 m to 9.0 m	Cum	11.09	1535.60	17022
c)	From 9.0 m to 10.5 m	Cum	22.17	1609.10	35674
d)	From 10.5 m to 12.0 m	Cum	30.59	1682.60	51477
e)	From 12.0 m to 13.5 m	Cum	0.00	1756.10	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1829.60	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 96				
4	<b>Filling available</b> 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	200.35	116.50	23341
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	677.58	262.50	177865
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10000	102.60	1026000
	BSR-BCD-20-Item 2.25; Pg-96				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>PCC:</b> 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	32.29	3953.40	127653
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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:				
8.1	<b>RCC Grade M-30</b>	Cum	192.79	5018.60	967536
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	<b>RCC Grade M -25</b>	Cum	50.61	5704.70	288715
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	26.77	68500.00	1834019
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	37.22	203.00	7555
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	646.23	356.40	230317
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	251.61	412.20	103714
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth beams, griders, bressumers and contilevers.	Sqm	155.95	362.90	56594
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	106.46	470.60	50100
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	32.83	5840.00	191751
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	324.71	157.40	51109
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	471.91	97.20	45870
	BSR - BCD-20- Item- 13.77.2, P-206				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	37.51	456.50	17123
	BSR-BCD-20; Item-11.4; Pg-174				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-168				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	88.25	2553.30	225329
	BSR-BCD-18; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-18; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	33.00	290.50	9587
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening</b> in the floor platform	RM	18.28	2040.00	37291
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	33.00	290.50	9587
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequered plate</b> 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	16.60	4080.00	67728
	(Item No.6, Section J, MJP Page 366 DSR 2018-19)				
24	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	81.16	4380.40	355513
	BSR-BCD-20; Item-4.1.2, Pg-99				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45 & RA				
v	Providing, lowering, laying in trenches, aligning, fixing in position and joining 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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>7956704</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- MANIFOLD CHAMBER IPS2A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	80.57	401.70	32365
c)	From 3.0 m to 4.5 m	Cum	80.57	442.70	35668
d)	From 4.5 m to 6.0 m	Cum	5.48	483.70	2651
e)	From 6.0 m to 7.5 m	Cum			0
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	56.84	116.50	6622
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	190.35	262.50	49967
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	4.91	3953.40	19411
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	61.37	5704.70	350097
	BSR-BCD-20; Item-5.33.2, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	50.15	4380.40	219677
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.91	68500.00	336308
	BSR-BCD-20; Item-5.22.7, Pg-106				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
<b>8</b>	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	11.50	203.00	2335
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	244.35	356.40	87086
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	39.13	412.20	16129
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	8.52	362.90	3092
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	52.71	17.80	938
	<b>Total</b>				<b>1267270</b>



**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- MANIFOLD CHAMBER IPS5**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	74.24	401.70	29822
c)	From 3.0 m to 4.5 m	Cum	74.24	442.70	32866
d)	From 4.5 m to 6.0 m	Cum	6.58	483.70	3183
e)	From 6.0 m to 7.5 m	Cum			0
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	51.98	116.50	6056
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	177.32	262.50	46547
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	4.51	3953.40	17830
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	58.43	5704.70	333326
	BSR-BCD-20; Item-5.33.2, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	49.51	4380.40	216874
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.67	68500.00	320196
	BSR-BCD-20; Item-5.22.7, Pg-106				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
<b>8</b>	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	10.92	203.00	2217
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	238.45	356.40	84984
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	35.64	412.20	14691
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	8.28	362.90	3005
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	48.49	17.80	863
	<b>Total</b>				<b>1217384</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- MANIFOLD CHAMBER IPS5A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	74.24	401.70	29822
c)	From 3.0 m to 4.5 m	Cum	74.24	442.70	32866
d)	From 4.5 m to 6.0 m	Cum	5.34	483.70	2583
e)	From 6.0 m to 7.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	54.99	116.50	6406
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	173.07	262.50	45431
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	4.51	3953.40	17830
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	57.30	5704.70	326879
	BSR-BCD-20; Item-5.33.2, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	45.26	4380.40	198257
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.58	68500.00	314004
	BSR-BCD-20; Item-5.22.7, Pg-106				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
<b>8</b>	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	10.92	203.00	2217
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	230.92	356.40	82300
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	35.64	412.20	14691
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	8.28	362.90	3005
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-245				
<b>10</b>	<b>Painting:</b> White washing with lime to give an ever shade: New work (three or more coats)				
	BSR-BCD-18; Item-13.70.1; Pg-296	Sq m	48.49	17.80	863
	<b>Total</b>				<b>1182078</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS2A**

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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	27.36	401.70	10991
c)	From 3.0 m to 4.5 m	Cum	27.36	442.70	12112
d)	From 4.5 m to 6.0 m	Cum	11.86	483.70	5737
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	58.90	116.50	6862
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	35.04	262.50	9198
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.58	3953.40	6246
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	23.87	5704.70	136171
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	10.50	4380.40	45994
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.91	68500.00	130808
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.92	203.00	1202
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	112.10	356.40	39952
	BSR - BCD-20- Item- 5.9.2, Pg-104				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
10	<b>Painting:</b> 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	15.56	17.80	277
	<b>Total</b>				<b>510474</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS5**

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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	27.36	401.70	10991
c)	From 3.0 m to 4.5 m	Cum	27.36	442.70	12112
d)	From 4.5 m to 6.0 m	Cum	11.86	483.70	5737
	BSR-BCD-20-Item 2.8.1; Pg-73 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	58.90	116.50	6862
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	35.04	262.50	9198
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.58	3953.40	6246
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	23.87	5704.70	136171
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	10.50	4380.40	45994
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.91	68500.00	130808
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.92	203.00	1202
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	112.10	356.40	39952
	BSR - BCD-20- Item- 5.9.2, Pg-104				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
10	<b>Painting:</b> 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	15.56	17.80	277
	<b>Total</b>				<b>510474</b>



**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS5A**

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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	27.36	401.70	10991
c)	From 3.0 m to 4.5 m	Cum	27.36	442.70	12112
d)	From 4.5 m to 6.0 m	Cum	11.86	483.70	5737
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	58.90	116.50	6862
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	35.04	262.50	9198
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.58	3953.40	6246
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	23.87	5704.70	136171
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	10.50	4380.40	45994
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.91	68500.00	130808
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.92	203.00	1202
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	112.10	356.40	39952
	BSR - BCD-20- Item- 5.9.2, Pg-104				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
10	<b>Painting:</b> 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	15.56	17.80	277
	<b>Total</b>				<b>510474</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- FLOW METER CHAMBER IPS2A**

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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	23.25	401.70	9340
c)	From 3.0 m to 4.5 m	Cum	15.50	442.70	6862
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	31.08	116.50	3621
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.92	262.50	8117
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.32	3953.40	5218
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	18.39	5704.70	104909
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	3.06	4380.40	13404
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.47	68500.00	100777
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.52	203.00	1121
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	83.52	356.40	29767
	BSR - BCD-20- Item- 5.9.2, Pg-104				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
10	<b>Painting:</b> 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	14.50	17.80	258
	<b>Total</b>				<b>388318</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- FLOW METER CHAMBER IPS5**

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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	23.25	401.70	9340
c)	From 3.0 m to 4.5 m	Cum	15.50	442.70	6862
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	31.08	116.50	3621
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.92	262.50	8117
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.32	3953.40	5218
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	18.39	5704.70	104909
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	3.06	4380.40	13404
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.47	68500.00	100777
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.52	203.00	1121
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	83.52	356.40	29767
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.50	17.80	258
	<b>Total</b>				<b>388318</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- FLOW METER CHAMBER IPS5A**

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	0.00	360.70	0
b)	From 1.5 m to 3.0 m	Cum	23.25	401.70	9340
c)	From 3.0 m to 4.5 m	Cum	15.50	442.70	6862
	BSR-BCD-20-Item 2.8.1; Pg-72 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	31.08	116.50	3621
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.92	262.50	8117
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	1000.00	102.60	102600
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.32	3953.40	5218
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	18.39	5704.70	104909
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
6a	<b>Plum Concrete:</b> Providing and laying in position cement concrete of specific grade excluding the cost of centering and shuttering - all work upto plinth level. 1:1.5:3	Cum	3.06	4380.40	13404
	BSR-BCD-20; Item-4.1.2, Pg-99				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.47	68500.00	100777
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.52	203.00	1121
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	83.52	356.40	29767
	BSR - BCD-20- Item- 5.9.2, Pg-104				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
10	<b>Painting:</b> 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	14.50	17.80	258
	<b>Total</b>				<b>388318</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS2A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	204.22	360.70	73663
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	27.59	3953.40	109068
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	116.36	116.50	13556
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	87.86	262.50	23063
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	59.79	4952.60	296127
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	76000.00	307108
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	26.60	203.00	5400
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.90	45979
	BSR - BCD-18- Item- 5.9.5, Pg-84				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	11.34	470.60	5337
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
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	462.46	97.20	44951
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	1106.50	13278
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	802.00	3609
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>16,92,339</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS5**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	204.22	360.70	73663
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	27.59	3953.40	109068
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	116.36	116.50	13556
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	87.86	262.50	23063
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	59.79	4952.60	296127
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	76000.00	307108
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	26.60	203.00	5400
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.90	45979
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	11.34	470.60	5337
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
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	462.46	97.20	44951
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	1106.50	13278
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	802.00	3609
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>16,92,339</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS5A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	204.22	360.70	73663
	BSR-BCD-20-Item 2.8.1; Pg-72 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	27.59	3953.40	109068
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	116.36	116.50	13556
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	87.86	262.50	23063
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	59.79	4952.60	296127
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	76000.00	307108
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	26.60	203.00	5400
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.90	45979
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	11.34	470.60	5337
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
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	462.46	97.20	44951
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	1106.50	13278
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	802.00	3609
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>16,92,339</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS2A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	96.74	360.70	34892.9
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	11.94	3953.40	47217.4
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	59.80	116.50	6967.1
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	36.93	262.50	9695
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	25.31	4952.60	125342.9
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	16.70	5704.70	95291.3
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.67	76000.00	126950.4
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.80	203.00	3410
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	25.14	412.20	10361
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	46.08	362.90	16722
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	9.24	470.60	4348
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.59	5840.00	96912.5
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	224.76	157.40	35377.2
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	224.76	97.20	21846.7
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	15.00	456.50	6847.5
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	1106.50	6639.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	15.00	2553.30	38299.5
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	6.05	217.00	1312.4
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>7,25,410</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS5**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	112.09	360.70	40431.4
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	14.18	3953.40	56053.3
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	68.02	116.50	7924.7
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.07	262.50	11568
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	30.21	4952.60	149610.6
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	18.66	5704.70	106444.0
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.87	76000.00	141808.4
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	18.20	203.00	3695
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	30.74	412.20	12669
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	49.09	362.90	17813
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	9.24	470.60	4348
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	18.78	5840.00	109678.7
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	249.56	157.40	39280.7
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	249.56	97.20	24257.2
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	9130.0
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	1106.50	6639.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	20.00	2553.30	51066.0
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	7.73	217.00	1677.0
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>8,31,070</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS5A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	112.09	360.70	40431.4
	BSR-BCD-20-Item 2.8.1; Pg-72 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	14.18	3953.40	56053.3
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	67.41	116.50	7853.3
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.68	262.50	11729
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	30.21	4952.60	149610.6
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	22.29	5704.70	127152.1
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	2.23	76000.00	169396.4
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	18.20	203.00	3695
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	30.74	412.20	12669
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	86.70	362.90	31463
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	9.24	470.60	4348
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	18.78	5840.00	109678.7
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	261.80	157.40	41207.3
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	261.80	97.20	25447.0
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	9130.0
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	1106.50	6639.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	20.00	2553.30	51066.0
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	7.73	217.00	1677.0
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>8,96,222</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS2A**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	90.91	360.70	32791
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	11.13	3953.40	43986
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	56.54	116.50	6587
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	34.37	262.50	9021
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	23.56	4952.60	116676
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	12.72	5704.70	72544
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.27	76000.00	96645
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.10	203.00	3268
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.20	9206

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	42.93	362.90	15579
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	9.24	470.60	4348
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	<b>Brick work</b> 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	16.88	5840.00	98589
	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	220.40	157.40	34691
	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	220.40	97.20	21423
	BSR - BCD-20- Item- 13.77.2 P-206				
10	<b>52 mm thick cement concrete flooring</b> 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	13.50	456.50	6163
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976
	BSR-BCD-20; Item-21.10; Pg-307				
12	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	13.50	2553.30	34470
	BSR-BCD-20; Item-22.8; Pg-310				
13	<b>Marble chips skirting</b> (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	2.25	802.00	1805
	BSR-BCD-20; Item-11.12; Pg-175				
14	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	5.51	217.00	1195
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>6,45,963</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS5**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	Cum	90.91	360.70	32791
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	11.13	3953.40	43986
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	56.54	116.50	6587
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	34.37	262.50	9021
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	23.56	4952.60	116676
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	12.72	5704.70	72544
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.27	76000.00	96645
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.10	203.00	3268
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.20	9206

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	42.93	362.90	15579
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	9.24	470.60	4348
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.88	5840.00	98589
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	220.40	157.40	34691
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	220.40	97.20	21423
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	13.50	456.50	6163
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	13.50	2553.30	34470
	BSR-BCD-20; Item-22.8; Pg-310				
<b>13</b>	<b>Marble chips skirting</b> (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	2.25	802.00	1805
	BSR-BCD-20; Item-11.12; Pg-175				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	5.51	217.00	1195
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>6,45,963</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS5A**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	90.91	360.70	32791
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg-96				
2	<b>PCC:</b> 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	11.13	3953.40	43986
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	56.54	116.50	6587
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	34.37	262.50	9021
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	23.56	4952.60	116676
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	12.72	5704.70	72544
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.27	76000.00	96645
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	16.10	203.00	3268
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.20	9206

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	42.93	362.90	15579
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	9.24	470.60	4348
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.88	5840.00	98589
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	220.40	157.40	34691
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	220.40	97.20	21423
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	13.50	456.50	6163
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	13.50	2553.30	34470
	BSR-BCD-20; Item-22.8; Pg-310				
<b>13</b>	<b>Marble chips skirting</b> (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	2.25	802.00	1805
	BSR-BCD-20; Item-11.12; Pg-175				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	5.51	217.00	1195
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>6,45,963</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS2A**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	125.55	360.70	45286
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	15.48	3953.40	61199
3	<b>Filling available</b> 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	70.77	116.50	8245
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	54.78	262.50	14380
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	39.80	4952.60	197115
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.78	5704.70	152743
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.68	76000.00	203490
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	21.00	203.00	4263
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.03	412.20	16911
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	88.30	362.90	32044
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	11.34	470.60	5337
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	31.99	5840.00	186794
	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	376.01	157.40	59184
	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	376.01	97.20	36548
	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	29.44	534.60	15739
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	7.65	3635.80	27814
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioividing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	29.44	2553.30	75169
	BSR-BCD-20; Item-22.8; Pg-310				
14	<b>Marble chips skirting</b> (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 poweder mix: 7 barbie chips) by volume.	Sqm	3.30	802.00	2647
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.92	217.00	2370
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>11,55,574</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS5**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	125.55	360.70	45286
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	15.48	3953.40	61199
3	<b>Filling available</b> 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	70.77	116.50	8245
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	54.78	262.50	14380
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	39.80	4952.60	197115
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.78	5704.70	152743
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.68	76000.00	203490
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	21.00	203.00	4263
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.03	412.20	16911
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	88.30	362.90	32044
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	11.34	470.60	5337
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	31.99	5840.00	186794
	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	376.01	157.40	59184
	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	376.01	97.20	36548
	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	29.44	534.60	15739
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	7.65	3635.80	27814
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioividing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	29.44	2553.30	75169
	BSR-BCD-20; Item-22.8; Pg-310				
14	<b>Marble chips skirting</b> (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 poweder mix: 7 barbie chips) by volume.	Sqm	3.30	802.00	2647
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.92	217.00	2370
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>11,55,574</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS5A**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	125.55	360.70	45286
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	15.48	3953.40	61199
3	<b>Filling available</b> 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	70.77	116.50	8245
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	54.78	262.50	14380
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	39.80	4952.60	197115
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.78	5704.70	152743
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.68	76000.00	203490
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	21.00	203.00	4263
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	41.03	412.20	16911
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	88.30	362.90	32044
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	11.34	470.60	5337
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	31.99	5840.00	186794
	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	376.01	157.40	59184
	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	376.01	97.20	36548
	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	29.44	534.60	15739
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	7.65	3635.80	27814
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioividing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	29.44	2553.30	75169
	BSR-BCD-20; Item-22.8; Pg-310				
14	<b>Marble chips skirting</b> (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 powderer mix: 7 barbie chips) by volume.	Sqm	3.30	802.00	2647
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.92	217.00	2370
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>11,55,574</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS2A**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	105.60	637.00	67267
	SOR-RCD-18; Item-4.2 (iii); Pg.-65				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	47.52	896.00	42578
	SOR-RCD-18; Item-4.12 (iii); Pg.-75				
3	<b>Prime coat</b> (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	316.80	30.30	9599
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	316.80	11.10	3516
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	15.84	5406.00	85631
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case II : Type B)	Sqm	316.80	44.00	13939
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	7.92	6743.00	53405
	BSR-RCD-2018-Item-5.7 P-94				
				<b>Total</b>	<b>275935</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS5**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	80.81	637.00	51476
	SOR-RCD-18; Item-4.2 (iii); Pg.-65				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	36.36	896.00	32579
	SOR-RCD-18; Item-4.12 (iii); Pg.-75				
3	<b>Prime coat</b> (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	242.43	30.30	7346
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	242.43	11.10	2691
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	12.12	5406.00	65521
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case II : Type B)	Sqm	242.43	44.00	10667
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	6.06	6743.00	40863
	BSR-RCD-2018-Item-5.7 P-94				
				<b>Total</b>	<b>211143</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS5A**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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
	SOR-RCD-18; Item-4.2 (iii); Pg.-65				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	67.50	896.00	60480
	SOR-RCD-18; Item-4.12 (iii); Pg.-75				
3	<b>Prime coat</b> (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	450.00	30.30	13635
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	450.00	11.10	4995
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	22.50	5406.00	121635
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case II : Type B)	Sqm	450.00	44.00	19800
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	11.25	6743.00	75859
	BSR-RCD-2018-Item-5.7 P-94				
				<b>Total</b>	<b>391954</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- COMPOUND WALL- IPS5**

Sr.	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	m <sup>3</sup>	716.60	360.70	258476.61
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	m <sup>3</sup>	21.88	3953.40	86501.54
2a	<b>Boulders:</b> Below foundation	m <sup>3</sup>	45.32	1235.90	56009.01
	BSR- BCD-20-Item- 24.5, pg 320				
2b	<b>Moorum Filling:</b> Inside Compound Wall	m <sup>3</sup>	1444.00	359.97	519796.68
	BSR- BCD-20-Item- 0810, pg 16 + Sr. 1.1, pg 89				
3	<b>Brick work</b> 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	m <sup>3</sup>	59.51	5840.00	347539.57
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	m <sup>2</sup>	574.32	146.00	83850.72
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	217.67	262.50	57138.36
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	498.93	116.50	58125.03
	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	m <sup>3</sup>	230.13	4689.20	1079137.32
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	6.13	5373.10	32910.24
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for. Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	141.62	435.50	61675.51
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	849.72	470.60	399878.23
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	18.90	76000	1436445.60
	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	m <sup>3</sup>	574.32	17.80	10222.90
	Cost of Compound Wall (without gates)				4487707
	Boundary length				142
	Cost of 1 m Compound Wall (without gates)				31688
11	<b>Gates:</b> 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	No.	1	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	13651.00	13651.00
	<b>Cost of Compound Wall (with gates)</b>				<b>4526661</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- COMPOUND WALL- IPS5A**

Sr.	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	m <sup>3</sup>	1416.80	360.70	511039.76
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	m <sup>3</sup>	43.26	3953.40	171024.08
2a	<b>Boulders:</b> Below foundation	m <sup>3</sup>	89.60	1235.90	110736.64
	BSR- BCD-20-Item- 24.5, pg 320				
2b	<b>Moorum Filling:</b> Inside Compound Wall	m <sup>3</sup>	2439.00	359.97	877966.83
	BSR- BCD-20-Item- 0810, pg 16 + Sr. 1.1, pg 89				
3	<b>Brick work</b> 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	m <sup>3</sup>	117.42	5840.00	685703.60
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	m <sup>2</sup>	1135.84	146.00	165832.64
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	430.36	262.50	112969.50
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	986.44	116.50	114920.26
	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	m <sup>3</sup>	455.00	4689.20	2133586.00
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	12.38	5373.10	66492.11
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for. Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	280.00	435.50	121940.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	1680.00	470.60	790608.00
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	37.39	76000	2841640.00
	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	m <sup>3</sup>	1135.84	17.80	20217.95
	Cost of Compound Wall (without gates)				8724677
	Boundary length				280
	Cost of 1 m Compound Wall (without gates)				31160
11	<b>Gates:</b> 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	No.	1	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	13651.00	13651.00
	<b>Cost of Compound Wall (with gates)</b>				<b>8763631</b>

## SEWERAGE SYSTEM FOR GAYA CITY

## Cost Summary - Pumping Station

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station									
		IPS2	IPS2A	IPS3	IPS4	IPS4A	IPS5	IPS 5A	IPS6	MPS (Total 3x30 MLD)	MPS (Immediate 1x30 MLD)
<b>A</b>	<b>Civil Works</b>										
1	Screen Chamber	7.30	14.07	8.51	9.50	10.29	9.80	11.43	12.22	11.07	11.07
2	Pump House (Wet well and Superstructure)	60.81	87.18	53.83	72.05	93.65	78.51	79.88	92.34	122.82	122.82
3	Manifold Chamber	6.93	13.00	5.94	7.37	8.62	12.49	12.12	9.19	12.96	8.97
4	Butterfly Valve Chamber	2.43	5.00	2.43	2.37	2.37	5.00	5.00	2.37	4.74	2.37
5	Flowmeter Valve Chamber	2.33	3.77	2.33	2.33	2.72	3.77	3.77	2.56	6.88	3.44
6	D.G. Room	15.61	17.00	15.61	15.35	15.35	17.00	17.00	15.35	15.35	15.35
7	Diesel Storage Room	7.16	7.27	7.16	6.31	7.04	8.33	8.97	7.99		
8	Store Room	5.68	6.39	5.68	5.68	5.68	6.39	6.39	5.68		
9	Metering Room	9.88	11.58	9.88	9.81	9.81	11.58	11.58	9.81		
10	Internal Roads (3m wide)	2.48	2.76	2.35	1.96	1.57	2.11	3.92	2.22		
11	Compound Wall	11.47	59.34	11.01	10.97	10.97	44.02	85.32	12.17		
12	Material Carrying Charges	1.61	2.46	1.54	1.65	1.85	2.13	2.84	1.97	2.22	5.52
13	Hiring of Vehicles	36.00									
<b>B</b>	<b>Mechanical Works</b>	33.40	50.50	33.58	48.41	80.65	50.51	45.03	113.31	295.51	133.40
<b>C</b>	<b>Electrical Works</b>	42.60	49.84	54.96	45.39	50.57	38.51	38.51	62.02	367.59	195.65
<b>D</b>	<b>Instrumentation and Control</b>	35.53	37.00	35.53	35.20	35.20	35.53	35.20	35.20	39.83	39.83
<b>E</b>	<b>Site Development</b>	18.14									
	<b>Total for Pumping Station</b>	<b>299.36</b>	<b>367.16</b>	<b>250.34</b>	<b>274.35</b>	<b>336.34</b>	<b>325.68</b>	<b>366.95</b>	<b>384.39</b>	<b>878.97</b>	<b>538.42</b>

## SEWERAGE SYSTEM FOR GAYA CITY

## Cost Summary - Pumping Station

Cost in Rs. Lakh

Sr. No.	Name of Sub-work	Pumping Station				
		IPS4	IPS4A	IPS6	MPS (Total 3x30 MLD)	MPS (Immediate 1x30 MLD)
<b>A</b>	<b>Civil Works</b>					
1	Screen Chamber	9.50	10.29	12.22	11.07	11.07
2	Pump House (Wet well and Superstructure)	72.05	93.65	92.34	122.82	122.82
3	Manifold Chamber	7.37	8.62	9.19	12.96	8.97
4	Butterfly Valve Chamber	2.37	2.37	2.37	4.74	2.37
5	Flowmeter Valve Chamber	2.33	2.72	2.56	6.88	3.44
6	D.G. Room	15.35	15.35	15.35	15.35	15.35
7	Diesel Storage Room	6.31	7.04	7.99		
8	Store Room	5.68	5.68	5.68		
9	Metering Room	9.81	9.81	9.81		
10	Internal Roads (3m wide)	1.96	1.57	2.22		
11	Compound Wall	10.97	10.97	12.17		
12	Material Carrying Charges	1.65	1.85	1.97	2.22	5.52
<b>B</b>	<b>Mechanical Works</b>	48.41	80.65	113.31	295.51	133.40
<b>C</b>	<b>Electrical Works</b>	45.39	50.57	62.02	367.59	195.65
<b>D</b>	<b>Instrumentation and Control</b>	35.20	35.20	35.20	39.83	39.83
	<b>Total for Pumping Station</b>	<b>274.35</b>	<b>336.34</b>	<b>384.39</b>	<b>878.97</b>	<b>538.42</b>



SEWERAGE SYSTEM FOR GAYA CITY

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

Pumping Stations	Qty. from Estimate Sheet														RCC, Flooring and Sand Filling						Bricks			Plaster				Total Quantity in MT			Carriage Charges (In Lakh)						
	Concrete (C:S:A)				Bricks (m3)	Plaster (m2)	Flooring (40 mm thk) M15			Sand Filling (m3)	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)	WM Road (Item 1)	WM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ m3	Volume (m3)	Wt (MT) 1440 kg/ m3	Volume (m3)	Wt (MT) 1840 kg/ m3					Volume (m3)	Wt (MT) 1870kg/ m3	Wt (MT) 1920kg/ m3	MT	MT	MT	Volume (m3)	Wt (MT) 1440 kg/ m3	Volume (m3)	Wt (MT) 1840 kg/ m3	Sand	Aggregate	Bricks	Sand (9.40 Rs./t.km)
1 IPS4																																			94.0	94.0	94.0
Screen Chamber		11.16		59.20	-							-	16.40	23.62	17.99	33.10	35.98	67.28	-	-	-	-	-	-	-	-	-	-	-	33.10	67.28	-	0.03	0.06	-		
Wetwell & Superstructure		39.38		246.84	33.85	333.53	39.75	1.59				-	67.56	97.29	73.42	135.09	146.83	274.57	64.98	1.41	5.65	57.92	1.00	1.44	3.00	5.52	146.26	274.57	64.98	0.14	0.26	0.06					
Manifold Chamber		5.10		44.55	-		-	-				-	11.87	17.09	12.59	23.17	25.19	47.11	-	-	-	-	-	-	-	-	-	23.17	47.11	-	0.02	0.04	-				
Butterfly Valve Chamber		1.34		15.03	-		-	-				-	3.95	5.69	4.14	7.62	8.28	15.48	-	-	-	-	-	-	-	-	7.62	15.48	-	0.01	0.01	-					
Flow Meter Valve Chamber		1.29		14.74	-		-	-				-	3.87	5.57	4.05	7.45	8.11	15.17	-	-	-	-	-	-	-	-	7.45	15.17	-	0.01	0.01	-					
D.G. Room		23.64		69.31	39.35	462.46	50.00	2.00	17.81			-	20.99	30.23	42.46	78.13	49.31	92.21	75.56	1.64	6.57	67.35	1.39	2.00	4.16	7.65	92.35	92.21	75.56	0.09	0.09	0.07					
Diesel Storage Room		9.31		26.75	16.59	224.76	15.00	0.60	6.05			-	8.10	11.66	15.57	28.65	19.04	35.60	31.86	0.69	2.77	28.40	0.67	0.96	2.02	3.72	35.14	35.60	31.86	0.03	0.03	0.03					
Store Room		8.89		22.77	16.88	220.40	13.50	0.54	5.51			-	7.04	10.14	13.89	25.56	16.77	31.36	32.41	0.70	2.82	28.89	0.66	0.95	1.98	3.64	32.02	31.36	32.41	0.03	0.03	0.03					
Metering Room		12.65		41.09	32.51	370.08	29.44	1.00	10.92			-	12.22	17.60	25.09	46.17	28.34	53.00	62.42	1.36	5.43	55.64	1.11	1.60	3.33	6.13	57.73	53.00	62.42	0.05	0.05	0.06					
Internal Roads										75.00	33.75	11.25	224.40														-	224.40			0.21						
Compound Wall		12.57	39.33		51.07	527.20	-	-				-	8.95	12.89	14.32	26.35	28.64	53.56	98.06	2.13	8.53	87.40	1.58	2.28	4.74	8.72	43.60	53.56	98.06	0.04	0.05	0.09					
Total	125.34	39.33	540.28	190.26	2,138.43	147.69	5.73	40.28	75.00	33.75	11.25	224.40	160.95	231.77	223.92	411.28	366.49	685.34	365.30	7.94	31.77	325.59	6.42	9.24	19.25	35.42	478.47	909.74	365.30	0.45	0.86	0.34					

2	IPS4A																				
	Screen Chamber			16.53																	
	Wetwell & Superstructure		81.16			332.08		45.36		443.50		73.03		2.92							
	Manifold Chamber		6.01			52.28															
	Butterfly Valve Chamber		1.34			15.03															
	Flow Meter Valve Chamber		1.58			17.33															
	D.G. Room		23.64			69.31	39.35			462.46	50.00		2.00		17.81						
	Diesel Storage Room		10.45			29.03	18.78			249.56	20.00		0.80		7.73						
	Store Room		8.89			22.77	16.88			220.40	13.50		0.54		5.51						
	Metering Room		12.65			41.09	32.51			370.08	29.44		1.00		10.92						
	Internal Roads											60.00									
	Compound Wall		12.57	39.33			51.07			527.20											
	Total		174.83							527.20											
			39.33																		
			640.95																		
			203.96																		
			2,273.20																		
			185.97																		
			7.26																		
			41.96																		
			60.00																		
			27.00																		
			9.00																		
			179.52																		
			193.40																		
			278.50																		
			264.95																		
			487.51																		
			445.98																		
			833.98																		
			391.60																		
			8.51																		
			34.05																		
			349.03																		
			6.82																		
			9.82																		
			20.46																		
			37.65																		
			559.21																		
			1,013.50																		
			391.60																		
			0.53																		
			0.95																		
			0.37																		







Rs.)
Total (Rs. In Lakhs)
0.09
0.46
0.07
0.02
0.02
0.24
0.10
0.09
0.16
0.21
0.18
1.65

1.85	0.18	0.17	0.16	0.09	0.11	0.24	0.03	0.02	0.08	0.66	0.11	
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1.97	0.20	0.24	0.16	0.09	0.12	0.24	0.02	0.02	0.08	0.65	0.13	
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2.22	0.16	0.09	0.25	0.24	0.02	0.03	0.04	0.02	0.07	0.12	1.04	0.13	
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5.52	1.47	1.94	1.69	-	0.04
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**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS4**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
			<b>IPS-4</b>		<b>IPS-4</b>
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	40.37	360.70	14560
b)	From 1.5 m to 3.0 m	Cum	40.37	407.00	16429
c)	From 3.0 m to 4.5 m	Cum	40.37	453.30	18297
d)	From 4.5 m to 6 m	Cum	40.37	499.60	20166
e)	From 6 m to 7.5 m	Cum	32.00	545.90	17467
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
3	<b>Filling available</b> 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	182.76	116.50	21292
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	10.69	262.50	2807
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	11.16	3953.40	44108
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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-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	59.20	5018.30	297107
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.74	68500.00	324442
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	7.68	203.00	1559
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	328.57	356.40	117102
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	6.44	412.20	2655
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	38.00	290.50	11039
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	8.80	17.80	157
12	<b>Railing:</b> 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 material, labour. <b>at walkway: Around platform</b>				
	RUIDP-2017, Item-10.20, Pg.-34	RM	10.00	2,040.00	20400
	<b>Total</b>				<b>950107</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS4A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
			IPS-4A		IPS-4A
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	58.04	360.70	20936
b)	From 1.5 m to 3.0 m	Cum	58.04	407.00	23623
c)	From 3.0 m to 4.5 m	Cum	58.04	453.30	26311
d)	From 4.5 m to 6 m	Cum	42.56	499.60	21265
e)	From 6 m to 7.5 m	Cum		545.90	
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.00	901.00	0
b)	From 7.5 m to 9.0 m	Cum	0.00	984.10	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1067.20	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
	<b>Hard rock (blasting prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.00	1500.50	0
b)	From 7.5 m to 9.0 m	Cum	0.00	1583.60	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1666.70	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
3	<b>Filling available</b> 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	62.14	116.50	7239
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	154.55	262.50	40570
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	16.53	3953.40	65351
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	62.04	5018.60	311370
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.96	68500.00	339997
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	9.08	203.00	1843
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	314.91	356.40	112234
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	10.40	412.20	4287
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	27.00	290.50	7844
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	10.55	17.80	188
12	<b>Railing:</b> 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 material, labour. <b>at walkway: Around platform</b>				
	RUIDP-2017, Item-10.20, Pg.-34	RM	12.50	2,040.00	25500
	<b>Total</b>				<b>1029078</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER IPS6**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
			<b>IPS-6</b>		<b>IPS-6</b>
<b>1</b>	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	66.60	360.70	24023
b)	From 1.5 m to 3.0 m	Cum	66.60	407.00	27106
c)	From 3.0 m to 4.5 m	Cum	66.60	453.30	30190
d)	From 4.5 m to 6 m	Cum	66.60	499.60	33273
e)	From 6 m to 7.5 m	Cum	4.44	545.90	2424
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
<b>2</b>	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.44	901.00	400
b)	From 7.5 m to 9.0 m	Cum	0.00	984.10	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1067.20	0
	BSR-BCD-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
a)	From 6 m to 7.5 m	Cum	0.22	1500.50	333
b)	From 7.5 m to 9.0 m	Cum	0.00	1583.60	0
c)	From 9.0 m to 10.5 m	Cum	0.00	1666.70	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
<b>3</b>	<b>Filling available</b> 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	73.79	116.50	8597
	BSR-BCD-20-Item 2.26; Pg-96				
<b>4</b>	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	197.05	262.50	51726
	BSR - RCD-18- Item- 3.11, P-45 & RA				
<b>5</b>	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520
	BSR-BCD-20-Item 2.25; Pg-96				
<b>6</b>	<b>PCC:</b> 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	19.17	3953.40	75787
	BSR-BCD-20; Item 4.1.3; Pg-99				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>RCC:</b> 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-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	73.46	5018.60	368666
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	5.88	68500.00	402561
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	9.88	203.00	2006
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	375.90	356.40	133971
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	11.86	412.20	4889
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	31.00	290.50	9006
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	11.55	17.80	206
12	<b>Railing:</b> 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 material, labour. at walkway: Around platform				
	RUIDP-2017, Item-10.20, Pg.-34	RM	12.70	2,040.00	25908
	<b>Total</b>				<b>1221592</b>



**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- SCREEN CHAMBER MPS**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	99.00	360.70	35709
b)	From 1.5 m to 3.0 m	Cum	99.00	407.00	40293
c)	From 3.0 m to 4.5 m	Cum	24.09	453.30	10920
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Excavation work</b> 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.				
3	<b>Filling available</b> 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	49.02	116.50	5711
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	173.07	262.50	45431
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	200.00	102.60	20520
	BSR-BCD-20-Item 2.25; Pg-96				
6	<b>PCC:</b> 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	29.16	3953.40	115281
	BSR-BCD-20; Item 4.1.3; Pg-99				
7	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	65.88	5018.60	330625
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
8	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	5.27	68500.00	361022
	BSR-BCD-20; Item-5.22.7, Pg-106				
9	<b>Centering &amp; Shuttering</b>				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.32	203.00	2501
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	264.57	356.40	94293
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	20.00	412.20	8244
	BSR - BCD-20- Item- 5.9.3, Pg-104				
10	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	13.00	290.50	3777
	BSR-BCD-20; Item-19.16; Pg-296				
11	<b>Painting:</b> 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	14.60	17.80	260
12	<b>Railing:</b> 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 material, labour. at walkway: Around platform				
	RUIDP-2017, Item-10.20, Pg.-34	RM	15.80	2,040.00	32232
	<b>Total</b>				<b>1106819</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS4**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	1036.00	654.70	6783
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	115.47	360.70	41650
b)	From 1.5 m to 3.0 m	Cum	115.47	407.00	46996
c)	From 3.0 m to 4.5 m	Cum	115.47	453.30	52343
d)	From 4.5 m to 6.0 m	Cum	115.47	499.60	57689
e)	From 6.0 m to 7.5 m	Cum	115.47	545.90	63035
f)	From 7.5 m to 9.0 m	Cum	115.47	592.20	68381
g)	From 9.0 m to 10.5 m	Cum	115.47	638.50	73728
h)	From 10.5 m to 12.0 m	Cum	83.90	684.80	57455
i)	From 12.0 m to 13.5 m				
j)	From 13.5 m to 15.0 m				
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	11.55	901.00	10404
b)	From 7.5 m to 9.0 m	Cum	23.09	984.10	22727
c)	From 9.0 m to 10.5 m	Cum	34.64	1067.20	36969
d)	From 10.5 m to 12.0 m				
e)	From 12.0 m to 13.5 m				
f)	From 13.5 m to 15.0 m				
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	5.77	1500.50	8663
b)	From 7.5 m to 9.0 m	Cum	11.55	1583.60	18286
c)	From 9.0 m to 10.5 m	Cum	23.09	1666.70	38491
d)	From 10.5 m to 12.0 m				
e)	From 12.0 m to 13.5 m				
f)	From 13.5 m to 15.0 m				
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	102.37	116.50	11926
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	789.82	262.50	207328
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR-BCD-20-Item 2.25; Pg-96				
7	<b>PCC:</b> 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	39.38	3953.40	155685
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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-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:				
8.1	RCC Grade M-30	Cum	195.20	5018.60	979631
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	RCC Grade M -25	Cum	51.64	5704.70	294591
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	27.15	68500.00	1859939
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	38.04	203.00	7722
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	644.70	356.40	229771
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	259.88	412.20	107123
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	159.43	362.90	57857
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	106.46	470.60	50100
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	33.85	5840.00	197659
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	333.53	157.40	52498
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	485.41	97.20	47182
	BSR - BCD-18- Item- 13.77.2, P-206				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	39.75	456.50	18146
	BSR-BCD-20; Item-11.4; Pg-174				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-169				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	91.61	2553.30	233908
	BSR-BCD-20; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	40.00	290.50	11620
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening in the floor platform</b>	RM	18.60	2040.00	37944
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arangements 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	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	40.00	290.50	11620
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequered plate</b> 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	17.00	4080.00	69360
	(Item No.6, Section J, MJP Page 366 DSR 2018-19)				
24	<b>230 thick rubble soling:</b> Supplying, filling, spreading & leveling 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	17.71	1235.90	21888
	BSR-BCD-20; Item-24.5, Pg-320				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45 & RA				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>7204529</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS4A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	1050.00	654.70	6874
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	181.14	360.70	65337
b)	From 1.5 m to 3.0 m	Cum	181.14	407.00	73724
c)	From 3.0 m to 4.5 m	Cum	181.14	453.30	82111
d)	From 4.5 m to 6.0 m	Cum	181.14	499.60	90498
e)	From 6.0 m to 7.5 m	Cum	181.14	545.90	98884
f)	From 7.5 m to 9.0 m	Cum	181.14	592.20	107271
g)	From 9.0 m to 10.5 m	Cum	181.14	638.50	115658
h)	From 10.5 m to 12.0 m	Cum	83.33	684.80	57064
i)	From 12.0 m to 13.5 m	Cum			
j)	From 13.5 m to 15.0 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	18.11	901.00	16321
b)	From 7.5 m to 9.0 m	Cum	36.23	984.10	35652
c)	From 9.0 m to 10.5 m	Cum	54.34	1067.20	57994
d)	From 10.5 m to 12.0 m	Cum	33.33	1150.30	38342
e)	From 12.0 m to 13.5 m	Cum	0.00	1233.40	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1316.50	0
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	9.06	1500.50	13590
b)	From 7.5 m to 9.0 m	Cum	18.11	1583.60	28685
c)	From 9.0 m to 10.5 m	Cum	36.23	1666.70	60381
d)	From 10.5 m to 12.0 m	Cum	25.00	1749.80	43743
e)	From 12.0 m to 13.5 m	Cum	0.00	1832.90	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1916.00	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	124.39	116.50	14491
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1226.92	262.50	322067
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR-BCD-20-Item 2.25; Pg-96				
7	<b>PCC:</b> 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	81.16	3953.40	320858
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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-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:				
8.1	RCC Grade M-30	Cum	263.72	5018.60	1323505
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	RCC Grade M -25	Cum	68.36	5704.70	389973
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	36.53	68500.00	2502223
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	48.66	203.00	9879
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	795.68	356.40	283579
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	375.81	412.20	154909
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	202.78	362.90	73589
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	129.44	470.60	60914
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	45.36	5840.00	264906
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	443.50	157.40	69807
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	659.06	97.20	64061
	BSR - BCD-20- Item- 13.77.2, P-206				



Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	73.03	456.50	33338
	BSR-BCD-20; Item-11.4; Pg-174				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-169				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc.	Sqm	138.93	2553.30	354730
	BSR-BCD-20; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	38.00	290.50	11039
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening</b> in the floor platform	RM	22.60	2040.00	46104
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> 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) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	38.00	290.50	11039
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequered plate</b> 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	22.00	4080.00	89760
	(Item No.6, Section J, MJP Page 366 DSR 2018-19)				
24	<b>230 thick rubble soling:</b> Supplying, filling, spreading & leveling 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	27.77	1235.90	34321
	BSR-BCD-18; Item-24.5, Pg-320				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45 & RA				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>9364652</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL IPS6**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	1110.00	654.70	7267
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	181.14	360.70	65337
b)	From 1.5 m to 3.0 m	Cum	181.14	407.00	73724
c)	From 3.0 m to 4.5 m	Cum	181.14	453.30	82111
d)	From 4.5 m to 6.0 m	Cum	181.14	499.60	90498
e)	From 6.0 m to 7.5 m	Cum	181.14	545.90	98884
f)	From 7.5 m to 9.0 m	Cum	181.14	592.20	107271
g)	From 9.0 m to 10.5 m	Cum	181.14	638.50	115658
h)	From 10.5 m to 12.0 m	Cum	47.22	684.80	32336
i)	From 12.0 m to 13.5 m	Cum			
j)	From 13.5 m to 15.0 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	18.11	901.00	16321
b)	From 7.5 m to 9.0 m	Cum	36.23	984.10	35652
c)	From 9.0 m to 10.5 m	Cum	54.34	1067.20	57994
d)	From 10.5 m to 12.0 m	Cum	18.89	1150.30	21727
e)	From 12.0 m to 13.5 m	Cum	0.00	1233.40	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1316.50	0
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	9.06	1500.50	13590
b)	From 7.5 m to 9.0 m	Cum	18.11	1583.60	28685
c)	From 9.0 m to 10.5 m	Cum	36.23	1666.70	60381
d)	From 10.5 m to 12.0 m	Cum	14.17	1749.80	24788
e)	From 12.0 m to 13.5 m	Cum	0.00	1832.90	0
f)	From 13.5 m to 15.0 m	Cum	0.00	1916.00	0
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	120.98	116.50	14094
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1194.22	262.50	313483
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR-BCD-20-Item 2.25; Pg-96				
7	<b>PCC:</b> 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	81.16	3953.40	320858
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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-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:				
8.1	<b>RCC Grade M-30</b>	Cum	259.44	5018.60	1302026
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	<b>RCC Grade M -25</b>	Cum	68.36	5704.70	389973
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	36.06	68500.00	2469973
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	48.62	203.00	9871
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	774.30	356.40	275959
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	375.81	412.20	154909
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	202.78	362.90	73589
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	129.44	470.60	60914
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	45.36	5840.00	264906
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	443.50	157.40	69807
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	659.06	97.20	64061
	BSR - BCD-20- Item- 13.77.2, P-206				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	73.03	456.50	33338
	BSR-BCD-20; Item-11.4; Pg-174				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-169				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	138.93	2553.30	354730
	BSR-BCD-20; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	37.00	290.50	10749
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening</b> in the floor platform	RM	22.60	2040.00	46104
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding 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	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	37.00	290.50	10749
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequerred plate</b> 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	22.00	4080.00	89760
	(Item No.6, Section J, MJP Page 366 DSR 2018-19)				
24	<b>230 thick rubble soling:</b> Supplying, filling, spreading & leveling 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	27.77	1235.90	34321
	BSR-BCD-20; Item-24.5, Pg-296				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45 & RA				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>9233829</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- WETWELL MPS**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	<b>Clearing jungle</b> 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.	100 Sqm	1855.00	654.70	12145
	BSR-BCD-20- Item 2.32 pg 96				
2	<b>Earth work in excavation in foundation trenches or drains</b> (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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	316.86	360.70	114291
b)	From 1.5 m to 3.0 m	Cum	316.86	407.00	128962
c)	From 3.0 m to 4.5 m	Cum	316.86	453.30	143633
d)	From 4.5 m to 6.0 m	Cum	316.86	499.60	158303
e)	From 6.0 m to 7.5 m	Cum	578.80	545.90	315967
f)	From 7.5 m to 9.0 m	Cum			
g)	From 9.0 m to 10.5 m	Cum			
h)	From 10.5 m to 12.0 m	Cum			
i)	From 12.0 m to 13.5 m	Cum			
j)	From 13.5 m to 15.0 m	Cum			
	BSR-BCD-20-Item 2.8.1; Pg-96 & 2.27.1; Pg.-96				
3	<b>Excavation work</b> 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.				
	<b>Ordinary Rock</b>				
a)	From 6.0 m to 7.5 m	Cum	57.88	862.60	49927
b)	From 7.5 m to 9.0 m	Cum			
c)	From 9.0 m to 10.5 m	Cum			
d)	From 10.5 m to 12.0 m	Cum			
e)	From 12.0 m to 13.5 m	Cum			
f)	From 13.5 m to 15.0 m	Cum			
	<b>Hard Rock (Blasting prohibited)</b>				
a)	From 6.0 m to 7.5 m	Cum	28.94	1462.10	42313
b)	From 7.5 m to 9.0 m	Cum			
c)	From 9.0 m to 10.5 m	Cum			
d)	From 10.5 m to 12.0 m	Cum			
e)	From 12.0 m to 13.5 m	Cum			
f)	From 13.5 m to 15.0 m	Cum			
	BSR-BCD-20-Item 2.9.1 and 2.9.3 pg 93, 2.27.2 pg 96				
4	<b>Filling available</b> 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	128.37	116.50	14955
	BSR-BCD-20-Item 2.26; Pg-96				
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	1717.87	262.50	450941
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000.00	102.60	513000

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR-BCD-20-Item 2.25; Pg-96				
7	<b>PCC:</b> 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	196.99	3953.40	778780
	BSR-BCD-20; Item 4.1.3; Pg-99				
8	<b>RCC:</b> 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-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:				
8.1	<b>RCC Grade M-30</b>	Cum	356.92	5018.60	1791239
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
	All work above Plinth level upto floor V Level.				
8.2	<b>RCC Grade M -25</b>	Cum	104.77	5704.70	597681
	BSR-BCD-20; Item-5.33.2, Pg-108				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	50.79	68500.00	3478834
	BSR-BCD-20; Item-5.22.7, Pg-106				
10	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	65.17	203.00	13229
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	836.38	356.40	298086
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	648.01	412.20	267110
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	317.15	362.90	115094
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	175.39	470.60	82539
	BSR - BCD-20- Item- 5.9.6, Pg-104				
11	<b>Brick work</b> with bricks of class designation 100A in foundations and plinth in Cement mortar 1: 4 (1 cement: 4 coarse sand)	Cum	63.34	5840.00	369920
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A, Pg- 113				
12	<b>Plastering:</b> 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sq m	619.41	157.40	97495
	BSR-BCD-20; Item-13.11.1, Pg-202				
13	<b>Painting:</b> Distempering with <b>oil bound washable</b> distemper of approved brand and manufacture to give an even shade	Sq m	1002.25	97.20	97419
	BSR - BCD-20- Item- 13.77.2, P-206				



Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
14	<b>52 mm thick cement concrete flooring</b> 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	146.71	456.50	66973
	BSR-BCD-20; Item-11.4; Pg-174				
15	<b>Structural steel</b> 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
	BSR-BCD-20; Item-10.1; Pg-169				
16	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	235.06	2553.30	600179
	BSR-BCD-20; Item-22.8; Pg-310				
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	25.20	3635.80	91622
	BSR-BCD-20; Item-21.10; Pg-307				
18	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	each	30.00	290.50	8715
	BSR-BCD-20; Item-19.16; 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: <b>Around Opening</b> in the floor platform	RM	29.00	2040.00	59160
	RUIDP-2017, Item-10.20, Pg.-34				
20	Supplying and fixing- <b>Rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding 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	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
21	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	30.00	290.50	8715
	BSR-BCD-20; Item-19.16; Pg-296				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
22	Providing and fixing in position <b>Lightening arrester</b> set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing 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 earthing 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
	RUIDP-2017, Item-19.80, Pg.-145				
23	Providing and fixing <b>M.S. chequerred plate</b> 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	30.00	4080.00	122400
	(Item No.6, Section J, MJP Page 366 DSR 2018-19)				
24	<b>230 thick rubble soling:</b> Supplying, filling, spreading & leveling 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	48.59	1235.90	60052
	BSR-BCD-20; Item-24.5, Pg-320				
25	<b>Bypass Arrangement</b>				
i	<b>Earth work</b> 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	163.90	360.70	59119
b)	From 1.5 m to 3.0 m	Cum	163.90	407.00	66707
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
ii	<b>Filling available</b> 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	263.69	116.50	30720
	BSR-BCD-20-Item 2.26; Pg-96				
iii	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10.00	102.60	1026
	BSR-BCD-20-Item 2.25; Pg-96				
iv	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	64.11	262.50	16828
	BSR - RCD-18- Item- 3.11, P-45 & RA				
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.				
	DI pipe- 1000 dia	m	50.00	21440.20	1072010
	BSR-BCD-20-Item 18.72.29; Pg-278				
	<b>Total</b>				<b>12282488</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- MANIFOLD CHAMBER IPS4**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
			<b>IPS-4</b>		<b>IPS-4</b>
1	Earth work in excavation in <b>foundation trenches</b> 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	83.33	360.70	30057
b)	From 1.5 m to 3.0 m	Cum	83.33	407.00	33915
c)	From 3.0 m to 4.5 m	Cum	22.22	453.30	10072
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	46.96	116.50	5471
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	141.92	262.50	37254
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	5.10	3953.40	20162
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	44.55	5704.70	254144
	BSR-BCD-20; Item-5.33.2, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	3.56	68500.00	244134
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	8.64	203.00	1754
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	186.90	356.40	66611

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	40.95	412.20	16880
	BSR - BCD-18- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	9.60	362.90	3484
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	54.55	17.80	971
	<b>Total</b>				<b>737493</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- MANIFOLD CHAMBER IPS4A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
			<b>IPS-4A</b>		<b>IPS-4A</b>
<b>1</b>	Earth work in excavation in <b>foundation trenches</b> 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	97.98	360.70	35341
b)	From 1.5 m to 3.0 m	Cum	97.98	407.00	39878
c)	From 3.0 m to 4.5 m	Cum	26.13	453.30	11845
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
<b>2</b>	<b>Filling available</b> 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	53.46	116.50	6228
	BSR-BCD-20-Item 2.26; Pg-96				
<b>3</b>	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	168.63	262.50	44265
	BSR - RCD-18- Item- 3.11, P-45 & RA				
<b>4</b>	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220
	BSR-BCD-20-Item 2.25; Pg-96				
<b>5</b>	<b>PCC:</b> 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	6.01	3953.40	23760
	BSR-BCD-20; Item 4.1.3; Pg-99				
<b>6</b>	<b>RCC:</b> 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-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	52.28	5704.70	298242
	BSR-BCD-20; Item-5.33.2, Pg-108				
<b>7</b>	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.18	68500.00	286494
	BSR-BCD-20; Item-5.22.7, Pg-106				
<b>8</b>	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	9.86	203.00	2002
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	215.25	356.40	76715

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	48.70	412.00	20064
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	13.68	362.90	4964
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	64.33	17.80	1145
	<b>Total</b>				<b>862487</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- MANIFOLD CHAMBER IPS6**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
			IPS-6		IPS-6
1	Earth work in excavation in <b>foundation trenches</b> 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	106.40	360.70	38378
b)	From 1.5 m to 3.0 m	Cum	106.40	407.00	43305
c)	From 3.0 m to 4.5 m	Cum	28.37	453.30	12860
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	54.59	116.50	6360
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	186.58	262.50	48977
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	6.56	3953.40	25934
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	55.52	5704.70	316725
	BSR-BCD-20; Item-5.33.2, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.44	68500.00	304250
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	10.07	203.00	2044
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	220.15	356.40	78461

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	53.96	412.20	22242
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	15.66	362.90	5683
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	69.94	17.80	1245
	<b>Total</b>				<b>919048</b>



**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- MANIFOLD CHAMBER MPS (1000 mm dia PM)**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	159.96	360.70	57698
b)	From 1.5 m to 3.0 m	Cum	159.96	407.00	65104
c)	From 3.0 m to 4.5 m	Cum	42.66	453.30	19338
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	67.44	116.50	7857
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	295.14	262.50	77474
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	10.01	3953.40	39574
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	77.84	5704.70	444054
	BSR-BCD-20; Item-5.33.2, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	6.23	68500.00	426563
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.47	203.00	2531
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	276.22	356.40	98445

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	85.66	412.20	35309
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	20.63	362.90	7487
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	105.64	17.80	1880
	<b>Total</b>				<b>1295898</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- MANIFOLD CHAMBER MPS (900 mm dia PM)**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	104.64	360.70	37744
b)	From 1.5 m to 3.0 m	Cum	104.64	407.00	42588
c)	From 3.0 m to 4.5 m	Cum	27.90	453.30	12647
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	53.93	116.50	6283
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	183.25	262.50	48103
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	6.45	3953.40	25499
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	54.13	5704.70	308795
	BSR-BCD-20; Item-5.33.2, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	4.33	68500.00	296632
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	9.95	203.00	2020
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	217.35	356.40	77464

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	52.99	412.20	21842
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	10.44	362.90	3789
	BSR - BCD-20- Item- 5.9.5, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	68.77	17.80	1224
	<b>Total</b>				<b>897214</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS4**

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	23.63	360.70	8523
b)	From 1.5 m to 3.0 m	Cum	23.63	407.00	9617
c)	From 3.0 m to 4.5 m	Cum	6.30	453.30	2856
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.58	116.50	2631
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.98	262.50	8132
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.34	3953.40	5298
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	15.03	5018.60	75430
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.20	68500.00	82364
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.08	203.00	828
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	80.50	356.40	28690

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.75	17.80	263
	<b>Total</b>				<b>237216</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS4A**

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	23.63	360.70	8523
b)	From 1.5 m to 3.0 m	Cum	23.63	407.00	9617
c)	From 3.0 m to 4.5 m	Cum	6.30	453.30	2856
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.58	116.50	2631
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.98	262.50	8132
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.34	3953.40	5298
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	15.03	5018.60	75430
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.20	68500.00	82364
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.08	203.00	828
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	80.50	356.40	28690

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-18- Item- 5.9.2, Pg-84				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.75	17.80	263
	<b>Total</b>				<b>237216</b>



**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- BUTTERFLY VALVE CHAMBER IPS6**

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	23.63	360.30	8514
b)	From 1.5 m to 3.0 m	Cum	23.63	406.60	9608
c)	From 3.0 m to 4.5 m	Cum	6.30	452.90	2853
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.58	116.50	2631
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.98	262.50	8132
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.34	3953.40	5298
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	15.03	5018.60	75430
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.20	68500.00	82364
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.08	203.00	828
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	80.50	356.40	28690

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.75	17.80	263
	<b>Total</b>				<b>237195</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- BUTTERFLY VALVE CHAMBER MPS**

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	23.63	360.70	8523
b)	From 1.5 m to 3.0 m	Cum	23.63	407.00	9617
c)	From 3.0 m to 4.5 m	Cum	6.30	453.30	2856
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.58	116.50	2631
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.98	262.50	8132
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.34	3953.40	5298
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	15.03	5018.60	75430
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.20	68500.00	82364
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.08	203.00	828
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	80.50	356.40	28690

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.75	17.80	263
	<b>Total</b>				<b>237216</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- FLOW METER CHAMBER IPS4**

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	22.79	360.70	8220
b)	From 1.5 m to 3.0 m	Cum	22.79	407.00	9276
c)	From 3.0 m to 4.5 m	Cum	6.08	453.30	2756
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	22.57	116.50	2629
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	29.09	262.50	7636
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.29	3953.40	5100
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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-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	14.74	5018.60	73974
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.18	68500.00	80775
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.08	203.00	828
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	80.50	356.40	28690

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	14.19	17.80	253
	<b>Total</b>				<b>232721</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- FLOW METER CHAMBER IPS4A**

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	27.54	360.70	9934
b)	From 1.5 m to 3.0 m	Cum	27.54	407.00	11209
c)	From 3.0 m to 4.5 m	Cum	7.34	453.30	3327
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	25.13	116.50	2928
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	37.29	262.50	9789
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.58	3953.40	6246
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	17.33	5018.60	86972
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.39	68500.00	94968
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.56	203.00	926
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	91.70	356.40	32682

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	17.36	17.80	309
	<b>Total</b>				<b>271874</b>



**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- FLOW METER CHAMBER IPS6**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
			IPS-6		IPS-6
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	25.92	360.30	9339
b)	From 1.5 m to 3.0 m	Cum	25.92	406.60	10539
c)	From 3.0 m to 4.5 m	Cum	6.91	452.90	3130
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	23.84	116.50	2777
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	34.91	262.50	9164
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	1.49	3953.40	5891
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	16.30	5018.60	81803
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.30	68500.00	89324
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.32	203.00	877
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	86.10	356.40	30686

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-20- Item- 5.9.2, Pg-104				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	16.28	17.80	290
	<b>Total</b>				<b>256404</b>

**SEWERAGE SYSTEM FOR GAYA CITY  
COST ESTIMATE- FLOW METER CHAMBER MPS**

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	37.13	360.70	13393
b)	From 1.5 m to 3.0 m	Cum	37.13	407.00	15112
c)	From 3.0 m to 4.5 m	Cum	9.90	453.30	4488
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>Filling available</b> 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	29.00	116.50	3379
	BSR-BCD-20-Item 2.26; Pg-96				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	55.16	262.50	14480
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	102.60	10260
	BSR-BCD-20-Item 2.25; Pg-96				
5	<b>PCC:</b> 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	2.18	3953.40	8618
	BSR-BCD-20; Item 4.1.3; Pg-99				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	22.06	5018.60	110710
	BSR-BCD-20; Item-5.33.1 + Item- 5.34.1, Pg-108				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.76	68500.00	120889
	BSR-BCD-20; Item-5.22.7, Pg-106				
8	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	5.28	203.00	1072
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	108.50	356.40	38669

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	BSR - BCD-18- Item- 5.9.2, Pg-84				
<b>9</b>	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786	each	8.00	290.50	2324
	BSR-BCD-20; Item-19.16; Pg-296				
<b>10</b>	<b>Painting:</b> 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	23.75	17.80	423
	<b>Total</b>				<b>343817</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS4**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	202.55	360.70	73061
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	23.64	3953.40	93466
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	158.24	116.50	18435
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.31	262.50	11632
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	28.90	4952.60	143140
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	68500.00	276802
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	38.40	203.00	7795
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.50	45929
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	110.88	470.60	52180
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
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	462.46	97.20	44951
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	1106.50	13278
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	802.00	3609
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>15,35,477</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS4A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	202.55	360.70	73061
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	23.64	3953.40	93466
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	158.24	116.50	18435
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.31	262.50	11632
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	28.90	4952.60	143140
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	68500.00	276802
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	38.40	203.00	7795
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.50	45929
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	110.88	470.60	52180
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
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	462.46	97.20	44951
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-18; Item-10.8.1; Pg-139	Sqm	12.00	1106.50	13278
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	802.00	3609
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>15,35,477</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- IPS6**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	202.55	360.70	73061
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	23.64	3953.40	93466
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	158.24	116.50	18435
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.31	262.50	11632
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	28.90	4952.60	143140
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	68500.00	276802
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	38.40	203.00	7795
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.50	45929
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	110.88	470.60	52180
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
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	462.46	97.20	44951
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	1106.50	13278
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-174	Sqm	4.50	802.00	3609
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>15,35,477</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- D.G. ROOM- MPS**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
1	Earth work in excavation in <b>foundation trenches</b> 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	202.55	360.70	73061
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	23.64	3953.40	93466
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	158.24	116.50	18435
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	44.31	262.50	11632
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	28.90	4952.60	143140
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	40.41	5704.70	230521
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	4.04	68500.00	276802
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	38.40	203.00	7795
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	64.84	412.20	26725
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	126.70	362.50	45929
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	110.88	470.60	52180
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Amount (Rs.)
7	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	39.35	5840.00	229831
8	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	462.46	157.40	72791
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	462.46	97.20	44951
10	<b>Water proofing:</b> 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; Pg-310	Sqm	50.00	2553.30	127665
11	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	50.00	456.50	22825
12	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
13	Supplying and fixing- <b>rolling shutters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioviding and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b> BSR-BCD-20; Item-10.8.1; Pg-169	Sqm	12.00	1106.50	13278
14	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	4.50	802.00	3609
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	17.81	217.00	3864
				<b>Total</b>	<b>15,35,477</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS4**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	67.52	360.70	24353.7
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	9.31	3953.40	36822.0
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	51.31	116.50	5978.1
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	16.20	262.50	4254
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	8.90	4952.60	44073.2
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	17.85	5704.70	101851.7
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.79	68500.00	122299.9
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	25.14	412.20	10361
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	57.96	362.50	21011
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	470.60	13440
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.59	5840.00	96912.5
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	224.76	157.40	35377.2
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	224.76	97.20	21846.7
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	15.00	456.50	6847.5
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	1106.50	6639.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	15.00	2553.30	38299.5
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	6.05	217.00	1312.4
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>6,31,253</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS4A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	67.52	360.70	24353.7
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	10.45	3953.40	41328.8
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	50.17	116.50	5845.3
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	17.34	262.50	4553
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	8.90	4952.60	44073.2
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	20.13	5704.70	114829.9
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	2.01	68500.00	137883.7
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	30.74	412.20	12669
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	64.26	362.50	23294
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	470.60	13440
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	18.78	5840.00	109678.7
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	249.56	157.40	39280.7
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	249.56	97.20	24257.2
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	9130.0
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	1106.50	6639.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	20.00	2553.30	51066.0
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	7.73	217.00	1677.0
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>7,03,574</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- DIESEL STORE ROOM- IPS6**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	<b>Excavation</b>				
1	Earth work in excavation in <b>foundation trenches</b> 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	151.92	360.70	54795.9
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	13.28	3953.40	52507.1
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	123.13	116.50	14344.8
	BSR-BCD-20-Item 2.26; Pg-96				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	28.78	262.50	7556
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>RCC:</b> 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-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	20.02	4952.60	99164.7
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	19.81	5704.70	113032.9
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.98	68500.00	135725.9
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	28.80	203.00	5846
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	25.14	412.00	10356
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate Rs.	Rs.
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	78.20	362.90	28379
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	64.26	470.80	30254
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.59	5840.00	96912.5
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	235.80	157.40	37114.9
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	235.80	97.20	22919.8
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	15.00	456.50	6847.5
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976.1
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	Supplying and fixing- <b>rolling shutters</b> of approved make. <b>(i) 80x1.25mm M.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	6.00	1106.50	6639.0
	BSR-BCD-20; Item-10.8.1; Pg-169				
<b>13</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	15.00	2553.30	38299.5
	BSR-BCD-20; Item-22.8; Pg-310				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	6.05	217.00	1312.4
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>7,98,983</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS4**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	67.52	360.70	24354
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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	8.89	3953.40	35162
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	51.73	116.50	6027
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	15.78	262.50	4143
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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.				
	RCC Grade M -25 Upto Plinth	Cum	8.90	4952.60	44073
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	13.87	5704.70	79104
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.39	68500.00	94986
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.00	9202

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	Sqm	54.81	362.90	19891
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	470.80	13446
	BSR - BCD-20- Item- 5.9.6, Pg-104				
7	<b>Brick work</b> 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	16.88	5840.00	98589
	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	220.40	157.40	34691
	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	220.40	97.20	21423
	BSR - BCD-20- Item- 13.77.2 P-206				
10	<b>52 mm thick cement concrete flooring</b> 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	13.50	456.50	6163
	BSR-BCD-20; Item-11.4; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976
	BSR-BCD-20; Item-21.10; Pg-307				
12	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	13.50	2553.30	34470
	BSR-BCD-20; Item-22.8; Pg-310				
13	<b>Marble chips skirting</b> (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	2.25	802.00	1805
	BSR-BCD-20; Item-11.12; Pg-175				
14	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	5.51	217.00	1195
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>5,68,296</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS4A**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	Cum	67.52	360.70	24354
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-93				
2	<b>PCC:</b> 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	8.89	3953.40	35162
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	51.73	116.50	6027
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	15.78	262.50	4143
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	8.90	4952.60	44073
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	13.87	5704.70	79104
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.39	68500.00	94986
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.00	9202

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	54.81	362.90	19891
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	28.56	470.80	13446
	BSR - BCD-20- Item- 5.9.6, Pg-104				
<b>7</b>	<b>Brick work</b> 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	16.88	5840.00	98589
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand)	Sqm	220.40	157.40	34691
	BSR-BCD-20;Item-13.11.1; Pg-202				
<b>9</b>	Painting: Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade	Sqm	220.40	97.20	21423
	BSR - BCD-20- Item- 13.77.2 P-206				
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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	13.50	456.50	6163
	BSR-BCD-20; Item-11.4; Pg-174				
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	10.17	3635.80	36976
	BSR-BCD-20; Item-21.10; Pg-307				
<b>12</b>	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	13.50	2553.30	34470
	BSR-BCD-20; Item-22.8; Pg-310				
<b>13</b>	<b>Marble chips skirting</b> (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	2.25	802.00	1805
	BSR-BCD-20; Item-11.12; Pg-96				
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	5.51	217.00	1195
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>5,68,296</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- STORE ROOM- IPS6**

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	67.52	360.70	24354
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg-96				
2	<b>PCC:</b> 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	8.89	3953.40	35162
	BSR-BCD-20; Item 4.1.3; Pg-99				
3	<b>Filling available</b> 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	51.73	116.50	6027
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	15.78	262.50	4143
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	8.90	4952.60	44073
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	13.87	5704.70	79104
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	Tonn	1.39	68500.00	94986
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centering and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	12.80	203.00	2598
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	22.34	412.00	9202
	BSR - BCD-20- Item- 5.9.3, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Qty.	Rate (Rs.)	Amount (Rs)
	Lintels, beams, plinth bams, griders, bressumers and cantilevers. BSR - BCD-20- Item- 5.9.5, Pg-104	Sqm	54.81	362.90	19891
	Columns,Pillars, Piers, Abutments, Posts and Struts. BSR - BCD-20- Item- 5.9.6, Pg-104	Sqm	28.56	470.80	13446
<b>7</b>	<b>Brick work</b> 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 BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113	Cum	16.88	5840.00	98589
<b>8</b>	Plastering: 12 mm cement plaster 1:3 (1 cement:3 coarsed sand) BSR-BCD-20;Item-13.11.1; Pg-202	Sqm	220.40	157.40	34691
<b>9</b>	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	220.40	97.20	21423
<b>10</b>	<b>52 mm thick cement concrete flooring</b> 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 BSR-BCD-20; Item-11.4; Pg-174	Sqm	13.50	456.50	6163
<b>11</b>	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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. BSR-BCD-20; Item-21.10; Pg-307	Sqm	10.17	3635.80	36976
<b>12</b>	<b>Water proofing:</b> 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; Pg-310	Sqm	13.50	2553.30	34470
<b>13</b>	<b>Marble chips skirting</b> (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. BSR-BCD-20; Item-11.12; Pg-175	Sqm	2.25	802.00	1805
<b>14</b>	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	Cum	5.51	217.00	1195
				<b>Total</b>	<b>5,68,296</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS4**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	75.69	360.70	27301
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.-96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	12.65	3953.40	50011
3	<b>Filling available</b> 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	52.71	116.50	6141
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.98	262.50	6032
	BSR - RCD-20- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	14.45	4952.60	71570
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.64	5704.70	151945
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.66	68500.00	182450
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	19.20	203.00	3898
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	39.90	412.00	16439
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	88.30	362.90	32044
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	55.44	470.80	26101
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	32.51	5840.00	189868
	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	370.08	157.40	58251
	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	370.08	97.20	35972
	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	29.44	534.60	15739
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	5.10	3635.80	18543
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioividing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	29.44	2553.30	75169
	BSR-BCD-20; Item-22.8; Pg-310				
14	<b>Marble chips skirting</b> (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 poweder mix: 7 barbie chips) by volume.	Sqm	3.30	802.00	2647
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.92	217.00	2370
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>9,80,787</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS4A**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	75.69	360.70	27301
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	12.65	3953.40	50011
3	<b>Filling available</b> 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	52.71	116.50	6141
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.98	262.50	6032
	BSR - RCD-20- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	14.45	4952.60	71570
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.64	5704.70	151945
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.66	68500.00	182450
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	19.20	203.00	3898
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	39.90	412.00	16439
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	Sqm	88.30	362.90	32044
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	55.44	470.80	26101
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	32.51	5840.00	189868
	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	370.08	157.40	58251
	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	370.08	97.20	35972
	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	29.44	534.60	15739
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	5.10	3635.80	18543
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioividing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	29.44	2553.30	75169
	BSR-BCD-20; Item-22.8; Pg-310				
14	<b>Marble chips skirting</b> (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 poweder mix: 7 barbie chips) by volume.	Sqm	3.30	802.00	2647
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.92	217.00	2370
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>9,80,787</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- METERING ROOM- IPS6**

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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	75.69	360.70	27301
	BSR-BCD-20-Item 2.8.1; Pg-93 & 2.27.1; Pg.96				
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	Cum	12.65	3953.40	50011
3	<b>Filling available</b> 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	52.71	116.50	6141
	BSR-BCD-20-Item 2.26; Pg-96				
3a	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	22.98	262.50	6032
	BSR - RCD-20- Item- 3.11, P-45 & RA				
4	<b>RCC:</b> 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-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	14.45	4952.60	71570
	BSR-BCD-20; Item-5.33.1, Pg-108				
	RCC Grade M -25 Above Plinth	Cum	26.64	5704.70	151945
	BSR-BCD-20; Item-5.33.2, Pg-108				
5	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.66	68500.00	182450
	BSR-BCD-20; Item-5.22.7, Pg-106				
6	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	19.20	203.00	3898
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	39.90	412.00	16439
	BSR - BCD-20- Item- 5.9.3, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and cantilevers.	Sqm	88.30	362.90	32044
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm	55.44	470.80	26101
	BSR - BCD-20- Item- 5.9.6, Pg-104				

Sr. No.	Item Description as per BSR	Unit	Metering Room	Rate Rs.	Amount (Rs)
7	<b>Brick work</b> 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	32.51	5840.00	189868
	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	370.08	157.40	58251
	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	370.08	97.20	35972
	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	29.44	534.60	15739
	BSR-BCD-20; Item-11.9; Pg-174				
11	Providing and fixing double glazed hermetically sealed glazing in <b>aluminium windows</b> , 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	5.10	3635.80	18543
	BSR-BCD-20; Item-21.10; Pg-307				
12	Supplying and fixing- <b>rolling shuters</b> of approved make.made of required size of M.S.laths inter locked together through their intire 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 prioividing and fixing necessary 27.5 cm long wire springs grade no. 2 and M.S. top cover of required thickness for rolling shutters. <b>(i) 80x1.25mmM.S. Laths with 1.25mm thick top cover with providing and fixing ball bearing for rolling shutter</b>	Sqm	7.50	1106.50	8299
	BSR-BCD-20; Item-10.8.1; Pg-169				
13	<b>Water proofing:</b> Providing and laying integral cement based water proofing treatment including prepatation of surface as required for treatment of roofs, balconies , terraces etc.	Sqm	29.44	2553.30	75169
	BSR-BCD-20; Item-22.8; Pg-310				
14	<b>Marble chips skirting</b> (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 powderer mix: 7 barbie chips) by volume.	Sqm	3.30	802.00	2647
	BSR-BCD-20; Item-11.12; Pg-175				
15	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	Cum	10.92	217.00	2370
	BSR - RCD-18- Item- 12.3, P-222				
				<b>Total</b>	<b>9,80,787</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS4**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	75.00	637.00	47775
	SOR-RCD-18; Item-4.2 (iii); Pg.-65				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	33.75	896.00	30240
	SOR-RCD-18; Item-4.12 (iii); Pg.-75				
3	<b>Prime coat</b> (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	225.00	30.30	6818
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	225.00	11.10	2498
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	11.25	5406.00	60818
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case - II : Type B)	Sqm	225.00	44.00	9900
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	5.63	6743.00	37963
	BSR-RCD-2018-Item-5.7 P-94				
				<b>Total</b>	<b>196012</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS4A**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	60.00	637.00	38220
	SOR-RCD-18; Item-4.2 (iii); Pg.-65				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	27.00	896.00	24192
	SOR-RCD-18; Item-4.12 (iii); Pg.-75				
3	<b>Prime coat</b> (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	180.00	30.30	5454
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	180.00	11.10	1998
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	9.00	5406.00	48654
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case - II : Type B)	Sqm	180.00	44.00	7920
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	4.50	6743.00	30344
	BSR-RCD-2018-Item-5.7 P-94				
				<b>Total</b>	<b>156782</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- IPS6**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	85.00	637.00	54145
	SOR-RCD-18; Item-4.2 (iii); Pg.-65				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	38.25	896.00	34272
	SOR-RCD-18; Item-4.12 (iii); Pg.-75				
3	<b>Prime coat</b> (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	255.00	30.30	7727
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	255.00	11.10	2831
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	12.75	5406.00	68927
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case - II : Type B)	Sqm	255.00	44.00	11220
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	6.38	6743.00	43020
	BSR-RCD-2018-Item-5.7 P-94				
				<b>Total</b>	<b>222142</b>

SEWERAGE SYSTEM FOR GAYA TOWN					
COST ESTIMATE- COMPOUND WALL- IPS4					
Sr.	Description	Unit	Qty	Rate (Rs)	Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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	m <sup>3</sup>	247.82	360.70	89387.43
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	m <sup>3</sup>	12.57	3953.40	49705.36
3	<b>Brick work</b> 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				
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	m <sup>2</sup>	527.20	146.00	76971.20
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	BSR - RCD-18- Item- 3.11, P-45 & RA	m <sup>2</sup>	43.55	262.50	11430.64
6	<b>Filling available</b> 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-20-Item 2.26; Pg-96	m <sup>3</sup>	204.27	116.50	23797.60
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 <sup>3</sup>	25.31	4689.20	118695
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	14.02	5194.80	72811.62
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	67.50	203.00	13702.50
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	m <sup>2</sup>	54.63	362.50	19801.56
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	123.75	470.60	58236.75
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>				
	BSR-BCD-20; Item-5.22.7, Pg-106	MT	3.15	68500	215522
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				
		m <sup>3</sup>	527.20	17.80	9384.16
	Cost of Compound Wall (without gates)				1057720
	Boundary length				130
	Cost of 1 m Compound Wall (without gates)				8136
11	<b>Gates:</b> 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	No.	1	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	13651.00	13651.00
	<b>Cost of Compound Wall (with gates)</b>				<b>1096674</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- COMPOUND WALL- IPS4A**

Sr.	Description	Unit	Qty	Rate (Rs)	Amount
1	Earth work in excavation in <b>foundation trenches</b> 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	m <sup>3</sup>	247.82	360.70	89387.43
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	m <sup>3</sup>	12.57	3953.40	49705.36
3	<b>Brick work</b> 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	m <sup>3</sup>	51.07	5840.00	298274.35
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	m <sup>2</sup>	527.20	146.00	76971.20
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	43.55	262.50	11430.64
	BSR - RCD-20- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	204.27	116.50	23797.60
	BSR-BCD-20-Item 2.26; Pg-96				
7	<b>RCC:</b> 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 <sup>3</sup>	25.31	4689.20	118695.38
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	14.02	5194.80	72811.62
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	<b>Centering &amp; Shuttering</b> Centring and shuttering including strutting, propping etc. and removal of form for. Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	67.50	203.00	13702.50
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	m <sup>2</sup>	54.63	362.50	19801.56
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	123.75	470.60	58236.75
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	3.15	68500	215521.55
	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	m <sup>3</sup>	527.20	17.80	9384.16
	Cost of Compound Wall (without gates)				1057720
	Boundary length				130
	Cost of 1 m Compound Wall (without gates)				8136
11	<b>Gates:</b> 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	No.	1	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	13651.00	13651.00
	<b>Cost of Compound Wall (with gates)</b>				<b>1096674</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- COMPOUND WALL- IPS6**

Sr.	Description	Unit	Qty	Rate (Rs)	Amount
1	Earth work in excavation in <b>foundation trenches</b> 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	m <sup>3</sup>	275.43	360.70	99347.03
2	<b>PCC:</b> 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				
	BSR-BCD-20; Item 4.1.3; Pg-99	m <sup>3</sup>	13.99	3953.40	55313.30
3	<b>Brick work</b> 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	m <sup>3</sup>	57.07	5840.00	333313.74
	BSR - BCD-20- Item- 6.1.12/1 + 6.3 A; P-113				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-20;Item-13.11.2; Pg-202	m <sup>2</sup>	588.80	146.00	85964.80
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	48.43	262.50	12712.30
	BSR - RCD-20- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	227.00	116.50	26445.57
	BSR-BCD-20-Item 2.26; Pg-96				
7	<b>RCC:</b> 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 <sup>3</sup>	28.13	4689.20	131883.75
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	15.61	5194.80	81109.43
	BSR-BCD-20; Item-5.33A.1, 5.33A.2.1, Pg-107				
8	<b>Centering &amp; Shuttering</b> Centring and shuttering including strutting, propping etc. and removal of form for. Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	75.00	203.00	15225.00
	BSR - BCD-20- Item- 5.9.1, Pg-104				
	Lintels, beams, plinth bams, grids, bressumers and contilevers.	m <sup>2</sup>	61.04	362.50	22127.73
	BSR - BCD-20- Item- 5.9.5, Pg-104				
	Columns,Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	137.50	470.60	64707.50
	BSR - BCD-20- Item- 5.9.6, Pg-104				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	3.50	68500	239687.42
	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	m <sup>3</sup>	588.80	17.80	10480.64
	Cost of Compound Wall (without gates)				1178318
	Boundary length				145
	Cost of 1 m Compound Wall (without gates)				8115
11	<b>Gates:</b> 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	No.	1	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	13651.00	13651.00
	<b>Cost of Compound Wall (with gates)</b>				<b>1217272</b>

GAYA SEWERAGE ELECTRICAL ESTIMATE				IPS2	
S. No.	Description	Unit	Qty	Unit Rate (Rs)	Total (Rs)
<b>1</b>	<b>Substation DP structure</b>				
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 12	Each	3	21,723	65,168.50
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 13	Each	3	19,216	57,649.42
1.2	Supplying & erecting D.p Structure for 100kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with neccessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation. PWD-Schedule Rate 2013-2014, pg-134 8-4-25	Each	2	1,37,526	2,75,052.80
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked (IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog) RUIDP- 2017, Pg-372-59.31.5	Mtr	12	76	912.00
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>				
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. omplete. PWD-Schedule Rate,pg-193	no.	2	19,085	38,170.00
2.2	G.I. Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807. ) (total length 40 m) RCD-18, item 8.18, pg-154	mtr	40	378	15,120.00
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint PWD-Schedule Ratepg-147	nos.	4	1,166	4,664.00
2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD. PWD-Schedule Ratepg-147	NO.	1	17,774	17,773.80
<b>3</b>	<b>11kV Cable</b>				
3.1	Supplying and Errecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete errected in approved trench or on trays as per direction of Engineer in Charge RUIDP- 2017, Pg-318-51.6.4				
a	3Cx95Sq.mm	Mtr	20	889	17,780.00

	<b>Cable Jointing Kit</b>				
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes				
	DSR-E&M 2018 Pg-34 item 9.2.10				
	3Cx95Sq.mm	Nos	2	1,694	3,388.00
<b>4</b>	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 100 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification.	Nos.	2	2,71,139	5,42,278.01
	MJP Schedule-2012-13 PG-32				
<b>5</b>	415VLT Switchboard:-Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 400A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	No.	1	3,97,219	3,97,219.28
	<b>200A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	No.	3		
	<b>200A FP MCCB 01 NOS DG INCOMER + 01 Buscoupler</b>	No.	2		
	125A TPNMCCB	No.	2		
	63A TPN MCCB	No.	6		
	32A TPN MCCB	No.	5		
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 11 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	6	6,882	41,292.00
	MJP-18, LG 3-2				
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	4	2,437	9,748.00
	MJP-18, LG 1-2				
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	Nos.	10	3,295	32,945.00
	GOM PWD CSR 13-14 pg-173				
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	Nos.	10	1,564	15,642.00
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	Nos.	10	254	2,541.00
	GOM PWD CSR 13-14 pg-174				
	<b>APFC PANEL</b>				
	Design,supplying and erecting 40 kVA, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor conforming to IS:13340-41/IEC:831-1&2	Nos.	40	300	12,000.00
	RUIDP- 2017, Pg-298-48.12.2				
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent.	Nos.	2	18,220	36,440.00
	RUIDP- 2017, Pg-298-48.13.1				

440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
RUIDP- 2017, Pg-299-48.16				
Up to 6kVAr	Nos.	8	1,588	12,704.00
RUIDP- 2017, Pg-299-48.16.1				
<b>Push Button station</b> : Providing erecting shrouded / Unshrouded push button actuator with box	Nos.	8	2,700	21,600.00
MARKET PRICE				
<b>Main Lighting MCB DB</b>				
Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	Nos.	1	16,282	16,282.00
RUIDP-2017, Pg-360-58.15.2				
<b>Local Lighting MCB DB</b>				
Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	8,832	8,831.77
Attachment-II				
<b>MCB Ventilation DB</b>				
Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	13,523	13,522.66
Attachment-II				
<b>1.1 kV XLPE cable :</b>				
Design,supplying & erecting XLPE insulated, armoured cable 3.5 C x 95 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	80	402	32,160.00
RUIDP SOR 2017 Pg-313 51.1.10.4				
Design,supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	30	151	4,530.00
RUIDP SOR 2017 Pg-312 51.1.3.3				
Design,supplying & erecting XLPE insulated,armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	30	125	3,750.00
RUIDP SOR 2017 Pg-315 51.1.1.2				
<b>Submersible Flate Cable</b>				
Design,supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	220	182	40,099.40
MJP				
<b>1.1 kV XLPE cable Termination:</b>				
Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx 95 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Set	6	461	2,766.00
RUIDP SOR 2017 Pg-335 52.7.29				
Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	87	348.00
RUIDP SOR 2017 Pg-323 52.7.40				
Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	77	308.00
RUIDP SOR 2017 Pg-323 52.7.38				

	<b>Point Wiring :</b>				
	Design, supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	Nos.	20	1,189	23,780.00
	DSR CPWD 2018 Pg.-1,1.1.3				
	Design, supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	Nos.	10	175	1,750.00
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	Nos.	10	1,460	14,600.00
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 10 meter	Nos.	10	540	5,400.00
	DSR CPWD 2018 Pg.-4,1.17.3				
	Design, supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 7 meters average length with flush type switch and required accessories as per specifications				
	Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	Nos.	4	1,859	7,436.00
	GOM, PWD, Electrical , CSR 2013-14, pg-61				
	20mm Metal Conduit(7 mtr.)	Nos.	8	1,022	8,176.00
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 7 meter	Nos.	8	378	3,024.00
	DSR CPWD 2018 Pg.-4,1.17.3				
	flush type switch	Nos.	8	45	360.00
	DSR CPWD 2018 Pg.-6,1.23.1				
	Design, supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
	2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire		50	263	13,150.00
	DSR CPWD 2018 Pg.-2,1.7.3				
	20mm steel conduit		50	146	7,300.00
	DSR CPWD 2018 Pg.-5,1.20.1				
	<b>Pump House lighting and area lighting</b>				
	<b>Indoor Lighting</b>				
	Design, supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	Nos.	12	1,962	23,544.00
	RUIDP SOR 2017, Pg 351, 57.4.1.4				
	Design, supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	Nos.	8	243	1,944.80
	GOM, PWD, Electrical , CSR 2013-14, pg-40				
	<b>Emergency Lighting:-</b> Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	Nos.	2	2,500	5,000.00
	Market Price				
	<b>Outdoor Lighting</b>				
	<b>Flood light:-</b> Design, supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	Nos.	2	3,310	6,620.00
	RUIDP SOR 2017, Pg 358, 58.8.1				
	Design, supplying and erecting Street lighting poles complete with bracket, switch box, 1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4CX6Sq.mm cu wires etc , including foundation				
	1x250Watt HPSV lamp		2	1,510	3,020.00
	RUIDP SOR 2017, Pg 360, 58.13.2.3				
	Tubular Pole(7.5mtr)		2	17,781	35,562.00
	RUIDP SOR 2017, Pg 361, 58.16.1				
	Aluminum housing with ip65 protected		2	4,773	9,546.00
	RUIDP SOR 2017, Pg 357, 58.3.3				
	Hot dipped galvanised Overhang of 88.9mm Odx 3.25 mm thickness		2	1,198	2,396.00



RUIDP SOR 2017, Pg 361, 58.17.2					
3Cx1.5 Sq.mm		2	54	108.00	
DSR CPWD 2018 Pg.-4,1.17.3					
4Cx6Sq.mm		50	220	11,000.00	
DSR CPWD 2018 Pg.-4,1.17.31					
Junction Box		2	333	666.00	
RUIDP SOR 2017, Pg 301, 42.22.3					
Design, supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)					
32A 4Pole RCCB/ELCB	Nos.	2	1,885	3,770.00	
DSR CPWD 2018 Pg.-67,1721					
Power Plug with Socket	Nos.	2	2,068	4,136.00	
RUIDP SOR 2017, Pg 291, 46.7.2.2					
<b>Ventilation Systems</b>					
Single Phase Exhaust Fan up to 450mm Sweep	Nos.	4	363	1,452.00	
DSR CPWD 2018 Pg.-9,1.50.1					
Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	Nos.	4	4,653	18,612.00	
GOM, PWD, Electrical , CSR 2013-14, pg-148					
<b>Earthing</b>					
Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complte as per specification.					
a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	Set	2	6,216	12,432.00	
DSR CPWD 2018 Pg.-26,5.4					
Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	mtrs.	15	10	150.00	
RUIDP SOR 2017, Pg 342, 54.4.2					
Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	Nos	10.00	1,224	12,240.00	
DSR CPWD 2018 Pg.-26,.5.10					
Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necesssary G.I clamps fixed on wall/cable/conduit with screws in approved manner	Kg	30.00	206	6,180.00	
DSR CPWD 2018 Pg.-27, 5.15					
<b>Lightning</b>					
Conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	Nos	2.00	448	896.00	
DSR CPWD 2018 Pg.-28, 6.1					
<b>Miscellaneous Items</b>					
Supplying rubber matting of 25 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	RM	4	5,122	20,486.40	
GOM, PWD, Electrical , CSR 2013-14, pg-147					
Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	No's	2	123	246.40	
GOM, PWD, Electrical , CSR 2013-14, pg-147					
Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.					

a) Low Voltage - size 200mmx150mm	No	4	171	682.00
b) High Voltage- size 250mmx200mm	No	2	171	341.00
GOM.PWD Schedule				
Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	Sets	1	622	621.50
GOM.PWD Schedule				
Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	Nos.	1	765	764.50
GOM, PWD, Electrical , CSR 2013-14, pg-147				
<b>Providing and fixing cable tray</b>				
150x50x1.6mm		10	531	5,310.00
DSR CPWD 2018 Pg.-20, 4.1.2				
Cable Tray Connector				
150x50x1.6mm		5	39	195.00
DSR CPWD 2018 Pg.-80, 2718				
Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 100 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,				
GOM.PWD Schedule pg-155				
a) Diesel Engine				
b) Engine mounted instrument panel fitted with and having digital display as specified				
c) Alternator: Synchronous alternator rated at 100 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL	No.	1	11,94,856	11,94,856
d) Base frame and foundation				
e) Fuel Tank				
f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
g) starting system complete as per specification				
h) Acoustics and weather proof enclosure				
i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 100 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	No.	1	1,70,365	1,70,365
j) Battery and Battery charger				
GOM.PWD Schedule pg-158				
M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	RMT	10	1,884	18,838.20
DSR CPWD 2018 Pg.-86, 3005				
Tools( as detailed in Schedule )	L.S		50,000	50,000
MJP CSR Pg-85-86				
Spares (as detailed in schedule)	L.S		1,00,000	1,00,000
			<b>Sub Total Cost in Rs.</b>	<b>35,49,642.44</b>
Miscellaneous Items required for completion of work			20% of above cost (LS)	7,09,928.49
			<b>Total Cost</b>	<b>42,59,570.93</b>

## GAYA SEWERAGE ELECTRICAL ESTIMATE

IPS2A

S. No.	Description	Unit	Qty	Unit Rate (Rs)	Total (Rs)
<b>1</b>	<b>Substation DP structure</b>				
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company.	Each	3	21,723	65,169
	MJP Sr. no 12				
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company.	Each	3	19,216	57,649
	MJP Sr. no 13				
1.2	Supplying & erecting D.p Structure for 200kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with neccessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation.	Each	2	1,15,584	2,31,167
	PWD-Schedule Rate 2013-2014, pg-134 8-4-26				
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked(IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog)	Mtr	12	76	912
	RUIDP- 2017, Pg-372-59.31.5				
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>				
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. omplete.	no.	2	19,085	38,170
	PWD-Schedule Rate,pg-193				
2.2	G.I. Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807. ) (total length 40 m)	mtr	40	378	15,120.00
	RCD-18, item 8.18, pg-154				
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint	nos.	4	1,166	4,664
	PWD-Schedule Ratepg-147				

2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD.	NO.	1	17,774	17,774
	PWD-Schedule Ratepg-147				
3	<b>11kV Cable</b>				
3.1	Supplying and Erecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete erected in approved trench or on trays as per direction of Engineer in Charge				
a	3Cx95Sq.mm	Mtr	20	889	17,780
	RUIDP- 2017, Pg-318-51.6.4				
	Cable Jointing Kit				
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes				
	3Cx95Sq.mm	Nos	2	1,694	3,388
	DSR-E&M 2018 Pg-34 item 9.2.10				
4	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 160 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification.	Nos.	2	3,23,177	6,46,354
	MJP Schedule-2012-13 PG-32				
5	<b>415VLT Switchboard:-</b> Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 250A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	No.	1	5,92,796	5,92,796
	<b>250A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	No.	3		
	<b>250A FP MCCB 01 NOS DG INCOMER +01 Buscoupler</b>	No.	2		
	125A TPNMCCB	No.	2		
	63A TPN MCCB	No.	6		
	32A TPN MCCB	No.	5		
	ATTACHMENT-I				
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 11 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	6	6,882	41,292.00
	MJP-18, LG 3-2				
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	4	2,437	9,748.00
	MJP-18, LG 1-2				

Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	Nos.	8	3,295	26,356
GOM PWD CSR 13-14 pg-173				
Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	Nos.	10	1,564	15,642
GOM PWD CSR 13-14 pg-174				
Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	Nos.	10	254	2,541
GOM PWD CSR 13-14 pg-174				
<b>APFC PANEL</b>				
Design,supplying and erecting 70 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor conforming to IS:13340-41/IEC;831-1&2	Nos.	70	300	21,000
RUIDP- 2017, Pg-298-48.12.2				
6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent.	Nos.	2	18,220	36,440
RUIDP- 2017, Pg-298-48.13.1				
440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
RUIDP- 2017, Pg-299-48.16				
Up to 6kVAr	Nos.	10	1,588	15,880
RUIDP- 2017, Pg-299-48.16.1				
10 kVAr	Nos.	2	1,649	3,298
RUIDP- 2017, Pg-300-48.16.2				
<b>Push Button station</b> : Providing erecting shrouded / Unshrouded push button actuator with box	Nos.	8	2,700	21,600
MARKET PRICE				
<b>Main Lighting MCB DB</b>				
Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	Nos.	1	16,282	16,282
RUIDP-2017, Pg-360-58.15.2				
<b>Local Lighting MCB DB</b>				
Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	8,832	8,832
Attachment-II				
<b>MCB Ventilation DB</b>				
Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	13,523	13,523
Attachment-II				
<b>1.1 kV XLPE cable :</b>				
Design,supplying & erecting XLPE insulated, armoured cable 3.5 C x185 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	160	402	64,320

	RUIDP SOR 2017 Pg-313 51.1.10.4				
	Design, supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	60	151	9,060
	RUIDP SOR 2017 Pg-312 51.1.3.3				
	Design, supplying & erecting XLPE insulated, armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	60	125	7,500
	RUIDP SOR 2017 Pg-315 51.1.1.2				
	<b>Submersible Flate Cable</b>				
	Design, supplying & erecting flate flexible 4 core 6 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	135	245	33,116
	MJP				
	Design, supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	20	182	3,645
	MJP				
	MJP				
	<b>1.1 kV XLPE cable Termination:</b>				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx185 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland, ect..) as per specifications	Set	6	716	4,296
	RUIDP SOR 2017 Pg-335 52.7.32				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland, ect..) as per specifications	Nos.	4	87	348
	RUIDP SOR 2017 Pg-335 52.7.40				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland, ect..) as per specifications	Nos.	4	77	308
	RUIDP SOR 2017 Pg-335 52.7.38				
	<b>Point Wiring :</b>				
	Design, supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	Nos.	20	1,189	23,780
	DSR CPWD 2018 Pg.-1,1.1.3				
	Design, supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	Nos.	10	175	1,750
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	Nos.	10	1,460	14,600
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 10 meter	Nos.	10	540	5,400
	DSR CPWD 2018 Pg.-4,1.17.3				

Design, supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq. mm FR grade copper wire 7 meters average length with flush type switch and required accessories as per specifications				
Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	Nos.	4	1,859	7,436
GOM, PWD, Electrical , CSR 2013-14, pg-61				
20mm Metal Conduit(7 mtr.)	Nos.	8	1,022	8,176
DSR CPWD 2018 Pg.-5,1.20.1				
1.5Sqmm FR grade copper wire 7 meter	Nos.	8	378	3,024
DSR CPWD 2018 Pg.-4,1.17.3				
flush type switch	Nos.	8	45	360
DSR CPWD 2018 Pg.-6,1.23.1				
Design, supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire		50	263	13,150
DSR CPWD 2018 Pg.-2,1.7.3				
20mm steel conduit		50	146	7,300
DSR CPWD 2018 Pg.-5,1.20.1				
<b>Pump House lighting and area lighting</b>				
<b>Indoor Lighting</b>				
Design, supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	Nos.	12	1,962	23,544
RUIDP SOR 2017, Pg 351, 57.4.1.4				
Design, supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	Nos.	8	243	1,945
GOM, PWD, Electrical , CSR 2013-14, pg-40				
<b>Emergency Lighting:-</b> Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	Nos.	2	2,500	5,000
Market Price				
<b>Outdoor Lighting</b>				
<b>Flood light:-</b> Design, supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	Nos.	2	3,310	6,620
RUIDP SOR 2017, Pg 358, 58.8.1				
Design, supplying and erecting Street lighting poles complete with bracket, switch box, 1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4CX6Sq.mm cu wires etc , including foundation				
1x250Watt HPSV lamp		6	1,510	9,060
RUIDP SOR 2017, Pg 360, 58.13.2.3				
Tubular Pole(7.5mtr)		6	17,781	1,06,686
RUIDP SOR 2017, Pg 361, 58.16.1				
Aluminum housing with ip65 protected		6	4,773	28,638
RUIDP SOR 2017, Pg 357, 58.3.3				
Hot diped galvanised Overhang of 88.9mm Odx 3.25 mm thickness		6	1,198	7,188
RUIDP SOR 2017, Pg 361, 58.17.2				
3Cx1.5 Sq.mm		6	54	324
DSR CPWD 2018 Pg.-4,1.17.3				
4Cx6Sq.mm		180	220	39,600
DSR CPWD 2018 Pg.-4,1.17.31				

	Junction Box		6	333	1,998
	RUIDP SOR 2017, Pg 301, 42.22.3				
	Design, supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
	32A 4Pole RCCB/ELCB	Nos.	4	1,885	7,540
	DSR CPWD 2018 Pg.-67,1721				
	Power Plug with Socket	Nos.	4	2,068	8,272
	RUIDP SOR 2017, Pg 291, 46.7.2.2				
	<b>Ventilation Systems</b>				
	Single Phase Exhaust Fan up to 450mm Sweep	Nos.	8	363	2,904
	DSR CPWD 2018 Pg.-9,1.50.1				
	Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	Nos.	4	4,653	18,612
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	<b>Earthing</b>				
	Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complete as per specification.				
	a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	Set	10	6,216	62,160
	DSR CPWD 2018 Pg.-26,5.4				
	Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	mtrs.	25	10	250
	RUIDP SOR 2017, Pg 342, 54.4.2				
	Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	Nos	20.00	1,224	24,480
	DSR CPWD 2018 Pg.-26,.5.10				
	Supplying and Errecting G.I strip of required size used for Earthing on wall or any other purpose with necesssary G.I clamps fixed on wall/cable/conduit with screws in approved manner	Kg	50.00	206	10,300
	DSR CPWD 2018 Pg.-27, 5.15				
	<b>Lightning</b>				
	Conventional spike type air termination suitable to carry lighting stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	Nos	4.00	448	1,792
	DSR CPWD 2018 Pg.-28, 6.1				
	<b>Miscellaneous Items</b>				
	Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	RM	7	5,122	35,851
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Supplying rubber matting of 3 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 33 kV	RM	7	6,965	48,756
	GOM, PWD, Electrical , CSR 2013-14, pg-148				



	Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	No's	2	123	246
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
	a) Low Voltage - size 200mmx150mm	No	4	171	682
	b) High Voltage- size 250mmx200mm	No	2	171	341
	GOM.PWD Schedule				
	Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	Sets	1	622	622
	GOM.PWD Schedule				
	Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	Nos.	1	765	765
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	<b>Providing and fixing cable tray</b>				
	300x62.5x2mm		15	1,918	28,770
	DSR CPWD 2018 Pg.-21, 4.3.8				
	150x50x1.6mm		10	531	5,310
	DSR CPWD 2018 Pg.-20, 4.1.2				
	Cable Tray Connector				
	300x62.5x2mm		5	44	220
	DSR CPWD 2018 Pg.-80, 2724				
	150x50x1.6mm		5	39	195
	DSR CPWD 2018 Pg.-80, 2718				
	Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 140 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,	No.	1	11,94,856	11,94,856
	a) Diesel Engine				
	b) Engine mounted instrument panel fitted with and having digital display as specified				
	c) Alternator: Synchronous alternator rated at 140 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
	d) Base frame and foundation				
	e) Fuel Tank				
	f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
	g) starting system complete as per specification				
	h) Acoustics and weather proof enclosure				
	j) Battery and Battery charger				
	GOM.PWD Schedule pg-155				
	i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 140 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	No.	1	1,70,365	1,70,365
	GOM.PWD Schedule pg-158				

M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	RMT	10	1,883.82	18,838.20
DSR CPWD 2018 Pg.-86, 3005				
Tools( as detailed in Schedule )	L.S		50,000	50,000
MJP CSR Pg-85-86				
Spares (as detailed in schedule)	L.S		1,00,000	1,00,000
			<b>Sub Total Cost in Rs.</b>	<b>41,53,675</b>
Miscellaneous Items required for completion of work		20% of above cost		8,30,735
			<b>Total Cost</b>	<b>49,84,410</b>

**GAYA SEWERAGE ELECTRICAL ESTIMATE****IPS3**

S. No.	Description	Unit	Qty	Unit Rate (Rs)	Total (Rs)
<b>1</b>	<b>Substation DP structure</b>				
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 12	Each	3	21,723	65,169
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 13	Each	3	19,216	57,649
1.2	Supplying & erecting D.p Structure for 200kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with necessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation. PWD-Schedule Rate 2013-2014, pg-134 8-4-26	Each	2	1,44,480	2,88,959
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked(IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog) RUIDP- 2017, Pg-372-59.31.5	Mtr	12	76	912
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>				
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. omplete. PWD-Schedule Rate,pg-193	no.	2	19,085	38,170
2.2	G.I. Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807. ) (total length 40 m) RCD-18, item 8.18, pg-154	mtr	40	378	15,120.00
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint PWD-Schedule Ratepg-147	nos.	4	1,166	4,664
2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD. PWD-Schedule Ratepg-147	NO.	1	17,774	17,774
<b>3</b>	<b>11kV Cable</b>				

3.1	Supplying and Erecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete erected in approved trench or on trays as per direction of Engineer in Charge				
a	3Cx95Sq.mm	Mtr	20	889	17,780
	RUIDP- 2017, Pg-318-51.6.4				
	Cable Jointing Kit				
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes				
	3Cx95Sq.mm	Nos	2	1,694	3,388
	DSR-E&M 2018 Pg-34 item 9.2.10				
<b>4</b>	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 200 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification.	Nos.	2	3,88,372	7,76,743
	MJP Schedule-2012-13 PG-32				
	<b>415VLT Switchboard:-</b> Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 400A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	No.	1	7,13,496	7,13,496
5	<b>400A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	No.	3		
	<b>0A FP MCCB 01 NOS DG INCOMER +01 Buscoupler</b>	No.	2		
	125A TPNMCCB	No.	2		
	63A TPN MCCB	No.	6		
	32A TPN MCCB	No.	5		
	ATTACHMENT-I				
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 11 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	6	6,882	41,292.00
	MJP-18, LG 3-2				
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	4	2,437	9,748.00
	MJP-18, LG 1-2				
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	Nos.	8	3,295	26,356
	GOM PWD CSR 13-14 pg-173				
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	Nos.	10	1,564	15,642
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	Nos.	10	254	2,541
	GOM PWD CSR 13-14 pg-174				
	<b>APFC PANEL</b>				

Design, supplying and erecting 70 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor confirming to IS:13340-41/IEC:831-1&2	Nos.	70	300	21,000
RUIDP- 2017, Pg-298-48.12.2				
6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent.	Nos.	2	18,220	36,440
RUIDP- 2017, Pg-298-48.13.1				
440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
RUIDP- 2017, Pg-299-48.16				
Up to 6kVAr	Nos.	10	1,588	15,880
RUIDP- 2017, Pg-299-48.16.1				
10 kVAr	Nos.	2	1,649	3,298
RUIDP- 2017, Pg-300-48.16.2				
<b>Push Button station</b> : Providing erecting shrouded / Unshrouded push button actuator with box	Nos.	8	2,970	23,760
MARKET PRICE				
<b>Main Lighting MCB DB</b>				
Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	Nos.	1	16,282	16,282
RUIDP-2017, Pg-360-58.15.2				
<b>Local Lighting MCB DB</b>				
Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	8,832	8,832
Attachment-II				
<b>MCB Ventilation DB</b>				
Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	13,523	13,523
Attachment-II				
<b>1.1 kV XLPE cable :</b>				
Design, supplying & erecting XLPE insulated, armoured cable 3.5 C x185 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	160	402	64,320
RUIDP SOR 2017 Pg-313 51.1.10.4				
Design, supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	60	151	9,060
RUIDP SOR 2017 Pg-312 51.1.3.3				
Design, supplying & erecting XLPE insulated, armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	60	125	7,500

	RUIDP SOR 2017 Pg-315 51.1.1.2				
	<b>Submersible Flate Cable</b>				
	Design,supplying & erecting flate flexible 4 core 6 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	135	245	33,116
	MJP				
	Design,supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	20	182	3,645
	MJP				
	Design,supplying & erecting flate flexible 4 core 16 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	45	613	27,578
	MJP				
	<b>1.1 kV XLPE cable Terminatrion:</b>				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx185 sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Set	6	716	4,296
	RUIDP SOR 2017 Pg-335 52.7.32				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	87	348
	RUIDP SOR 2017 Pg-335 52.7.40				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	77	308
	RUIDP SOR 2017 Pg-335 52.7.38				
	<b>Point Wiring :</b>				
	Design,supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	Nos.	20	1,189	23,780
	DSR CPWD 2018 Pg.-1,1.1.3				
	Design,supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	Nos.	10	175	1,750
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	Nos.	10	1,460	14,600
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 10 meter	Nos.	10	540	5,400
	DSR CPWD 2018 Pg.-4,1.17.3				
	Design,supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire7 meters average length with flush type switch and required accessories as per specifications				
	Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	Nos.	4	1,859	7,436
	GOM, PWD, Electrical , CSR 2013-14, pg-61				
	20mm Metal Conduit(7 mtr.)	Nos.	8	1,022	8,176
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 7 meter	Nos.	8	378	3,024
	DSR CPWD 2018 Pg.-4,1.17.3				
	flush type switch	Nos.	8	45	360
	DSR CPWD 2018 Pg.-6,1.23.1				

Design,supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire		50	263	13,150
DSR CPWD 2018 Pg.-2,1.7.3				
20mm steel conduit		50	146	7,300
DSR CPWD 2018 Pg.-5,1.20.1				
<b>Pump House lighting and area lighting</b>				
<b>Indoor Lighting</b>				
Design,supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	Nos.	12	1,962	23,544
RUIDP SOR 2017, Pg 351, 57.4.1.4				
Design,supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	Nos.	8	243	1,945
GOM, PWD, Electrical , CSR 2013-14, pg-40				
<b>Emergency Lighting:-</b> Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	Nos.	2	2,750	5,500
Market Price				
<b>Outdoor Lighting</b>				
<b>Flood light:-</b> Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	Nos.	2	3,310	6,620
RUIDP SOR 2017, Pg 358, 58.8.1				
Design,supplying and erecting Street lighting poles complete with bracket, switch box,1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4CX6Sq.mm cu wires etc , including foundation				
1x250Watt HPSV lamp		6	1,510	9,060
RUIDP SOR 2017, Pg 360, 58.13.2.3				
Tubular Pole(7.5mtr)		6	17,781	1,06,686
RUIDP SOR 2017, Pg 361, 58.16.1				
Aluminum housing with ip65 protected		6	4,773	28,638
RUIDP SOR 2017, Pg 357, 58.3.3				
Hot dipped galvanised Overhang of 88.9mm Odx 3.25 mm thickness		6	1,198	7,188
RUIDP SOR 2017, Pg 361, 58.17.2				
3Cx1.5 Sq.mm		6	54	324
DSR CPWD 2018 Pg.-4,1.17.3				
4Cx6Sq.mm		180	220	39,600
DSR CPWD 2018 Pg.-4,1.17.31				
Junction Box		6	333	1,998
RUIDP SOR 2017, Pg 301, 42.22.3				
Design,supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
32A 4Pole RCCB/ELCB	Nos.	4	1,885	7,540
DSR CPWD 2018 Pg.-67,1721				
Power Plug with Socket	Nos.	4	2,068	8,272
RUIDP SOR 2017, Pg 291, 46.7.2.2				
<b>Ventilation Systems</b>				
Single Phase Exhaust Fan up to 450mm Sweep	Nos.	8	363	2,904
DSR CPWD 2018 Pg.-9,1.50.1				
Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	Nos.	4	4,653	18,612

	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	<b>Earthing</b>				
	Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complete as per specification.				
	a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	Set	10	6,216	62,160
	DSR CPWD 2018 Pg.-26,5.4				
	Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	mtrs.	25	10	250
	RUIDP SOR 2017, Pg 342, 54.4.2				
	Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	Nos	20.00	1,224	24,480
	DSR CPWD 2018 Pg.-26,.5.10				
	Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necessary G.I clamps fixed on wall/cable/conduit with screws in approved manner	Kg	50.00	206	10,300
	DSR CPWD 2018 Pg.-27, 5.15				
	<b>Lightning</b>				
	Conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	Nos	4.00	448	1,792
	DSR CPWD 2018 Pg.-28, 6.1				
	<b>Miscellaneous Items</b>				
	Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	RM	7	5,122	35,851
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Supplying rubber matting of 3 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 33 kV	RM	7	6,965	48,756
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	No's	2	123	246
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
	a) Low Voltage - size 200mmx150mm	No	4	171	682
	b) High Voltage- size 250mmx200mm	No	2	171	341
	GOM.PWD Schedule				
	Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	Sets	1	622	622
	GOM.PWD Schedule				
	Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	Nos.	1	765	765
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	<b>Providing and fixing cable tray</b>				



	300x62.5x2mm		15	1,918	28,770
	DSR CPWD 2018 Pg.-21, 4.3.8				
	150x50x1.6mm		10	531	5,310
	DSR CPWD 2018 Pg.-20, 4.1.2				
	Cable Tray Connector				
	300x62.5x2mm		5	44	220
	DSR CPWD 2018 Pg.-80, 2724				
	150x50x1.6mm		5	39	195
	DSR CPWD 2018 Pg.-80, 2718				
	Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 160 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,	No.	1	12,68,991	12,68,991
	a) Diesel Engine				
	b) Engine mounted instrument panel fitted with and having digital display as specified				
	c) Alternator: Synchronous alternator rated at 400 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
	d) Base frame and foundation				
	e) Fuel Tank				
	f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
	g) starting system complete as per specification				
	h) Acoustics and weather proof enclosure				
	j) Battery and Battery charger				
	GOM.PWD Schedule pg-155				
	i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 160 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	No.	1	1,83,228	1,83,228
	GOM.PWD Schedule pg-158				
	M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	RMT	10	1,884	18,838
	DSR CPWD 2018 Pg.-86, 3005				
	Tools( as detailed in Schedule )	L.S		50,000	50,000
	MJP CSR Pg-85-86				
	Spares (as detailed in schedule)	L.S		1,00,000	1,00,000
		<b>Sub Total Cost in Rs.</b>		<b>45,79,792</b>	
	Miscellaneous Items required for completion of work	20% of above cost (LS)		9,15,958	
		<b>Total Cost</b>		<b>54,95,751</b>	

GAYA SEWERAGE ELECTRICAL ESTIMATE-IPS4					
S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
<b>1</b>	<b>Substation DP structure</b>				
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company.	3	Each	21,723	65,169
	MJP Sr. no 12				
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company.	3	Each	19,216	57,649
	MJP Sr. no 13				
1.2	Supplying & erecting D.p Structure for 100kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with necessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation.	2	Each	1,37,526	2,75,053
	PWD-Schedule Rate 2013-2014, pg-134 8-4-25				
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked (IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog)	12	Mtr	76	912
	RUIDP- 2017, Pg-372-59.31.5				
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>				
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. omplete.	2	no.	19,085	38,170
	PWD-Schedule Rate,pg-193				
2.2	G.I. Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807. ) (total length 40 m)	mtr	40	378	15,120.00
	RCD-18, item 8.18, pg-154				
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint	4	nos.	1,166	4,664
	PWD-Schedule Ratepg-147				
2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD.	1	NO.	17,774	17,774

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	PWD-Schedule Ratepg-147				
<b>3</b>	<b>11kV Cable</b>				
3.1	Supplying and Erecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete erected in approved trench or on trays as per direction of Engineer in Charge				
	RUIDP- 2017, Pg-318-51.6.4				
a	3Cx95Sq.mm	20	Mtr	889	17,780
	Cable Jointing Kit				
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes				
	DSR-E&M 2018 Pg-34 item 9.2.10				
	3Cx95Sq.mm	2	Nos	1,694	3,388
<b>4</b>	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 100 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification.	2	Nos.	2,71,139	5,42,278
	MJP Schedule-2012-13 PG-32				
<b>5</b>	415VLT Switchboard:-Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 400A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	1	No.	5,33,419	5,33,419
	<b>200A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	3	No.		
	<b>200A FP MCCB 01 NOS DG INCOMER + 01 Buscoupler</b>	2	No.		
	100A TPNMCCB	6	No.		
	63A TPN MCCB	2	No.		
	32A TPN MCCB	5	No.		
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 15 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	6	7,998	47,988.00
	MJP-18, LG 3-3				
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	4	2,437	9,748.00
	MJP-18, LG 1-2				
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	10	Nos.	3,295	32,945
	GOM PWD CSR 13-14 pg-173				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	10	Nos.	1,564	15,642
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	10	Nos.	254	2,541
	GOM PWD CSR 13-14 pg-174				
	<b>APFC PANEL</b>				
	Design, supplying and erecting 40 kVAr, 440 V, Three phase, 50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor conforming to IS:13340-41/IEC:831-1&2	40	Nos.	300	12,000
	RUIDP- 2017, Pg-298-48.12.2				
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondary current.	2	Nos.	18,220	36,440
	RUIDP- 2017, Pg-298-48.13.1				
	440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
	RUIDP- 2017, Pg-299-48.16				
	Up to 6kVAr	8	Nos.	1,588	12,704
	RUIDP- 2017, Pg-299-48.16.1				
	<b>Push Button station</b> : Providing erecting shrouded / Unshrouded push button actuator with box	8	Nos.	2,970	23,760
	MARKET PRICE				
	<b>Main Lighting MCB DB</b>				
	Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	1	Nos.	16,282	16,282
	RUIDP-2017, Pg-360-58.15.2				
	<b>Local Lighting MCB DB</b>				
	Supplying and erecting metal clad distribution board approved make 415/500 V, 8 way, 32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification (Refer Attachment-II)	1	Nos.	8,832	8,832
	Attachment-II				
	<b>MCB Ventilation DB</b>				
	Supplying and erecting metal clad distribution board approved make 415/500 V, 12 way, 32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification (Refer Attachment-II)	1	Nos.	13,523	13,523
	Attachment-II				
	<b>1.1 kV XLPE cable :</b>				
	Design, supplying & erecting XLPE insulated, armoured cable 3.5 C x 95 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S. spacer with G.I. Earth wire 6 sq.mm, complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	80	RM	402	32,160
	RUIDP SOR 2017 Pg-313 51.1.10.4				
	Design, supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S. spacer with G.I. Earth wire 6 sq.mm, complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	30	RM	151	4,530

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	RUIDP SOR 2017 Pg-312 51.1.3.3				
	Design,supplying & erecting XLPE insulated,armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	30	RM	125	3,750
	RUIDP SOR 2017 Pg-315 51.1.1.2				
	<b>Submersible Flate Cable</b>				
	Design,supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	220	RM	182	40,099
	MJP				
	<b>1.1 kV XLPE cable Termination:</b>				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx 95 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	6	Set	461	2,766
	RUIDP SOR 2017 Pg-335 52.7.29				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	87	348
	RUIDP SOR 2017 Pg-335 52.7.40				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	77	308
	RUIDP SOR 2017 Pg-335 52.7.38				
	<b>Point Wiring :</b>				
	Design,supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	20	Nos.	1,189	23,780
	DSR CPWD 2018 Pg.-1,1.1.3				
	Design,supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	10	Nos.	175	1,750
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	10	Nos.	1,460	14,600
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 10 meter	10	Nos.	540	5,400
	DSR CPWD 2018 Pg.-4,1.17.3				
	Design,supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire7 meters average length with flush type switch and required accessories as per specifications				
	Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	4	Nos.	1,859	7,436
	GOM, PWD, Electrical , CSR 2013-14, pg-61				
	20mm Metal Conduit(7 mtr.)	8	Nos.	1,022	8,176
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 7 meter	8	Nos.	378	3,024
	DSR CPWD 2018 Pg.-4,1.17.3				
	flush type switch	8	Nos.	45	360
	DSR CPWD 2018 Pg.-6,1.23.1				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Design,supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
	2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire	50		263	13,150
	DSR CPWD 2018 Pg.-2,1.7.3				
	20mm steel conduit	50		146	7,300
	DSR CPWD 2018 Pg.-5,1.20.1				
	<b>Pump House lighting and area lighting</b>				
	<b>Indoor Lighting</b>				
	Design,supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	12	Nos.	1,962	23,544
	RUIDP SOR 2017, Pg 351, 57.4.1.4				
	Design,supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	8	Nos.	243	1,945
	GOM, PWD, Electrical , CSR 2013-14, pg-40				
	<b>Emergency Lighting:-</b> Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	2	Nos.	2,750	5,500
	Market Price				
	<b>Outdoor Lighting</b>				
	<b>Flood light:-</b> Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	2	Nos.	3,310	6,620
	RUIDP SOR 2017, Pg 358, 58.8.1				
	Design,supplying and erecting Street lighting poles complete with bracket, switch box,1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4CX6Sq.mm cu wires etc , including foundation				
	1x250Watt HPSV lamp	2		1,510	3,020
	RUIDP SOR 2017, Pg 360, 58.13.2.3				
	Tubular Pole(7.5mtr)	2		17,781	35,562
	RUIDP SOR 2017, Pg 361, 58.16.1				
	Aluminum housing with ip65 protected	2		4,773	9,546
	RUIDP SOR 2017, Pg 357, 58.3.3				
	Hot dipped galvanised Overhang of 88.9mm Odx 3.25 mm thickness	2		1,198	2,396
	RUIDP SOR 2017, Pg 361, 58.17.2				
	3Cx1.5 Sq.mm	2		54	108
	DSR CPWD 2018 Pg.-4,1.17.3				
	4Cx6Sq.mm	50		220	11,000
	DSR CPWD 2018 Pg.-4,1.17.31				
	Junction Box	2		333	666
	RUIDP SOR 2017, Pg 301, 42.22.3				
	Design,supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
	32A 4Pole RCCB/ELCB	2	Nos.	1,885	3,770
	DSR CPWD 2018 Pg.-67,1721				
	Power Plug with Socket	2	Nos.	2,068	4,136
	RUIDP SOR 2017, Pg 291, 46.7.2.2				
	<b>Ventilation Systems</b>				
	Single Phase Exhaust Fan up to 450mm Sweep	4	Nos.	363	1,452
	DSR CPWD 2018 Pg.-9,1.50.1				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	4	Nos.	4,653	18,612
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	<b>Earthing</b>				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complte as per specification.				
	a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	2	Set	6,216	12,432
	DSR CPWD 2018 Pg.-26,5.4				
	Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	15	mtrs.	10	150
	RUIDP SOR 2017, Pg 342, 54.4.2				
	Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	10.00	Nos	1,224	12,240
	DSR CPWD 2018 Pg.-26,.5.10				
	Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necesssary G.I clamps fixed on wall/cable/conduit with screws in approved manner	30.00	Kg	206	6,180
	DSR CPWD 2018 Pg.-27, 5.15				
	<b>Lightning</b>				
	Conventional spike type air termination suitable to carry lighting stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	2.00	Nos	448	896
	DSR CPWD 2018 Pg.-28, 6.1				
	<b>Miscellaneous Items</b>				
	Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	4	RM	5,122	20,486
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	2	No's	123	246
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
	a) Low Voltage - size 200mmx150mm	4	No	171	682
	b) High Voltage- size 250mmx200mm	2	No	171	341
	GOM.PWD Schedule				
	Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	1	Sets	622	622
	GOM.PWD Schedule				
	Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	1	Nos.	765	765
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	<b>Providing and fixing cable tray</b>				
	150x50x1.6mm	10		531	5,310
	DSR CPWD 2018 Pg.-20, 4.1.2				



S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Cable Tray Connector				
	150x50x1.6mm	5		39	195
	DSR CPWD 2018 Pg.-80, 2718				
	Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 125 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,				
	GOM.PWD Schedule pg-155				
	a) Diesel Engine				
	b) Engine mounted instrument panel fitted with and having digital display as specified	1	No.	12,68,991	12,68,991
	c) Alternator: Synchronous alternator rated at 125 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
	d) Base frame and foundation				
	e) Fuel Tank				
	f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
	g) starting system complete as per specification				
	h) Acoustics and weather proof enclosure				
	i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 125 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	1	No.	1,83,228	1,83,228
	j) Battery and Battery charger				
	GOM.PWD Schedule pg-158				
	M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	10	RMT	1,884	18,838
	DSR CPWD 2018 Pg.-86, 3005				
	Tools( as detailed in Schedule )	L.S		50,000	50,000
	MJP CSR Pg-85-86				
	Spares (as detailed in schedule)	L.S		1,00,000	1,00,000
				<b>Sub Total Cost in Rs.</b>	<b>37,82,196</b>
	Miscellaneous Items required for completion of work	L.S.	20% of above cost		7,56,439
				<b>Total Cost</b>	<b>45,38,635</b>

<b>GAYA SEWERAGE ELECTRICAL ESTIMATE-IPS4A</b>					
<b>S. No.</b>	<b>Description</b>	<b>Qty</b>	<b>Unit</b>	<b>Unit Rate (Rs)</b>	<b>Total (Rs)</b>
<b>1</b>	<b>Substation DP structure</b>				
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 12	3	Each	21,723	65,169
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 13	3	Each	19,216	57,649
1.2	Supplying & erecting D.p Structure for 200kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with necessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation. PWD-Schedule Rate 2013-2014, pg-134 8-4-26	2	Each	1,44,480	2,88,959
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked(IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog) RUIDP- 2017, Pg-372-59.31.5	12	Mtr	76	912
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>				
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. complete. PWD-Schedule Rate,pg-193	2	no.	19,085	38,170
2.2	G.I. Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807. ) (total length 40 m) RCD-18, item 8.18, pg-154	mtr	40	378	15,120.00
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint PWD-Schedule Ratepg-147	4	nos.	1,166	4,664

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD.	1	NO.	17,774	17,774
	PWD-Schedule Ratepg-147				
3	<b>11kV Cable</b>				
3.1	Supplying and Erecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete erected in approved trench or on trays as per direction of Engineer in Charge				
a	3Cx95Sq.mm	20	Mtr	889	17,780
	RUIDP- 2017, Pg-318-51.6.4				
	Cable Jointing Kit				
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes				
	3Cx95Sq.mm	2	Nos	1,694	3,388
	DSR-E&M 2018 Pg-34 item 9.2.10				
4	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 200 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification.	2	Nos.	3,23,177	6,46,354
	MJP Schedule-2012-13 PG-32				
5	<b>415VLT Switchboard:-</b> Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 400A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	1	No.	5,92,796	5,92,796
	<b>400A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	3	No.		
	<b>0A FP MCCB 01 NOS DG INCOMER +01 Buscoupler</b>	2	No.		
	100A TPNMCCB	6	No.		
	63A TPN MCCB	2	No.		
	32A TPN MCCB	5	No.		
	ATTACHMENT-I				
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 11 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	6	6,882	41,292.00
	MJP-18, LG 3-2				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	4	2,437	9,748.00
	MJP-18, LG 1-2				
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	8	Nos.	3,295	26,356
	GOM PWD CSR 13-14 pg-173				
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	10	Nos.	1,564	15,642
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	10	Nos.	254	2,541
	GOM PWD CSR 13-14 pg-174				
	<b>APFC PANEL</b>				
	Design,supplying and erecting 70 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor conforming to IS:13340-41/IEC;831-1&2	70	Nos.	300	21,000
	RUIDP- 2017, Pg-298-48.12.2				
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent.	2	Nos.	18,220	36,440
	RUIDP- 2017, Pg-298-48.13.1				
	440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
	RUIDP- 2017, Pg-299-48.16				
	Up to 6kVAr	10	Nos.	1,588	15,880
	RUIDP- 2017, Pg-299-48.16.1				
	10 kVAr	2	Nos.	1,649	3,298
	RUIDP- 2017, Pg-300-48.16.2				
	<b>Push Button station</b> : Providing erecting shrouded / Unshrouded push button actuator with box	8	Nos.	2,970	23,760
	MARKET PRICE				
	<b>Main Lighting MCB DB</b>				
	Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	1	Nos.	16,282	16,282
	RUIDP-2017, Pg-360-58.15.2				
	<b>Local Lighting MCB DB</b>				
	Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	1	Nos.	8,832	8,832
	<b>Attachment-II</b>				
	<b>MCB Ventilation DB</b>				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	1	Nos.	13,523	13,523
	Attachment-II				
	<b>1.1 kV XLPE cable :</b>				
	Design,supplying & erecting XLPE insulated, armoured cable 3.5 C x185 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	160	RM	402	64,320
	RUIDP SOR 2017 Pg-313 51.1.10.4				
	Design,supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	151	9,060
	RUIDP SOR 2017 Pg-312 51.1.3.3				
	Design,supplying & erecting XLPE insulated,armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	125	7,500
	RUIDP SOR 2017 Pg-315 51.1.1.2				
	<b>Submersible Flate Cable</b>				
	Design,supplying & erecting flate flexible 4 core 6 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	135	RM	245	33,116
	MJP				
	Design,supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	20	RM	182	3,645
	MJP				
	MJP				
	<b>1.1 kV XLPE cable Terminatrion:</b>				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx185 sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	6	Set	716	4,296
	RUIDP SOR 2017 Pg-335 52.7.32				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	87	348
	RUIDP SOR 2017 Pg-335 52.7.40				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	77	308
	RUIDP SOR 2017 Pg-335 52.7.38				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	<b>Point Wiring :</b>				
	Design, supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	20	Nos.	1,189	23,780
	DSR CPWD 2018 Pg.-1,1.1.3				
	Design, supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	10	Nos.	175	1,750
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	10	Nos.	1,460	14,600
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 10 meter	10	Nos.	540	5,400
	DSR CPWD 2018 Pg.-4,1.17.3				
	Design, supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 7 meters average length with flush type switch and required accessories as per specifications				
	Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	4	Nos.	1,859	7,436
	GOM, PWD, Electrical , CSR 2013-14, pg-61				
	20mm Metal Conduit(7 mtr.)	8	Nos.	1,022	8,176
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 7 meter	8	Nos.	378	3,024
	DSR CPWD 2018 Pg.-4,1.17.3				
	flush type switch	8	Nos.	45	360
	DSR CPWD 2018 Pg.-6,1.23.1				
	Design, supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
	2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire	50		263	13,150
	DSR CPWD 2018 Pg.-2,1.7.3				
	20mm steel conduit	50		146	7,300
	DSR CPWD 2018 Pg.-5,1.20.1				
	<b>Pump House lighting and area lighting</b>				
	<b>Indoor Lighting</b>				
	Design, supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	12	Nos.	1,962	23,544
	RUIDP SOR 2017, Pg 351, 57.4.1.4				
	Design, supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	8	Nos.	243	1,945
	GOM, PWD, Electrical , CSR 2013-14, pg-40				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Emergency Lighting:- Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	2	Nos.	2,750	5,500
	Market Price				
	<b>Outdoor Lighting</b>				
	<b>Flood light:-</b> Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	2	Nos.	3,310	6,620
	RUIDP SOR 2017, Pg 358, 58.8.1				
	Design,supplying and erecting Street lighting poles complete with bracket, switch box,1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4CX6Sq.mm cu wires etc , including foundation				
	1x250Watt HPSV lamp	6		1,510	9,060
	RUIDP SOR 2017, Pg 360, 58.13.2.3				
	Tubular Pole(7.5mtr)	6		17,781	1,06,686
	RUIDP SOR 2017, Pg 361, 58.16.1				
	Aluminum housing with ip65 protected	6		4,773	28,638
	RUIDP SOR 2017, Pg 357, 58.3.3				
	Hot diped galvanised Overhang of 88.9mm Odx 3.25 mm thickness	6		1,198	7,188
	RUIDP SOR 2017, Pg 361, 58.17.2				
	3Cx1.5 Sq.mm	6		54	324
	DSR CPWD 2018 Pg.-4,1.17.3				
	4Cx6Sq.mm	180		220	39,600
	DSR CPWD 2018 Pg.-4,1.17.31				
	Junction Box	6		333	1,998
	RUIDP SOR 2017, Pg 301, 42.22.3				
	Design,supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
	32A 4Pole RCCB/ELCB	4	Nos.	1,885	7,540
	DSR CPWD 2018 Pg.-67,1721				
	Power Plug with Socket	4	Nos.	2,068	8,272
	RUIDP SOR 2017, Pg 291, 46.7.2.2				
	<b>Ventilation Systems</b>				
	Single Phase Exhaust Fan up to 450mm Sweep	8	Nos.	363	2,904
	DSR CPWD 2018 Pg.-9,1.50.1				
	Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	4	Nos.	4,653	18,612
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	<b>Earthing</b>				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complete as per specification.				
	a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	10	Set	6,216	62,160
	DSR CPWD 2018 Pg.-26,5.4				
	Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	25	mtrs.	10	250
	RUIDP SOR 2017, Pg 342, 54.4.2				
	Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	20	Nos	1,224	24,480
	DSR CPWD 2018 Pg.-26,.5.10				
	Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necessary G.I clamps fixed on wall/cable/conduit with screws in approved manner	50	Kg	206	10,300
	DSR CPWD 2018 Pg.-27, 5.15				
	<b>Lightning</b>				
	Conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	4	Nos	448	1,792
	DSR CPWD 2018 Pg.-28, 6.1				
	<b>Miscellaneous Items</b>				
	Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	7	RM	5,122	35,851
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Supplying rubber matting of 3 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 33 kV	7	RM	6,965	48,756
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	2	No's	123	246
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
	a) Low Voltage - size 200mmx150mm	4	No	171	682
	b) High Voltage- size 250mmx200mm	2	No	171	341
	GOM.PWD Schedule				



S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	1	Sets	622	622
	GOM.PWD Schedule				
	Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	1	Nos.	765	765
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	<b>Providing and fixing cable tray</b>				
	300x62.5x2mm	15		1,918	28,770
	DSR CPWD 2018 Pg.-21, 4.3.8				
	150x50x1.6mm	10		531	5,310
	DSR CPWD 2018 Pg.-20, 4.1.2				
	Cable Tray Connector				
	300x62.5x2mm	5		44	220
	DSR CPWD 2018 Pg.-80, 2724				
	150x50x1.6mm	5		39	195
	DSR CPWD 2018 Pg.-80, 2718				
	Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 140 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,	1	No.	11,94,856	11,94,856
	a) Diesel Engine				
	b) Engine mounted instrument panel fitted with and having digital display as specified				
	c) Alternator: Synchronous alternator rated at 140 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
	d) Base frame and foundation				
	e) Fuel Tank				
	f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
	g) starting system complete as per specification				
	h) Acoustics and weather proof enclosure				
	j) Battery and Battery charger				
	GOM.PWD Schedule pg-155				
	i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 140 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	1	No.	1,70,365	1,70,365
	GOM.PWD Schedule pg-158				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	10	RMT	1,884	18,838
	DSR CPWD 2018 Pg.-86, 3005				
	Tools( as detailed in Schedule )		L.S	50,000	50,000
	MJP CSR Pg-85-86				
	Spares (as detailed in schedule)		L.S	1,00,000	1,00,000
		<b>Sub Total Cost in Rs.</b>			<b>42,14,127</b>
	Miscellaneous Items required for completion of work	L.S	20% of above cost		8,42,825
			<b>Total Cost</b>		<b>50,56,952</b>

GAYA SEWERAGE ELECTRICAL ESTIMATE					IPSS	
S. No.	Description	Unit	Qty	Unit Rate (Rs)	Total (Rs)	
<b>1</b>	<b>Substation DP structure</b>					
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 12	Each	3	21,723	65,169	
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 13	Each	3	19,216	57,649	
1.2	Supplying & erecting D.p Structure for 100kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with necessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation. PWD-Schedule Rate 2013-2014, pg-134 8-4-25	Each	2	1,37,526	2,75,053	
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked (IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog) RUIDP- 2017, Pg-372-59.31.5	Mtr	12	76	912	
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>					
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. complete. PWD-Schedule Rate,pg-193	no.	2	19,085	38,170	
2.2	G.I. Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807. ) (total length 40 m) RCD-18, item 8.18, pg-154	mtr	40	378	15,120.00	
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint PWD-Schedule Ratepg-147	nos.	4	1,166	4,664	
2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD. PWD-Schedule Ratepg-147	NO.	1	17,774	17,774	
<b>3</b>	<b>11kV Cable</b>					
3.1	Supplying and Errecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete errected in approved trench or on trays as per direction of Engineer in Charge RUIDP- 2017, Pg-318-51.6.4					
a	3Cx95Sq.mm Cable Jointing Kit	Mtr	20	889	17,780	
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes DSR-E&M 2018 Pg-34 item 9.2.10					
	3Cx95Sq.mm	Nos	2	1,694	3,388	

<b>4</b>	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 100 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification.	Nos.	2	2,71,139	5,42,278
	MJP Schedule-2012-13 PG-32				
	<b>415VLT Switchboard:-</b> Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 400A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame	No.	1	3,97,219	3,97,219
5	,as per specification.(Refer Attachment-I)				
	<b>200A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	No.	3		
	<b>200A FP MCCB 01 NOS DG INCOMER + 01 Buscoupler</b>	No.	2		
	125A TPNMCCB	No.	2		
	63A TPN MCCB	No.	6		
	32A TPN MCCB	No.	5		
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 11 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	6	6,882	41,292.00
	MJP-18, LG 3-2				
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	Nos.	4	2,437	9,748.00
	MJP-18, LG 1-2				
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	Nos.	10	3,295	32,945
	GOM PWD CSR 13-14 pg-173				
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	Nos.	10	1,564	15,642
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	Nos.	10	254	2,541
	GOM PWD CSR 13-14 pg-174				
	<b>APFC PANEL</b>				
	Design,supplying and erecting 40 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor confirming to IS:13340-41/IEC;831-1&2	Nos.	40	300	12,000
	RUIDP- 2017, Pg-298-48.12.2				
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent.	Nos.	2	18,220	36,440
	RUIDP- 2017, Pg-298-48.13.1				
	440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
	RUIDP- 2017, Pg-299-48.16				
	Up to 6kVAr	Nos.	8	1,588	12,704
	RUIDP- 2017, Pg-299-48.16.1				
	<b>Push Button station :</b> Providing erecting shrouded / Unshrouded push button actuator with box	Nos.	8	2,970	23,760
	MARKET PRICE				
	<b>Main Lighting MCB DB</b>				
	Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	Nos.	1	16,282	16,282
	RUIDP-2017, Pg-360-58.15.2				
	<b>Local Lighting MCB DB</b>				
	Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	8,832	8,832

Attachment-II				
<b>MCB Ventilation DB</b>				
Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	13,523	13,523
Attachment-II				
<b>1.1 kV XLPE cable :</b>				
Design,supplying & erecting XLPE insulated, armoured cable 3.5 C x 95 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,l. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	80	402	32,160
RUIDP SOR 2017 Pg-313 51.1.10.4				
Design,supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,l. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	30	151	4,530
RUIDP SOR 2017 Pg-312 51.1.3.3				
Design,supplying & erecting XLPE insulated,armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,l. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	30	125	3,750
RUIDP SOR 2017 Pg-315 51.1.1.2				
<b>Submersible Flate Cable</b>				
Design,supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	220	182	40,099
MJP				
<b>1.1 kV XLPE cable Termination:</b>				
Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx 95 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Set	6	461	2,766
RUIDP SOR 2017 Pg-335 52.7.29				
Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	87	348
RUIDP SOR 2017 Pg-335 52.7.40				
Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	77	308
RUIDP SOR 2017 Pg-335 52.7.38				
<b>Point Wiring :</b>				
Design,supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	Nos.	20	1,189	23,780
DSR CPWD 2018 Pg.-1,1.1.3				
Design,supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
5/15A Single phase independent plug	Nos.	10	175	1,750
DSR CPWD 2018 Pg.-6,1.24.5				
20mm Metal Conduit(10 mtr.)	Nos.	10	1,460	14,600
DSR CPWD 2018 Pg.-5,1.20.1				
1.5Sqmm FR grade copper wire 10 meter	Nos.	10	540	5,400
DSR CPWD 2018 Pg.-4,1.17.3				
Design,supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire7 meters average length with flush type switch and required accessories as per specifications				
Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	Nos.	4	1,859	7,436
GOM, PWD, Electrical , CSR 2013-14, pg-61				

20mm Metal Conduit(7 mtr.) DSR CPWD 2018 Pg.-5,1.20.1	Nos.	8	1,022	8,176
1.5Sqmm FR grade copper wire 7 meter DSR CPWD 2018 Pg.-4,1.17.3	Nos.	8	378	3,024
flush type switch DSR CPWD 2018 Pg.-6,1.23.1	Nos.	8	45	360
Design,supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire DSR CPWD 2018 Pg.-2,1.7.3		50	263	13,150
20mm steel conduit DSR CPWD 2018 Pg.-5,1.20.1		50	146	7,300
<b>Pump House lighting and area lighting</b>				
<b>Indoor Lighting</b>				
Design,supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications. RUIDP SOR 2017, Pg 351, 57.4.1.4	Nos.	12	1,962	23,544
Design,supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9 GOM, PWD, Electrical , CSR 2013-14, pg-40	Nos.	8	243	1,945
<b>Emergency Lighting:-</b> Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery Market Price	Nos.	2	2,750	5,500
<b>Outdoor Lighting</b>				
<b>Flood light:-</b> Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting RUIDP SOR 2017, Pg 358, 58.8.1	Nos.	2	3,310	6,620
Design,supplying and erecting Street lighting poles complete with bracket, switch box,1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4CX6Sq.mm cu wires etc , including foundation 1x250Watt HPSV lamp RUIDP SOR 2017, Pg 360, 58.13.2.3		2	1,510	3,020
Tubular Pole(7.5mtr) RUIDP SOR 2017, Pg 361, 58.16.1		2	17,781	35,562
Aluminum housing with ip65 protected RUIDP SOR 2017, Pg 357, 58.3.3		2	4,773	9,546
Hot diped galvanised Overhang of 88.9mm Odx 3.25 mm thickness RUIDP SOR 2017, Pg 361, 58.17.2		2	1,198	2,396
3Cx1.5 Sq.mm DSR CPWD 2018 Pg.-4,1.17.3		2	54	108
4Cx6Sq.mm DSR CPWD 2018 Pg.-4,1.17.31		50	220	11,000
Junction Box RUIDP SOR 2017, Pg 301, 42.22.3		2	333	666
Design,supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB) 32A 4Pole RCCB/ELCB DSR CPWD 2018 Pg.-67,1721	Nos.	2	1,885	3,770
Power Plug with Socket RUIDP SOR 2017, Pg 291, 46.7.2.2	Nos.	2	2,068	4,136
<b>Ventilation Systems</b>				
Single Phase Exhaust Fan up to 450mm Sweep DSR CPWD 2018 Pg.-9,1.50.1	Nos.	4	363	1,452
Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete. GOM, PWD, Electrical , CSR 2013-14, pg-148	Nos.	4	4,653	18,612
<b>Earthing</b>				

Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complete as per specification.				
a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	Set	2	6,216	12,432
DSR CPWD 2018 Pg.-26,5.4				
Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	mtrs.	15	10	150
RUIDP SOR 2017, Pg 342, 54.4.2				
Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	Nos	10	1,224	12,240
DSR CPWD 2018 Pg.-26,.5.10				
Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necessary G.I clamps fixed on wall/cable/conduit with screws in approved manner	Kg	30	206	6,180
DSR CPWD 2018 Pg.-27, 5.15				
<b>Lightning</b>				
Conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	Nos	2	448	896
DSR CPWD 2018 Pg.-28, 6.1				
<b>Miscellaneous Items</b>				
Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	RM	4	5,122	20,486
GOM, PWD, Electrical , CSR 2013-14, pg-147				
Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	No's	2	123	246
GOM, PWD, Electrical , CSR 2013-14, pg-147				
Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
a) Low Voltage - size 200mmx150mm	No	4	171	682
b) High Voltage- size 250mmx200mm	No	2	171	341
GOM.PWD Schedule				
Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	Sets	1	622	622
GOM.PWD Schedule				
Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	Nos.	1	765	765
GOM, PWD, Electrical , CSR 2013-14, pg-147				
<b>Providing and fixing cable tray</b>				
150x50x1.6mm		10	531	5,310
DSR CPWD 2018 Pg.-20, 4.1.2				
Cable Tray Connector				
150x50x1.6mm		5	39	195
DSR CPWD 2018 Pg.-80, 2718				
Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 100 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,	No.	1	8,77,929	8,77,929
GOM.PWD Schedule pg-155				
a) Diesel Engine				
b) Engine mounted instrument panel fitted with and having digital display as specified				
c) Alternator: Synchronous alternator rated at 100 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
d) Base frame and foundation				
e) Fuel Tank				

f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
g) starting system complete as per specification				
h) Acoustics and weather proof enclosure				
i) Fabrication, installation, testing and commissioning of automatic mains failure control including auto by pass panel suitable for 100 kVA silent type D.G set complete with relays, timers set of CT's for metering and protection and energy analyser, control cabling from AMF panel to diesel engine and elsewhere as required	No.	1	1,44,460	1,44,460
j) Battery and Battery charger				
GOM.PWD Schedule pg-158				
M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	RMT	10	1,884	18,838
DSR CPWD 2018 Pg.-86, 3005				
Tools( as detailed in Schedule )	L.S		50,000	50,000
MJP CSR Pg-85-86				
Spares (as detailed in schedule)	L.S		1,00,000	1,00,000
	<b>Sub Total Cost in Rs.</b>			<b>32,09,470</b>
Miscellaneous Items required for completion of work	20% of above cost (LS)			6,41,894
	<b>Total Cost</b>			<b>38,51,364</b>



GAYA SEWERAGE ELECTRICAL ESTIMATE					IP55A
S. No.	Description	Unit	Qty	Unit Rate (Rs)	Total (Rs)
<b>1</b>	<b>Substation DP structure</b>				
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 12	Each	3	21,723	65,169
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company. MJP Sr. no 13	Each	3	19,216	57,649
1.2	Supplying & erecting D.p Structure for 100kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with necessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation. PWD-Schedule Rate 2013-2014, pg-134 8-4-25	Each	2	1,37,526	2,75,053
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked (IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog) RUIDP- 2017, Pg-372-59.31.5	Mtr	12	76	912
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>				
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. omplete. PWD-Schedule Rate,pg-193	no.	2	19,085	38,170
2.2	G.I. Barbed wire Fencing 1.8 metre high (Providing and fixing 1.8 metres high GI barbed wire fencing with 2.4 m angle iron posts 50 mm x 50 mm x 6 mm placed every 3 metres center to center founded in M15 grade cement concrete, 0.6 metre below ground level, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with 12 horizontal lines and 2 diagonals interwoven with horizontal wires, fixed with GI staples, turn buckles etc complete as per clause 807. ) (total length 40 m) RCD-18, item 8.18, pg-154	mtr	40	378	15,120.00
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint PWD-Schedule Ratepg-147	nos.	4	1,166	4,664
2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD. PWD-Schedule Ratepg-147	NO.	1	17,774	17,774
<b>3</b>	<b>11kV Cable</b>				
3.1	Supplying and Erecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete erected in approved trench or on trays as per direction of Engineer in Charge RUIDP- 2017, Pg-318-51.6.4				
a	3Cx95Sq.mm Cable Jointing Kit	Mtr	20	889	17,780
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes DSR-CPWD 2014 Pg-31 item 9.2.10				
	DSR-E&M 2018 Pg-34 item 9.2.10	Nos	2	1,694	3,388

<b>4</b>	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 100 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification. MJP Schedule-2012-13 PG-32	Nos.	2	2,71,139	5,42,278
5	<b>415VLT Switchboard:-</b> Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 400A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	No.	1	3,97,219	3,97,219
	<b>200A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	No.	3		
	<b>200A FP MCCB 01 NOS DG INCOMER + 01 Buscoupler</b>	No.	2		
	125A TPNMCCB	No.	2		
	63A TPN MCCB	No.	6		
	32A TPN MCCB	No.	5		
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 11 kW motor totally complete erected on provided angle iron frame, including motor protection relay. MJP-18, LG 3-2	Nos.	6	6,882	41,292.00
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay. MJP-18, LG 1-2	Nos.	4	2,437	9,748.00
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model) GOM PWD CSR 13-14 pg-173	Nos.	10	3,295	32,945
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation GOM PWD CSR 13-14 pg-174	Nos.	10	1,564	15,642
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete. GOM PWD CSR 13-14 pg-174	Nos.	10	254	2,541
	<b>APFC PANEL</b>				
	Design,supplying and erecting 40 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor conforming to IS:13340-41/IEC;831-1&2 RUIDP- 2017, Pg-298-48.12.2	Nos.	40	300	12,000
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent. RUIDP- 2017, Pg-298-48.13.1	Nos.	2	18,220	36,440
	440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks RUIDP- 2017, Pg-299-48.16				
	Up to 6kVAr RUIDP- 2017, Pg-299-48.16.1	Nos.	8	1,588	12,704
	<b>Push Button station :</b> Providing erecting shrouded / Unshrouded push button actuator with box MARKET PRICE	Nos.	8	2,970	23,760
	<b>Main Lighting MCB DB</b>				
	Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement RUIDP-2017, Pg-360-58.15.2	Nos.	1	16,282	16,282
	<b>Local Lighting MCB DB</b>				
	Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	8,832	8,832

Attachment-II					
<b>MCB Ventilation DB</b>					
Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	Nos.	1	13,523	13,523	
Attachment-II					
<b>1.1 kV XLPE cable :</b>					
Design,supplying & erecting XLPE insulated, armoured cable 3.5 C x 95 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	80	402	32,160	
RUIDP SOR 2017 Pg-313 51.1.10.4					
Design,supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	30	151	4,530	
RUIDP SOR 2017 Pg-312 51.1.3.3					
Design,supplying & erecting XLPE insulated,armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	RM	30	125	3,750	
RUIDP SOR 2017 Pg-315 51.1.1.2					
<b>Submersible Flate Cable</b>					
Design,supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	RM	220	182	40,099	
MJP					
<b>1.1 kV XLPE cable Termination:</b>					
Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx 95 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Set	6	461	2,766	
RUIDP SOR 2017 Pg-335 52.7.29					
Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	87	348	
RUIDP SOR 2017 Pg-335 52.7.40					
Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	Nos.	4	77	308	
RUIDP SOR 2017 Pg-335 52.7.38					
<b>Point Wiring :</b>					
Design,supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	Nos.	20	1,189	23,780	
DSR CPWD 2018 Pg.-1,1.1.3					
Design,supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications					
5/15A Single phase independent plug	Nos.	10	175	1,750	
DSR CPWD 2018 Pg.-6,1.24.5					
20mm Metal Conduit(10 mtr.)	Nos.	10	1,460	14,600	
DSR CPWD 2018 Pg.-5,1.20.1					
1.5Sqmm FR grade copper wire 10 meter	Nos.	10	540	5,400	
DSR CPWD 2018 Pg.-4,1.17.3					
Design,supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire7 meters average length with flush type switch and required accessories as per specifications					
Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	Nos.	4	1,859	7,436	
GOM, PWD, Electrical , CSR 2013-14, pg-61					
20mm Metal Conduit(7 mtr.)	Nos.	8	1,022	8,176	

DSR CPWD 2018 Pg.-5,1.20.1				
1.5Sqmm FR grade copper wire 7 meter	Nos.	8	378	3,024
DSR CPWD 2018 Pg.-4,1.17.3				
flush type switch	Nos.	8	45	360
DSR CPWD 2018 Pg.-6,1.23.1				
Design,supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire		50	263	13,150
DSR CPWD 2018 Pg.-2,1.7.3				
20mm steel conduit		50	146	7,300
DSR CPWD 2018 Pg.-5,1.20.1				
<b>Pump House lighting and area lighting</b>				
<b>Indoor Lighting</b>				
Design,supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluoroscent lamp with electronic ballast fixed in on ceiling as per specifications.	Nos.	12	1,962	23,544
RUIDP SOR 2017, Pg 351, 57.4.1.4				
Design,supplying and erecting compact fluoresent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	Nos.	8	243	1,945
GOM, PWD, Electrical , CSR 2013-14, pg-40				
<b>Emergency Lighting:-</b> Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	Nos.	2	2,750	5,500
Market Price				
<b>Outdoor Lighting</b>				
<b>Flood light:-</b> Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	Nos.	2	3,310	6,620
RUIDP SOR 2017, Pg 358, 58.8.1				
Design,supplying and erecting Street lighting poles complete with bracket, switch box,1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4CX6Sq.mm cu wires etc , including foundation				
1x250Watt HPSV lamp		2	1,510	3,020
RUIDP SOR 2017, Pg 360, 58.13.2.3				
Tubular Pole(7.5mtr)		2	17,781	35,562
RUIDP SOR 2017, Pg 361, 58.16.1				
Aluminum housing with ip65 protected		2	4,773	9,546
RUIDP SOR 2017, Pg 357, 58.3.3				
Hot diped galvanised Overhang of 88.9mm Odx 3.25 mm thickness		2	1,198	2,396
RUIDP SOR 2017, Pg 361, 58.17.2				
3Cx1.5 Sq.mm		2	54	108
DSR CPWD 2018 Pg.-4,1.17.3				
4Cx6Sq.mm		50	220	11,000
DSR CPWD 2018 Pg.-4,1.17.31				
Junction Box		2	333	666
RUIDP SOR 2017, Pg 301, 42.22.3				
Design,supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
32A 4Pole RCCB/ELCB	Nos.	2	1,885	3,770
DSR CPWD 2018 Pg.-67,1721				
Power Plug with Socket	Nos.	2	2,068	4,136
RUIDP SOR 2017, Pg 291, 46.7.2.2				
<b>Ventilation Systems</b>				
Single Phase Exhaust Fan up to 450mm Sweep	Nos.	4	363	1,452
DSR CPWD 2018 Pg.-9,1.50.1				
Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	Nos.	4	4,653	18,612
GOM, PWD, Electrical , CSR 2013-14, pg-148				
<b>Earthing</b>				

Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complete as per specification.				
a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	Set	2	6,216	12,432
DSR CPWD 2018 Pg.-26,5.4				
Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	mtrs.	15	10	150
RUIDP SOR 2017, Pg 342, 54.4.2				
Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	Nos	10.00	1,224	12,240
DSR CPWD 2018 Pg.-26,.5.10				
Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necessary G.I clamps fixed on wall/cable/conduit with screws in approved manner	Kg	30.00	206	6,180
DSR CPWD 2018 Pg.-27, 5.15				
<b>Lightning</b>				
Conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	Nos	2.00	448	896
DSR CPWD 2018 Pg.-28, 6.1				
<b>Miscellaneous Items</b>				
Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	RM	4	5,122	20,486
GOM, PWD, Electrical , CSR 2013-14, pg-147				
Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	No's	2	123	246
GOM, PWD, Electrical , CSR 2013-14, pg-147				
Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
a) Low Voltage - size 200mmx150mm	No	4	171	682
b) High Voltage- size 250mmx200mm	No	2	171	341
GOM.PWD Schedule				
Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	Sets	1	622	622
GOM.PWD Schedule				
Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	Nos.	1	765	765
GOM, PWD, Electrical , CSR 2013-14, pg-147				
<b>Providing and fixing cable tray</b>				
150x50x1.6mm		10	531	5,310
DSR CPWD 2018 Pg.-20, 4.1.2				
Cable Tray Connector				
150x50x1.6mm		5	39	195
DSR CPWD 2018 Pg.-80, 2718				
Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 100 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,	No.	1	8,77,929	8,77,929
GOM.PWD Schedule pg-155				
a) Diesel Engine				
b) Engine mounted instrument panel fitted with and having digital display as specified				
c) Alternator: Synchronous alternator rated at 100 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
d) Base frame and foundation				
e) Fuel Tank				

f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
g) starting system complete as per specification				
h) Acoustics and weather proof enclosure				
i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 100 kVA silent type D.G set complete with relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	No.	1	1,44,460	1,44,460
j) Battery and Battery charger				
GOM.PWD Schedule pg-158				
M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	RMT	10	1,884	18,838
DSR CPWD 2018 Pg.-86, 3005				
Tools( as detailed in Schedule )	L.S		50,000	50,000
MJP CSR Pg-85-86				
Spares (as detailed in schedule)	L.S		1,00,000	1,00,000
	<b>Sub Total Cost in Rs.</b>			<b>32,09,470</b>
Miscellaneous Items required for completion of work	20% of above cost (LS)			6,41,894
	<b>Total Cost</b>			<b>38,51,364</b>

GAYA SEWERAGE ELECTRICAL ESTIMATE-IPS6					
S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
<b>1</b>	<b>Substation DP structure</b>				
1.1	Supply and Errection of Steel Structure for mounting CT in all respect with nuts and bolts as required by Power Supply company.	3	Each	21,723	65,169
	MJP Sr. no 12				
	Supply and Errection of Steel Structure for mounting PT in all respect with nuts and bolts as required by Power Supply company.	3	Each	19,216	57,649
	MJP Sr. no 13				
1.2	Supplying & erecting D.p Structure for 200kVA Transformer with R.S.J Pole 2 Nos. of size 100 mm X 116 mm X 11 m long suitable for 11/0.433 kV Tranformer. D.P Structure includes The A.B switch 200 Amps. , D.O Fuse set & L.A Set 2 Nos. Top chanel of size 100 mm X 50 mm for erection of A.B Switch. Channel of size 75 X 40 mm for erecting D.O Fuse set, L.A, A.B Switch handle with neccessary clamps, Nut-Bolts. cross arm, top clip , insulators, etc. Complete with caution board & barbed wire D.P Structure shall be erected in provided c.c foundation.	2	Each	1,44,480	2,88,959
	PWD-Schedule Rate 2013-2014, pg-134 8-4-26				
1.3	Supplying and drawing overhead steel core Aluminium conductor (ACSR) ISI marked(IS 398 part II-1996) on existing cross arms through insulator with all necessary T&P required including binding and twisting etc. complete in all respect as required as per Discom specification. 100 sqmm of (6/4.72 mm+1/1.57 mm) (Dog)	12	Mtr	76	912
	RUIDP- 2017, Pg-372-59.31.5				
<b>2</b>	<b>Substation Foundation &amp; Fencing</b>				
2.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick brunt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. omplete.	2	no.	19,085	38,170
	PWD-Schedule Rate,pg-193				
2.2	Supplying and erecting fencing of section having size 2450 mm in height from ground level and 1200 mm width with angle iron frame work erected in CC Foundation and painted as per specification No SS-AS/FSG (total length 40 m)	1	NO.	2,20,955	2,20,955
	PWD-Schedule Ratepg-146				
2.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint	4	nos.	1,166	4,664
	PWD-Schedule Ratepg-147				
2.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD.	1	NO.	17,774	17,774
	PWD-Schedule Ratepg-147				
<b>3</b>	<b>11kV Cable</b>				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
3.1	Supplying and Erecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete erected in approved trench or on trays as per direction of Engineer in Charge				
a	3Cx95Sq.mm	20	Mtr	889	17,780
	RUIDP- 2017, Pg-318-51.6.4				
	Cable Jointing Kit				
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes				
	3Cx95Sq.mm	2	Nos	1,694	3,388
	DSR-E&M 2018 Pg-34 item 9.2.10				
<b>4</b>	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 200 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with off load tap changer -15% to +5% and other fittings as per (IS 2026) specification.	2	Nos.	3,88,372	7,76,743
	MJP Schedule-2012-13 PG-32				
<b>5</b>	<b>415VLT Switchboard:-</b> Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 400A 36kA/1sec MCCB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	1	No.	7,50,263	7,50,263
	<b>400A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	3	No.		
	<b>250A FP MCCB 01 NOS DG INCOMER +01 Buscoupler</b>	2	No.		
	100A TPNMCCB	6	No.		
	63A TPN MCCB	2	No.		
	32A TPN MCCB	5	No.		
	ATTACHMENT-I				
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 30 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	6	Nos.	38,720	2,32,320
	GWSSB CSR 2011-13,pg 151				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 22 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	2	Nos.	26,620	53,240
	GWSSB CSR 2011-13,pg 150				
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	2	Nos.	2,851	5,702
	MJP CSR 2012-13, Pg-53				



S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	10	Nos.	3,295	32,945
	GOM PWD CSR 13-14 pg-173				
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	10	Nos.	1,564	15,642
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	10	Nos.	254	2,541
	GOM PWD CSR 13-14 pg-174				
	<b>APFC PANEL</b>				
	Design, supplying and erecting 70 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor confirming to IS:13340-41/IEC;831-1&2	70	Nos.	300	21,000
	RUIDP- 2017, Pg-298-48.12.2				
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondary current.	2	Nos.	18,220	36,440
	RUIDP- 2017, Pg-298-48.13.1				
	440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
	RUIDP- 2017, Pg-299-48.16				
	Up to 6kVAr	10	Nos.	1,588	15,880
	RUIDP- 2017, Pg-299-48.16.1				
	10 kVAr	2	Nos.	1,649	3,298
	RUIDP- 2017, Pg-300-48.16.2				
	<b>Push Button station</b> : Providing erecting shrouded / Unshrouded push button actuator with box	8	Nos.	2,970	23,760
	MARKET PRICE				
	<b>Main Lighting MCB DB</b>				
	Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	1	Nos.	16,282	16,282
	RUIDP-2017, Pg-360-58.15.2				
	<b>Local Lighting MCB DB</b>				
	Supplying and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	1	Nos.	8,832	8,832
	Attachment-II				
	<b>MCB Ventilation DB</b>				
	Supplying and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	1	Nos.	13,523	13,523
	Attachment-II				
	<b>1.1 kV XLPE cable :</b>				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Design, supplying & erecting XLPE insulated, armoured cable 3.5 C x185 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	160	RM	402	64,320
	RUIDP SOR 2017 Pg-313 51.1.10.4				
	Design, supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	151	9,060
	RUIDP SOR 2017 Pg-312 51.1.3.3				
	Design, supplying & erecting XLPE insulated, armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G.I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	125	7,500
	RUIDP SOR 2017 Pg-315 51.1.1.2				
	<b>Submersible Flate Cable</b>				
	Design, supplying & erecting flate flexible 4 core 25 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	135	RM	980	1,32,290
	MJP				
	Design, supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	20	RM	182	3,645
	MJP				
	Design, supplying & erecting flate flexible 4 core 16 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	45	RM	613	27,578
	MJP				
	<b>1.1 kV XLPE cable Termination:</b>				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx185 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	6	Set	716	4,296
	RUIDP SOR 2017 Pg-335 52.7.32				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	87	348
	RUIDP SOR 2017 Pg-335 52.7.40				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	77	308
	RUIDP SOR 2017 Pg-335 52.7.38				
	<b>Point Wiring :</b>				
	Design, supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	20	Nos.	1,189	23,780
	DSR CPWD 2018 Pg.-1,1.1.3				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Design,supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	10	Nos.	175	1,750
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	10	Nos.	1,460	14,600
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 10 meter	10	Nos.	540	5,400
	DSR CPWD 2018 Pg.-4,1.17.3				
	Design,supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 7 meters average length with flush type switch and required accessories as per specifications				
	Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	4	Nos.	1,859	7,436
	GOM, PWD, Electrical , CSR 2013-14, pg-61				
	20mm Metal Conduit(7 mtr.)	8	Nos.	1,022	8,176
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 7 meter	8	Nos.	378	3,024
	DSR CPWD 2018 Pg.-4,1.17.3				
	flush type switch	8	Nos.	45	360
	DSR CPWD 2018 Pg.-6,1.23.1				
	Design,supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
	2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire	50		263	13,150
	DSR CPWD 2018 Pg.-2,1.7.3				
	20mm steel conduit	50		146	7,300
	DSR CPWD 2018 Pg.-5,1.20.1				
	<b>Pump House lighting and area lighting</b>				
	<b>Indoor Lighting</b>				
	Design,supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	12	Nos.	1,962	23,544
	RUIDP SOR 2017, Pg 351, 57.4.1.4				
	Design,supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	8	Nos.	243	1,945
	GOM, PWD, Electrical , CSR 2013-14, pg-40				
	<b>Emergency Lighting:-</b> Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	2	Nos.	2,750	5,500
	Market Price				
	<b>Outdoor Lighting</b>				
	<b>Flood light:-</b> Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	2	Nos.	3,310	6,620
	RUIDP SOR 2017, Pg 358, 58.8.1				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Design,supplying and erecting Street lighting poles complete with bracket, switch box,1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4Cx6Sq.mm cu wires etc , including foundation				
	1x250Watt HPSV lamp	6		1,510	9,060
	RUIDP SOR 2017, Pg 360, 58.13.2.3				
	Tubular Pole(7.5mtr)	6		17,781	1,06,686
	RUIDP SOR 2017, Pg 361, 58.16.1				
	Aluminum housing with ip65 protected	6		4,773	28,638
	RUIDP SOR 2017, Pg 357, 58.3.3				
	Hot diped galvanised Overhang of 88.9mm Odx 3.25 mm thickness	6		1,198	7,188
	RUIDP SOR 2017, Pg 361, 58.17.2				
	3Cx1.5 Sq.mm	6		54	324
	DSR CPWD 2018 Pg.-4,1.17.3				
	4Cx6Sq.mm	180		220	39,600
	DSR CPWD 2018 Pg.-4,1.17.31				
	Junction Box	6		333	1,998
	RUIDP SOR 2017, Pg 301, 42.22.3				
	Design,supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
	32A 4Pole RCCB/ELCB	4	Nos.	1,885	7,540
	DSR CPWD 2018 Pg.-67,1721				
	Power Plug with Socket	4	Nos.	2,068	8,272
	RUIDP SOR 2017, Pg 291, 46.7.2.2				
	<b>Ventilation Systems</b>				
	Single Phase Exhaust Fan up to 450mm Sweep	8	Nos.	363	2,904
	DSR CPWD 2018 Pg.-9,1.50.1				
	Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	4	Nos.	4,653	18,612
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	<b>Earthing</b>				
	Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complt as per specification.				
	a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	10	Set	6,216	62,160
	DSR CPWD 2018 Pg.-26,5.4				
	Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	25	mtrs.	10	250

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	RUIDP SOR 2017, Pg 342, 54.4.2				
	Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	20.00	Nos	1,224	24,480
	DSR CPWD 2018 Pg.-26,.5.10				
	Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necessary G.I clamps fixed on wall/cable/conduit with screws in approved manner	50.00	Kg	206	10,300
	DSR CPWD 2018 Pg.-27, 5.15				
	<b>Lightning</b>				
	Conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 25mm dia copper pipe of standard length with copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	4.00	Nos	448	1,792
	DSR CPWD 2018 Pg.-28, 6.1				
	<b>Miscellaneous Items</b>				
	Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	7	RM	5,122	35,851
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Supplying rubber matting of 3 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 33 kV	7	RM	6,965	48,756
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	2	No's	123	246
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
	a) Low Voltage - size 200mmx150mm	4	No	171	682
	b) High Voltage- size 250mmx200mm	2	No	171	341
	GOM.PWD Schedule				
	Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	1	Sets	622	622
	GOM.PWD Schedule				
	Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	1	Nos.	765	765
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	<b>Providing and fixing cable tray</b>				
	300x62.5x2mm	15		1,918	28,770
	DSR CPWD 2018 Pg.-21, 4.3.8				
	150x50x1.6mm	10		531	5,310
	DSR CPWD 2018 Pg.-20, 4.1.2				
	Cable Tray Connector				
	300x62.5x2mm	5		44	220

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	DSR CPWD 2018 Pg.-80, 2724				
	150x50x1.6mm	5		39	195
	DSR CPWD 2018 Pg.-80, 2718				
	Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 160 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,	1	No.	12,68,991	12,68,991
	a) Diesel Engine				
	b) Engine mounted instrument panel fitted with and having digital display as specified				
	c) Alternator: Synchronous alternator rated at 400 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
	d) Base frame and foundation				
	e) Fuel Tank				
	f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
	g) starting system complete as per specification				
	h) Acoustics and weather proof enclosure				
	j) Battery and Battery charger				
	GOM.PWD Schedule pg-155				
	i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 160 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	1	No.	1,83,228	1,83,228
	GOM.PWD Schedule pg-158				
	M.S Pipe for Cable Road Crossing: Providing and supplying spirally welded / ERW/SAW/fabricated M.S. pipes, 200 mm (I.D) and 6.00mm thickness ( Commercial Quality ) including procurements of plates, gas cutting to required size rolling, tack welding assembling in suitable lengths to form pies, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes ( Central and local ), railway freight, insurance unloading from railway wagon, loading into truck, transport to stores / site, unloading, stacking, etc, complete as per IS-3589 and IS-5504 as applicable as per specifications ( No negative tolerance in thickness is permissible)	10	RMT	1,884	18,838
	DSR CPWD 2018 Pg.-86, 3005				
	Tools( as detailed in Schedule )		L.S	50,000	50,000
	MJP CSR Pg-85-86				
	Spares (as detailed in schedule)		L.S	1,00,000	1,00,000
		<b>Sub Total Cost in Rs.</b>			<b>51,68,380</b>
	Miscellaneous Items required for completion of work	L.S	20% of above cost		10,33,676
		<b>Total Cost</b>			<b>62,02,056</b>

**GAYA SEWERAGE ELECTRICAL ESTIMATE-MPS (Immediate)**

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Substation Foundation & Fencing				
1.1	Providing transformer plinth 1.5 x 1.5 x 2 m in size with necessary excavation in ground at the bottom with 150 mm. thick M-10 PCC at the bottom and top and 250 mm. thick burnt brick wall constructed at periphery and remaining hollow portion shall be filled with 60 mm hard broken aggregate , external surface duly plastered 15 mm thick including watering etc. omplete.	8	no.	19,085	1,52,680
	PWD-Schedule Rate,pg-193				
1.2	Supplying and erecting fencing of section having size 2450 mm in height from ground level and 1200 mm width with angle iron frame work erected in CC Foundation and painted as per specification No SS-AS/FSG (total length 40 m)	2	NO.	2,20,955	4,41,910
	PWD-Schedule Ratepg-146				
1.3	Supplying and erecting 50x50x6 mm . Angle iron as corner support 2 m long fixed at the middle of the fencing frame and the other side inclined at 30 degree angle, in C.C foundation of 15 x15x40 cm complete duly painted with one coat of red oxide and two coats aluminum paint	4	nos.	1,166	4,664
	PWD-Schedule Ratepg-147				
1.4	Supplying and erecting double leaf hinged door each 1500 mm in width x 1850 mm in height using B class , GI pipe with angle iron supports , chain link wiremesh ( jali) complete supported on channel iron , erected in foundation , and painted as per specification no SS-AS/DLD.	2	NO.	17,774	35,548
	PWD-Schedule Ratepg-147				
2	11kV Indoor Switchgear				
2.1	Supplying, installation, testing & commissioning of indoor type floor mounted metal clad, 11 kV ,VCB panel with 1 No. VCBs, totally enclosed & fully interlocked, horizontal drawout, horizontal isolation type breaker as per IS 13118, as amended up to date and additional specifications, having capacities as mentioned below, single break, trip free mechanism, manually charged and manually closing breaker suitable for use on 11 kV, 3 Phase, 50Hz A.C.supply with short circuit fault level of 16kA,complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated Aluminum bus bars of 630 Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip. Device, spring release coil, shunt trip coil and auxiliary switch of 4 NO + 4 NC and equipped" with following switchgears and accessories i/c connections suitable for 3 x 300sq.mm. XLPE 11 kV cable (cable entry from top/bottom), end termination with heat shrinkable jointing material etc. as required.(Note-Cost of end termination not included in this item) Enclosure suitable for future expansion for outgoing feeders. (Refer Attachment-III)	1	set	20,24,717	20,24,717
	a) Incoming 1+Outgoing-02 No. 630 Amp.VCB				
	b) 1 No. - 11 kV/ 110 Volts PT class 0.5 accuracy and 100 VA burden with 1 No. Voltmeter (0-11 kV), analog type, selector switch for voltmeter and MCB.				
	c) 1 No. - (0-300A) dual scale Ammeter, analog type, selector switches for ammeters.				
	d) 1 No. -Microprocessor based numerical relay with O/L , E/F and S/C protection				
	e) 1 No. - set of dual core dual ratio 3 CTs 300/150/5/5 A of 15VA burden and accuracy Class-0.5 for metering and class 5P10 for protection.				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	b) 2 Nos. Microprocessor based numerical relays with 0/L, E/F & S/C protections				
	c) 2 Nos. - set of dual core dual ratio 3 CTs 100/50/5/5 A of 15VA burden and accuracy Class-1.0 for metering and class 5P10 protection.				
3	Metering Cubicle				
3.1	Supplying, erecting, testing, commissioning 11kV H.T metering cubical (Compact Type) approved by MSEDCL/ Licensee fabricated with 2mm.(14SWG) M.S.sheets with supporting angle and channel, painted with powder coating/epoxy paint of required shade copper bus bar size 25x6mm electronic security lock and heavy duty mechanical lock , with counter meter for measuring no of times the opening of doors , top side cover(C.T,P.T Cover) interlock with meter doors, epoxy coated 3nos C.T having required ratio 150/5A burden 10VA class 0.5 I.L 12/28/75 kVP epoxy terminal block suitable for provided trivector meter and provision for incoming and outgoing cables etc complete duly tested by licensee with necessary test certificates and erected on provided plinth / C.C foundation(including trivector meter)	1	set	1,38,730	1,38,730
	GOM, PWD, Electrical , CSR 2013-14, pg-101				
4	11kV Cable				
	Supplying and Erecting Aluminum Conductor, XLPE/PVC-11kV Armoured cable complete erected in approved trench or on trays as per direction of Engineer in Charge				
	3Cx300Sq.mm	110	Mtr	1,680	1,84,800
	RUIDP- 2017, Pg-319-51.6.9				
	Cable Jointing Kit				
	Providing and making heat shrinkable type outdoor joint kit of approved make suitable for XLPE insulated 11kV cable with required components, preparation of cable ends, testing,etc. as required of following sizes				
	3Cx 300 Sq.mm	10	Nos	2,655	26,550
	DSR-CPWD 2018 Pg-34 item 9.2.16				
4	Transformer				
4.1	Supplying and Erecting approved make 1600 kVA, 11/0.433kV, 3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with On load tap changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box and other fittings as per (IS 2026) specification.	2	Nos.	20,69,537	41,39,074
	MJP Schedule-2012-13 PG-34				
5	415VLT Switchboard:-Design, supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 1600A 36kA/1sec ACB withdrawable, 12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	1	No.	23,50,810	23,50,810
	2500A FP ACB 02 NOS Incomer + 01 Buscoupler	3	No.		
	630A FP MCCB 01 NOS DG INCOMER +01 Buscoupler	2	No.		
	1250A FP ACB 02 NOS	2	No.		
	400A TPNMCCB	2	No.		
	100A TPNMCCB	6	No.		
	63A TPN MCCB	6	No.		
	ATTACHMENT-I				
	LT Switchgear				
	L.T starters: Design, supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil, over load element and required power and control wiring complete as per specifications				



S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	SoftStarter:-Design , Supplying and erecting fully wired Soft starter suitable for 55 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	4	Nos.	1,03,125	4,12,500
	GWSSB CSR 2011-13,pg 133				
	DOL Starter:-Design , Supplying and erecting fully wired DOL-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	4	Nos.	2,851	11,405
	MJP CSR 2012-13, Pg-53				
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	4	Nos.	3,295	13,178
	GOM PWD CSR 13-14 pg-173				
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	8	Nos.	1,564	12,514
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	8	Nos.	254	2,033
	GOM PWD CSR 13-14 pg-174				
	APFC PANEL				
	Design,supplying and erecting 250 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor confirming to IS:13340-41/IEC:831-1&2	250	Nos.	300	75,000
	RUIDP- 2017, Pg-298-48.12.2				
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent.	2	Nos.	18,220	36,440
	RUIDP- 2017, Pg-298-48.13.1				
	440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
	RUIDP- 2017, Pg-299-48.16				
	Up to 6kVAr	4	Nos.	1,588	6,352
	RUIDP- 2017, Pg-299-48.16.1				
	20 kVAr	4	Nos.	1,649	6,596
	RUIDP- 2017, Pg-300-48.16.3				
	50 kVAr	3	Nos.	10,935	32,805
	RUIDP- 2017, Pg-300-48.16.5				
	Push Button station : Providing erecting shrouded / Unshrouded push button actuator with box	4	Nos.	2,970	11,880
	MARKET PRICE				
	Main Lighting MCB DB				
	Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	2	Nos.	16,282	32,564
	RUIDP-2017, Pg-360-58.15.2				
	Local Lighting MCB DB				
	Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	3	Nos.	8,832	26,495
	Attachment-II				
	MCB Ventilation DB				
	Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	3	Nos.	13,523	40,568
	Attachment-II				
	1.1 kV XLPE cable :				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Design, supplying & erecting XLPE insulated, armoured cable 3.5 C x 500 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	720	RM	2,060	14,83,200
	RUIDP SOR 2017 Pg-314 51.1.17.4				
	Design, supplying & erecting XLPE insulated, armoured cable 3.5 C x 300 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	400	RM	1,257	5,02,800
	RUIDP SOR 2017 Pg-314 51.1.15.4				
	Design, supplying & erecting XLPE insulated, armoured cable 3.5 C x 50 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	160	RM	316	50,560
	RUIDP SOR 2017 Pg-313 51.1.8.4				
	Design, supplying & erecting XLPE insulated, armoured cable 3.5 C x 35 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	160	RM	262	41,920
	RUIDP SOR 2017 Pg-313 51.1.7.4				
	Design, supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	151	9,060
	RUIDP SOR 2017 Pg-312 51.1.3.3				
	Design, supplying & erecting XLPE insulated, armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs, on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	125	7,500
	RUIDP SOR 2017 Pg-312 51.1.1.2				
	Submersible Flate Cable				
	Design, supplying & erecting flate flexible 4 core 25 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	60	RM	980	58,796
	MJP				
	Design, supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	20	RM	182	3,645
	MJP				
	1.1 kV XLPE cable Termination:				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx 500 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland, ect..) as per specifications	12	Set	1,518	18,216
	RUIDP SOR 2017 Pg-335 52.7.36				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx 300 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland, ect..) as per specifications	12	Set	958	11,496
	RUIDP SOR 2017 Pg-335 52.7.34				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx50 sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	8	Set	198	1,584
	RUIDP SOR 2017 Pg-335 52.7.17				
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx35 sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	8	Set	127	1,016
	RUIDP SOR 2017 Pg-334 52.7.16				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	87	348
	RUIDP SOR 2017 Pg-335 52.7.40				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	77	308
	RUIDP SOR 2017 Pg-335 52.7.38				
	Point Wiring :				
	Design,supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	20	Nos.	1,189	23,780
	DSR CPWD 2018 Pg.-1,1.1.3				
	Design,supplying and erecting point wiring for single Phase independent 5/15A plug in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	10	Nos.	175	1,750
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	20	Nos.	1,022	20,440
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 10 meter	20	Nos.	378	7,560
	DSR CPWD 2018 Pg.-4,1.17.3				
	Design,supplying and erecting point wiring for single phase Exhaust fan in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire7 meters average length with flush type switch and required accessories as per specifications				
	Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	6	Nos.	1,859	11,154
	GOM, PWD, Electrical , CSR 2013-14, pg-61				
	20mm Metal Conduit(7 mtr.)	10	Nos.	1,022	10,220
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 7 meter	10	Nos.	378	3,780
	DSR CPWD 2018 Pg.-4,1.17.3				
	flush type switch	10	Nos.	45	450
	DSR CPWD 2018 Pg.-6,1.23.1				
	Design,supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
	2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire	10		263	2,630
	DSR CPWD 2018 Pg.-2,1.7.3				
	20mm steel conduit	10		146	1,460
	DSR CPWD 2018 Pg.-5,1.20.1				
	Pump House lighting and area lighting				
	Indoor Lighting				
	Design,supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	16	Nos.	1,962	31,392
	RUIDP SOR 2017, Pg 351, 57.4.1.4				
	Design,supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	8	Nos.	243	1,945

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	GOM, PWD, Electrical , CSR 2013-14, pg-40				
	Emergency Lighting:- Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	4	Nos.	2,750	11,000
	Market Price				
	Outdoor Lighting				
	Flood light:- Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	6	Nos.	3,310	19,860
	RUIDP SOR 2017, Pg 358, 58.8.1				
	Design,supplying and erecting Street lighting poles complete with bracket, switch box,1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4Cx6Sq.mm cu wires etc , including foundation				
	1x250Watt HPSV lamp	8		1,510	12,080
	RUIDP SOR 2017, Pg 360, 58.13.2.3				
	Tubular Pole(7.5mtr)	8		17,781	1,42,248
	RUIDP SOR 2017, Pg 361, 58.16.1				
	Aluminum housing with ip65 protected	8		4,773	38,184
	RUIDP SOR 2017, Pg 357, 58.3.3				
	Hot diped galvanised Overhang of 88.9mm Odx 3.25 mm thickness	8		1,198	9,584
	RUIDP SOR 2017, Pg 361, 58.17.2				
	3Cx1.5 Sq.mm	8		54	432
	DSR CPWD 2018 Pg.-4,1.17.3				
	4Cx6Sq.mm	240		220	52,800
	DSR CPWD 2018 Pg.-4,1.17.31				
	Junction Box	8		333	2,664
	RUIDP SOR 2017, Pg 301, 42.22.3				
	Design,supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
	32A 4Pole RCCB/ELCB	8	Nos.	1,885	15,080
	DSR CPWD 2018 Pg.-67,1721				
	Power Plug with Socket	8	Nos.	2,068	16,544
	RUIDP SOR 2017, Pg 291, 46.7.2.2				
	Ventilation Systems				
	Single Phase Exhaust Fan up to 450mm Sweep	8	Nos.	363	2,904
	DSR CPWD 2018 Pg.-9,1.50.1				
	Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	8	Nos.	4,653	37,224
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	Earthing				
	Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complete as per specification.				
	a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	10	Set	6,216	62,160
	DSR CPWD 2018 Pg.-26,.5.4				
	b) G.I Pipe of 50mm Diameter	60			
	Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	50	mtrs.	10	500
	RUIDP SOR 2017, Pg 342, 54.4.2				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	20	Nos	1,224	24,480
	DSR CPWD 2018 Pg.-26,.5.10				
	Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necessary G.I clamps fixed on wall/cable/conduit with screws in approved manner	50	Kg	206	10,300
	DSR CPWD 2018 Pg.-27, 5.15				
	Lightning				
	Conventional spike type air termination suitable to carry lighting stroke made up of heavy gauge 25mm dia copper pipe of standard length with copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	8	Nos	448	3,584
	DSR CPWD 2018 Pg.-28, 6.1				
	Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 315 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following.	1	No.	23,95,191	23,95,191
	GOM.PWD Schedule pg-156				
	a) Diesel Engine				
	b) Engine mounted instrument panel fitted with and having digital display as specified				
	c) Alternator: Synchronous alternator rated at 315 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
	d) Base frame and foundation				
	e) Fuel Tank				
	f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
	g) starting system complete as per specification				
	h) Acoustics and weather proof enclosure				
	i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 315 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	1	No.	2,72,063	2,72,063
	j) Battery and Battery charger				
	GOM.PWD Schedule pg-159				
	Miscellaneous Items				
	Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	12	RM	5,122	61,459
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Supplying rubber matting of 3 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 33 kV	12	RM	6,965	83,582
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	Providing printed instruction chart for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	2	No's	123	246
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing enameled iron GI sheet 18 gauge Danger Board of below size as per IS2551 of 1982 in English and Hindi erected at position.				
	a) Low Voltage - size 200mmx150mm	4	No	171	682
	b) High Voltage- size 250mmx200mm	2	No	171	341
	GOM.PWD Schedule				
	Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	1	Sets	622	622
	GOM.PWD Schedule				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Design,supplying standard first aid box with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	1	Nos.	765	765
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing and fixing cable tray				
	750x62.5x2mm	60	Nos.	3,887	2,33,220
	DSR CPWD 2018 Pg.-21, 4.3.12				
	300x50x1.6mm	60	Nos.	1,918	1,15,080
	DSR CPWD 2018 Pg.-20, 4.3.8				
	Cable Tray Connector				
	750x62.5x2mm	22	Nos.	67	1,474
	DSR CPWD 2018 Pg.-94, 2728				
	350x50x1.6mm	22	Nos.	39	858
	DSR CPWD 2018 Pg.-94, 2718				
	Tools( as detailed in Schedule )		L.S	50,000	50,000
	MJP CSR Pg-85-86				
	Spares (as detailed in schedule)		L.S	1,00,000	1,00,000
	Sub Total Cost in Rs.				<b>163,04,032</b>
	Miscellaneous Items required for completion of work		L.S	20% of above cost	32,60,806
				<b>Total Cost</b>	<b>195,64,839</b>

## GAYA SEWERAGE ELECTRICAL ESTIMATE-MPS (Future)

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
<b>4</b>	<b>Transformer</b>				
4.1	Supplying and Erecting approved make 1000 kVA, 11/0.433kV,3phase, 50 Hz, Oil immersed and naturally cooled outdoor type, copper wound transformer with delta connection on HV side & star connection on LV side (Dyn11) with additional neutral brought out on load side, voltage rating 11/0.433kV with On load tap changer -15% to +5% in steps of 1.25% with RTCC, AVR and marshalling box and other fittings as per (IS 2026) specification.	2	Nos.	17,55,366	35,10,731
	MJP Schedule-2012-13 PG-34				
5	415VLT Switchboard:-Design,supplying, installation, testing & commissioning of floor ACB panel board suitable for Four pole incoming 1600A 36kA/1sec ACB withdrawable,12ways Four pole outgoing erected on provided iron frame ,as per specification.(Refer Attachment-I)	1	No.	18,42,617	18,42,617
	<b>1600A FP MCCB 02 NOS Incomer + 01 Buscoupler</b>	3	No.		
	<b>800A FP MCCB 01 NOS DG INCOMER +01 Buscoupler</b>	2	No.		
	250A TPNMCCB	6	No.		
	100A TPNMCCB	2	No.		
	63A TPN MCCB	6	No.		
	ATTACHMENT-I				
	<b>LT Switchgear</b>				
	<b>L.T starters:</b> Design,supplying and erecting assembled following starter in provided cubical panel with ON-OFF Push buttons ,no volt coil,over load element and required power and control wiring complete as per specifications				
	<b>SOFTSTARTER:-</b> Design , Supplying and erecting MICROPROCESSOR BASED SOFT starter suitable for 110 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	6	Nos.	1,48,500	8,91,000
	GWSSB CSR 2011-13,pg 151				
	<b>Star-Delta Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for 55 kW motor totally complete erected on provided angle iron frame, including motor protection relay.	2	Nos.	78,650	1,57,300
	GWSSB CSR 2011-13,pg 150				
	<b>DOL Starter:-</b> Design , Supplying and erecting fully wired Star-Delta starter suitable for UP TO 10 HP motor totally complete erected on provided angle iron frame, including motor protection relay.	2	Nos.	2,851	5,702
	MJP CSR 2012-13, Pg-53				
	Supplying and erecting Pump protection relay comprising current sensing phase failure and UV+OV relay with dry run and overload protection suitable for 3-phase pumps(Similar to Minilec-D2 MPR 2 model)	8	Nos.	3,295	26,356
	GOM PWD CSR 13-14 pg-173				
	Supply and Erecting Water level Controller 415V/230V AC two way for underground Ground tank operation	8	Nos.	1,564	12,514
	GOM PWD CSR 13-14 pg-174				
	Supplying and erecting PVC coated 5mm dia. Brass Sensor/electrode duly wired with nut and bolts complete.	8	Nos.	254	2,033
	GOM PWD CSR 13-14 pg-174				
	<b>APFC PANEL</b>				
	Design,supplying and erecting 450 kVAr, 440 V, Three phase ,50 cycles, Heavy Duty Capacitor Bank MPP/MP type shunt capacitor confirming to IS:13340-41/IEC:831-1&2	450	Nos.	300	1,35,000
	RUIDP- 2017, Pg-298-48.12.2				
	6 to 14 Stage SITC of Microprocessor based intelligent power factor correction relay having sensitivity up to 50 milli Amp Secondarycurrent.	2	Nos.	18,220	36,440
	RUIDP- 2017, Pg-298-48.13.1				
	440 Volt 3 pole capacitor (AC 6B) duty contactor with 3 no. early make and post break auxiliary contacts in series with quick discharge damping resistors/reactors to limit inrush current conforming to IS:13947-4-1 suitable for the following capacitor Banks				
	RUIDP- 2017, Pg-299-48.16				
	Up to 6kVAr	6	Nos.	1,588	9,528
	RUIDP- 2017, Pg-299-48.16.1				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	20 kVAr	6	Nos.	1,649	9,894
	RUIDP- 2017, Pg-300-48.16.3				
	50 kVAr	6	Nos.	10,935	65,610
	RUIDP- 2017, Pg-300-48.16.5				
	<b>Push Button station</b> : Providing erecting shrouded / Unshrouded push button actuator with box	8	Nos.	2,970	23,760
	MARKET PRICE				
	<b>Main Lighting MCB DB</b>				
	Suitable for 15 kW Load three phase including contactor MCB, Cable glands, terminal Blocks, locking arrangement	1	Nos.	16,282	16,282
	RUIDP-2017, Pg-360-58.15.2				
	<b>Local Lighting MCB DB</b>				
	Suppling and erecting metal clad distribution board approved make 415/500 V ,8 way,32A per way & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	1	Nos.	8,832	8,832
	Attachment-II				
	<b>MCB Ventilation DB</b>				
	Suppling and erecting metal clad distribution board approved make 415/500 V ,12way,32A per way with cable end box & neutral bar connector complete erected on iron frame / wooden plank or board as per specification(Refer Attachment-II)	1	Nos.	13,523	13,523
	Attachment-II				
	<b>1.1 kV XLPE cable :</b>				
	Design,supplying & erecting XLPE insulated, armoured cable 3.5 C x400 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	180	RM	1,623	2,92,140
	RUIDP SOR 2017 Pg-314 51.1.16.4				
	Design,supplying & erecting XLPE insulated, armoured cable 3.5 C x300 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	80	RM	1,257	1,00,560
	RUIDP SOR 2017 Pg-314 51.1.15.4				
	Design,supplying & erecting XLPE insulated, armoured cable 4C x 6 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	151	9,060
	RUIDP SOR 2017 Pg-312 51.1.3.3				
	Design,supplying & erecting XLPE insulated,armoured cable 3 c x 2.5 sq.mm aluminium cable 1100 V grade with ISI mark and stranded aluminium conductor with 6mm thick 25 mm width M.S . spacer with G,I. Earth wire 6 sq.mm , complete erected with gland & Lugs,on wall/trusses/pole or laid in provided trench/pipe as per specifications	60	RM	125	7,500
	RUIDP SOR 2017 Pg-312 51.1.1.2				
	<b>Submersible Flate Cable</b>				
	Design,supplying & erecting flate flexible 4 core 95 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	160	RM	6,050	9,68,000
	MJP				
	Design,supplying & erecting flate flexible 4 core 25 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	50	RM	980	48,996
	MJP				
	Design,supplying & erecting flate flexible 4 core 4 sq.mm PVC sheathed submersible type copper cable suitably clamped at fixed intervals with column pipe assembly complete	20	RM	182	3,645
	MJP				
	<b>1.1 kV XLPE cable Terminatrimon:</b>				



S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Providing & erecting epoxy outdoor end termination kit for LT 3.5Cx 400 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	6	Set	1,303	7,818
	RUIDP SOR 2017 Pg-322 52.7.33				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx6 sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	87	348
	RUIDP SOR 2017 Pg-322 52.7.40				
	Providing & erecting epoxy outdoor end termination kit for LT 4Cx2.5sqmm XLPE 1.1 kV armoured Cables with necessary material (Including Lug& Gland,ect..) as per specifications	4	Nos.	77	308
	RUIDP SOR 2017 Pg-322 52.7.38				
	<b>Point Wiring :</b>				
	Design,supplying and erecting point wiring for light/fan/bell in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 8 meters average length with flush type switch and required accessories as per specifications	20	Nos.	1,189	23,780
	DSR CPWD 2018 Pg.-1,1.1.3				
	Design,supplying and erecting point wiring for <b>single Phase independent 5/15A plug</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire 10 meters average length with flush type switch and required accessories as per specifications				
	5/15A Single phase independent plug	10	Nos.	175	1,750
	DSR CPWD 2018 Pg.-6,1.24.5				
	20mm Metal Conduit(10 mtr.)	10	Nos.	1,460	14,600
	20mm Metal Conduit(10 mtr.)				
	1.5Sqmm FR grade copper wire 10 meter	10	Nos.	540	5,400
	DSR CPWD 2018 Pg.-4,1.17.3				
	Design,supplying and erecting point wiring for <b>single phase Exhaust fan</b> in 20 mm metal conduit with 1.5 sq .mm FR grade copper wire7 meters average length with flush type switch and required accessories as per specifications				
	Supplying and erecting ceiling fan of 1200 mm . Sweep complete erected in position as per specification	4	Nos.	1,859	7,436
	GOM, PWD, Electrical , CSR 2013-14, pg-61				
	20mm Metal Conduit(7 mtr.)	8	Nos.	1,022	8,176
	DSR CPWD 2018 Pg.-5,1.20.1				
	1.5Sqmm FR grade copper wire 7 meter	8	Nos.	378	3,024
	DSR CPWD 2018 Pg.-4,1.17.3				
	flush type switch	8	Nos.	45	360
	DSR CPWD 2018 Pg.-6,1.23.1				
	Design,supplying & erecting mains with 2cx4 sq.mm F.R copper wire , in 16 gauge 20 mm dia. Rigid steel conduit, with continuous GI earth wire of 2.5 sq.mm as per specifications				
	2Cx4Sq.mm + 1x4Sq.mm F.R Copper wire	50		263	13,150
	DSR CPWD 2018 Pg.-2,1.7.3				
	20mm steel conduit	50		146	7,300
	DSR CPWD 2018 Pg.-5,1.20.1				
	<b>Pump House lighting and area lighting</b>				
	<b>Indoor Lighting</b>				
	Design,supplying and erecting approved make surface soft light rectangular fitting suitable for 2x36 W compact fluorescent lamp with electronic ballast fixed in on ceiling as per specifications.	12	Nos.	1,962	23,544
	RUIDP SOR 2017, Pg 351, 57.4.1.4				
	Design,supplying and erecting compact fluorescent lamp 20 W ,230 V, integral type complete with ceramic adopter and having p.f more than 0.9	8	Nos.	243	1,945
	GOM, PWD, Electrical , CSR 2013-14, pg-40				
	Emergency Lighting:- Decorative normal cum Emergency fixture with 1 x 11W CFL lamp, mirror optic reflector with 2 Hour back up-Battery	2	Nos.	2,750	5,500
	Market Price				
	<b>Outdoor Lighting</b>				
	<b>Flood light:-</b> Design,supplying and erecting high purity sheet aluminum Flood light Luminaries suitable for 150 Watts HPSV lamp on provided bracket as per specification area lighting	2	Nos.	3,310	6,620
	RUIDP SOR 2017, Pg 358, 58.8.1				

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	Design, supplying and erecting Street lighting poles complete with bracket, switch box, 1x250Watt street light sodium lamp fitting, 3c x1.5 sq.mm & 4Cx6Sq.mm cu wires etc , including foundation				
	1x250Watt HPSV lamp	6		1,510	9,060
	RUIDP SOR 2017, Pg 360, 58.13.2.3				
	Tubular Pole(7.5mtr)	6		17,781	1,06,686
	RUIDP SOR 2017, Pg 361, 58.16.1				
	Aluminum housing with ip65 protected	6		4,773	28,638
	RUIDP SOR 2017, Pg 357, 58.3.3				
	Hot dipped galvanised Overhang of 88.9mm Odx 3.25 mm thickness	6		1,198	7,188
	RUIDP SOR 2017, Pg 361, 58.17.2				
	3Cx1.5 Sq.mm	6		54	324
	DSR CPWD 2018 Pg.-4,1.17.3				
	4Cx6Sq.mm	180		220	39,600
	DSR CPWD 2018 Pg.-4,1.17.31				
	Junction Box	6		333	1,998
	RUIDP SOR 2017, Pg 301, 42.22.3				
	Design, supplying and erecting three phase ,32A,415V ,industrial Power plug with socket, switches(4-pole MCB) and Earth leakage Circuit Breaker (ELCB)				
	32A 4Pole RCCB/ELCB	4	Nos.	1,885	7,540
	DSR CPWD 2018 Pg.-67,1721				
	Power Plug with Socket	4	Nos.	2,068	8,272
	RUIDP SOR 2017, Pg 291, 46.7.2.2				
	<b>Ventilation Systems</b>				
	Single Phase Exhaust Fan up to 450mm Sweep	6	Nos.	363	2,178
	DSR CPWD 2018 Pg.-9,1.50.1				
	Supplying ,erecting D.C.P .type fire extinguisher 10 kg capacity cartridge type with Gun Metal cap 150 gram CO2 gas cartridge, powder and brackets conforming to IS 2171-1985 and complete erected with necessary clamps made from 50x6 mm M.S flat with nuts & bolts grouted in wall complete.	4	Nos.	4,653	18,612
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	<b>Earthing</b>				
	Earthing:- Installation of Earth station with necessary Earth plate including providing all accessories masonry enclosure with cover plate having locking arrangement and 20 mm .dia.G.I pipe, watering pipe with funnel, G.I .bolts, nuts,checking etc,but without charcoal or coke and salt as required including excavation work and refilling complete as per specification.				
	GOM, PWD, Electrical , CSR 2013-14, pg-139/140				
	a) With 600 mm x 600 mm x 6 mm. Thick ( 18 Kg.approx) G.I.earth plate	10	Set	6,216	62,160
	DSR CPWD 2018 Pg.-26,5.4				
	b) G.I Pipe of 50mm Diameter	40			
	Supplying and erecting G.I earth wire 12 SWG complete erected on wall with necessary clamps in an approved manner for earthing or any other purposes with copper lug cable sockets of 30A & more at each end with necessary cadmium plate double nut & bolts with washers & covering it with bituminous compound in recess for connection etc. as required	25	mtrs.	10	250
	RUIDP SOR 2017, Pg 342, 54.4.2				
	Providing pipe type earthing with 40mm dia. G.I. pipe complete with all specifications as required.	20	Nos	1,224	24,480
	DSR CPWD 2018 Pg.-26,.5.10				
	Supplying and Erecting G.I strip of required size used for Earthing on wall or any other purpose with necessary G.I clamps fixed on wall/cable/conduit with screws in approved manner	50	Kg	206	10,300
	DSR CPWD 2018 Pg.-27, 5.15				
	<b>Lightning</b>				
	Conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 25mm dia copper pipe of standard length with.copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner.	4	Nos	448	1,792

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
	DSR CPWD 2018 Pg.-28, 6.1				
	Providing ,installing,testing and commissioning of silent type Diesel Generating set along with having prime power rating of 630 kVA,415 Volts at 1500RPM,0.8 lagging power factor at 415 V suitable for ,50Hz,3 phase system and for 0.85 load factor and consisting of the following,	1	No.	47,90,381	47,90,381
	GOM.PWD Schedule pg-156				
	a) Diesel Engine				
	b) Engine mounted instrument panel fitted with and having digital display as specified				
	c) Alternator: Synchronous alternator rated at 630 kVA,415 Volts at 1500RPM,3-phase,50Hz,A.C supply at 0.8 lagging power factor at 40 degree C ,50% RH at 1000 metre MSL				
	d) Base frame and foundation				
	e) Fuel Tank				
	f) Exhaust system complete with exhaust gas piping insulation ..etc as per specifications				
	g) starting system complete as per specification				
	h) Acoustics and weather proof enclosure				
	i) Fabrication,installation,testing and commissioning of automatic mains failure control including auto by pass panel suitable for 630 kVA silent type D.G set complete wit relays,timers set of CT's for metering and protection and energy analyser,control cabling from AMF panel to diesel engine and elsewhere as required	1	No.	5,44,126	5,44,126
	j) Battery and Battery charger				
	GOM.PWD Schedule pg-159				
	<b>Miscellaneous Items</b>				
	Supplying rubber matting of 2.5 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 11 kV	7	RM	5,122	35,851
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Supplying rubber matting of 3 mm ,thickness PVC Synthetic Elastomer electrically insulating mat with class B insulation conforming to IS:15625 2006 33 kV	7	RM	6,965	48,756
	GOM, PWD, Electrical , CSR 2013-14, pg-148				
	Providing printed <b>instruction chart</b> for treating persons suffering from electric shock , printed in English & marathi and duly laminated.	2	No's	123	246
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	Providing enameled iron GI sheet 18 gauge <b>Danger Board</b> of below size as per IS2551 of 1982 in English and Hindi erected at position.				
	a) Low Voltage - size 200mmx150mm	4	No	171	682
	b) High Voltage- size 250mmx200mm	2	No	171	341
	GOM.PWD Schedule				
	Providing pair of duly tested rubber hand gloves suitable for working on 11 kV supply.	1	Sets	622	622
	GOM.PWD Schedule				
	Design,supplying standard <b>first aid box</b> with necessary antiseptic cream, medicine for use on wounds due burn, crepe bandage ,gauge bandage,medicated ready to use bandage (Band-aid) adhesive tape for medicinal use,scissors,anti-septic solution (Savion or similar) etc.	1	Nos.	765	765
	GOM, PWD, Electrical , CSR 2013-14, pg-147				
	<b>Providing and fixing cable tray</b>				
	300x62.5x2mm	40		1,918	76,720
	DSR CPWD 2018 Pg.-20, 4.3.8				
	150x50x1.6mm	40		531	21,240
	DSR CPWD 2018 Pg.-20, 4.1.2				
	Cable Tray Connector				
	300x62.5x2mm	15		40	600
	DSR CPWD 2018 Pg.-94, 2720				
	150x50x1.6mm	15		39	585
	DSR CPWD 2018 Pg.-94, 2718				
	Tools( as detailed in Schedule )		L.S	50,000	50,000
	MJP CSR Pg-85-86				
	Spares (as detailed in schedule)		L.S	1,00,000	1,00,000
	<b>Sub Total Cost in Rs.</b>				<b>143,28,075</b>
	Miscellaneous Items required for completion of work		L.S	20% of above cost	28,65,615

S. No.	Description	Qty	Unit	Unit Rate (Rs)	Total (Rs)
				<b>Total Cost</b>	<b>171,93,690</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**SCHEDULE OF QUANTITY OF EACH PUMPING STATION**  
**Supply, Installation and Commissioning including required material**

S. No.	Description	Quantity	Unit
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate, PU liner, hastelloy electrode, HART protocol	1	No.
	Make: ABB, Krohne, Siemens or E & H		
	Size: 600 mm for pumping main	1	No.
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.
	Make: E & H, Krohne, Miltronics, SBEM		
3	Level switch Ultrasonic type for sump 5 m range	1	No.
4	Automation system with PLC/RTU, SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.		
5	Instrumentation control panel and interfacing panel	1	set
	Make: Rittal, Enclotek, or equivalent		
6	UPS for instrumentation and SCADA	1	set
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot
9	Multifunction energy meter intelligent type	1	1

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Input / Output Schedule for each Pumping Installation**

S. No.	Signal Description	RTU/PLC I/O			
		DI	DO	AI	AO
1	Pump Motor (8 NOs.)				
i.	Running status	✓			
ii.	Stop status	✓			
iii.	Trip status	✓			
iv.	Stop (command)		✓		
v.	Available	✓			
vi.	Motor fault	✓			
vii.	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	Emergency Stop	✓			
6	Hardwired Trip Activated	✓			
7	UPS Trouble	✓			

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS2**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	365025	365025
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU, SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley; SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4664659</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS2A**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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: 350 mm for pumping main	1	No.	428380	428380
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU,SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4728014</b>



**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS3**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	374720	374720
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU, SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley; SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multifunction energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4674354</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS4**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	374720	374720
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU,SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4674354</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS4A**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	536602	536602
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU,SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4836236</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS5**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	374720	374720
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU,SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4674354</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS5A**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	365025	365025
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU,SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4664659</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS6**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	581556	581556
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU,SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4881190</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **MPS**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	581556	581556
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	73140	73140
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	62880	62880
4	Automation system with PLC/RTU,SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1803931	1803931
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	Instrumentation control panel and interfacing panel	1	set	187171	187171
	Make: Rittal, Enclotek, or equivalent				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot	1896012	1896012
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>4881190</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**SCHEDULE OF QUANTITY OF EACH PUMPING STATION**  
**Supply, Installation and Commissioning including required material**

S. No.	Description	Quantity	Unit
1	Electromagnetic flow meter full bore with accuracy 0.5% of rate, PU liner, hastelloy electrode, HART protocol	1	No.
	Make: ABB, Krohne, Siemens or E & H		
	Size: 600 mm for pumping main	1	No.
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.
	Make: E & H, Krohne, Miltronics, SBEM		
3	Level switch Ultrasonic type for sump 5 m range	1	No.
4	Automation system with PLC/RTU, SCADA, panel etc. for 8 Nos. of pumps and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.		
5	Instrumentation control panel and interfacing panel	1	set
	Make: Rittal, Enclotek, or equivalent		
6	UPS for instrumentation and SCADA	1	set
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	Lot	Lot
8	Cables for interfacing between PLC and instrumentation panel	Lot	Lot
9	Multifunction energy meter intelligent type	1	1



**SEWERAGE SYSTEM FOR GAYA CITY**  
**Input / Output Schedule for each Pumping Installation**

S. No.	Signal Description	RTU/PLC I/O			
		DI	DO	AI	AO
1	Pump Motor (8 NOs.)				
i.	Running status	✓			
ii.	Stop status	✓			
iii.	Trip status	✓			
iv.	Stop (command)		✓		
v.	Available	✓			
vi.	Motor fault	✓			
vii.	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	Emergency Stop	✓			
6	Hardwired Trip Activated	✓			
7	UPS Trouble	✓			

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS2**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3552534</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS2A**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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: 350 mm for pumping main	1	No.	393061	393061
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3699696</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS3**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multifunction energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3552534</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS4**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3520146</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS4A**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
6	UPS for instrumentation and SCADA	1	set	84000	84000
7	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
8	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
9	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3520146</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS5**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	245889	245889
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3552524</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS5A**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3520146</b>



**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **IPS6**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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
2	Ultrasonic level measuring system for 6 m depth suitable for sump with digital communication facility	1	No.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3520146</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**ICA- Cost Estimate** **MPS**  
**Supply, Installation and Commissioning including**  
**required material**

S. 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.	62890	62890
	Make: E & H, Krohne, Miltronics, SBEM				
3	Level switch Ultrasonic type for sump	1	No.	31445	31445
4	Automation system with PLC/RTU cum Instrumentation panel, SCADA, panel etc. and interfacing all instruments enlisted above with redundant CPU. Event shall be reported to concerned officer on his mobile by means of SMS.	1	set	1370800	1370800
	Make: PLC: Schneider, GE faunuc, Mitsubishi, Allen Bradley: SCADA of same co.				
5	UPS for instrumentation and SCADA	1	set	84000	84000
6	Cables for instrumentation i.e. flow meter, level measurement, level switch, power manager to ICP	1	Lot	1565000	1565000
7	Cables for interfacing between PLC and instrumentation panel	1	Lot	180000	180000
8	Multi function energy meter intelligent type	1	No.	12500	12500
	<b>Total Rs.</b>				<b>3983214</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 2					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
1	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS, pressure gauge etc complete having <b>discharge 104.4 cum/hr. (29 LPS) at the total head of 13 m (Head Range: 10 m-16 m), 1440 RPM</b> 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.	No	6	113900	683400
	RUIDP -2013-18.1.3 page 97				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 54 cum/hr (15 LPS ) at the total head of 15 m (Head Range: 12 m-18 m), 1440 RPM</b> 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.	no	2	113900	227800
	RUIDP -2013-18.1.3 page 97				
2	<b>Dismantling Joint</b>				
	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 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	No	6	4664	27984
b	Size:100 mm	No	2	3036	6072
c	Size:250 mm	No	1	8404	8404
d	Size: 350 mm	No	1	13420	13420
	RUIDP 2013 19. 28.2, 5, 7,8+ 10 % for added for class PN 1.6 page 127				
3	<b>Butterfly Valve</b>				
	Providing lowering laying , aligning , fixing in position , CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:150 mm	No	6	30800	184800
b	Size:100 mm	No	2	22880	45760
c	Size: 350 mm	No	1	93170	93170
	RUIDP 2013 19.21.1.2, 5, 8 + 10 % for added for class PN 1.6 page 123				
4	<b>Sluice Valve</b>				
	Providing PN-1 rating, double flange manually operated Sluice Valve without bypass arrangement conforming to IS-2906/14846, including worn gear arrangement as per test pressure stainless steel spindle, caps including all taxes transportation etc. complete & lowering, laying and jointing in position following C.I. D/F Sluice valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic testing, etc. complete.	No			
a	Size:150 mm	No	6	28380	170280

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
b	Size:100 mm	No	2	17710	35420
	RUDP 2013 19.19.1.2,4 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>Butterfly Valve</b>				
	Providing lowering laying , aligning , fixing in position , CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size 150 mm	No	6	30800	184800
b	Size:100 mm	No	2	22880	45760
c	size : 350 mm	no	1	93170	93170
	RUIDP 2013 19.21.1.2, 4 8+ 10 % for added for class PN 1.6 page 123				
<b>5</b>	<b>DI Flanged Pipe</b>				
	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:150 mm	m	66	3490	54560
b	Size:100 mm	m	22	2480	230340
c	size: 350 mm	m	1	9400	9400
	RUIDP 2013 19.6.1 ,2,6 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	910	145	131950
b	above 300 mm	kg	1490	152	226480
	RUIDP 2013 19..8.2..1 &2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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	No	6	5720	34320
b	Size:100 mm	No	2	3870	7740
	RUIDP 2013 19.2,4 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 (including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:150 mm	No	6	12980	77880

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
b	Size:100 mm	No	2	12100	24200
	RUIDP 2013 19.25.1.2,4 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5	4434	22171
	BSR SOR Item No. 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				
	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 8 , 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	509200	509200
	RUIDP -2013-18.9.1.2 + 18.9.4 added 20% for span 14 m page 104				
<b>11</b>	<b>Sluice Gate</b>				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , freight , 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 ( 11.23 MLD)	set	2	144700	289400
	RUIDP -2013-18.7.4 + 18.7.22 page 102-103				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 11.23 MLD	set	2	101900	203800
	RUIDP 2013 18.3.6 + 18.3.20 page 100				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	27600	27600
	RUIDP -2013-18.10.1 page 104				
	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150	93	13875
	RUIDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>36,83,156</b>
<b>Say</b>					<b>36,84,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 2A					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, Cl Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 198 cum/hr (55 LPS ) at the total head of 16 m (Head Range: 13 m-17 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications. (40.46 MLD)	No	6	122800	736800
	RUIDP -2013-18.1.6 page 97				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, Cl Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 100.80 cum/hr (28 LPS ) at the total head of 16 m (Head Range: 13 m-17m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2	113900	227800
	RUIDP 2013 18.1.3 page 97				
<b>2</b>	<b>Dismantling Joint</b>				
	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 10 kg/cm <sup>2</sup> 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:200 mm	No	6	6490	38940
b	Size:150 mm	No	2	4664	9328
c	Size:350 mm	No	1	13420	13420
d	Size: 500 mm	No	1	29370	29370
	RUIDP 2013 19. 28...,547,8 & 11+ 10 % for added for class PN 1.6 page 126-127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing PN-1.0 rating C. I. double flanged short body type manually operated Butterfly Valve, having body, disc and end cover in graded cast iron to IS-210 GrCF 200 generally conforming to IS-13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in Teflon bearing without bypass arrangement including all material, labour etc. complete & required concrete support. Lowering, laying and jointing in position Butterfly valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic testing, etc. complete.				
a	Size:200 mm	No	6	44110	264660
a	Size:150 mm	No	2	30800	61600
c	Size: 500 mm	No	1	166540	166540
	RUIDP 2013 19.21.1.4, 5 & 11 + 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	Providing , lowering , laying , aligning , fixing in position in pipe line , manually operated , PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only	No			
a	Size:200 mm	No	6	49500	297000
b	Size:150 mm	No	2	28380	56760
	RUDP 2013 19.19.1. 4,6 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>DI Flanged Pipe</b>				
	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:200 mm	m	66	4790	316140
b	Size:150 mm	m	24	3490	83760
c	Size:350 mm	m	10	9400	94000
	RUIDP SOR 2013 19.6.2,3, 6 and 12 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	790	145	114550
b	above 300 mm	kg	700	152	106400
	RUIDP 2013 19..8.2..1 &2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:200 mm	No	6	8240	49440
	Size:150 mm	No	2	5720	11440
	RUIDP 2013 19.34., 8 & 5 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:200 mm	No	6	43890	263340
b	Size:150 mm	No	2	12980	25960
	RUIDP 2013 19.25.1-4,6 + 10 % for added for class PN 1.6 page 125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5	4434	22170
	BSR SOR Item No. 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				

S. No.	Item 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 8 , 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	509200	509200
	RUIDP -2013-18.9.1.2 + 18.9.4 added 20% for span 14 m page 104				
<b>11</b>	<b>Sluice Gate</b>				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , freight , 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 9 m (21.50 MLD )	set	2	193900	387800
	RUIDP -2013-18.7.7 + 18.7.22 page 102-103				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 21.5 MLD	set	2	139000	278000
	RUIDP 2013 18.3.12 page 100				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	27600	27600
	RUIDP -2013-18.10.1 page 104				
	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150	93	13875
	RUIDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>42,05,893</b>
<b>Say</b>					<b>42,06,000</b>



SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 3					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 61.2 cum/hr (17 LPS ) at the total head of 21 m (Head Range: 18 m-24 m), 1000 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6	113900	683400
	RUIDP -2013-18.1.3 page 97				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 32.4 cum/hr (9 LPS ) at the total head of 21 m (Head Range: 18 m-24 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2	113900	227800
	RUIDP -2013-18.1.3 page 97				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering, laying, aligning, fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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	No	6	4664	27984
b	Size:100 mm	No	2	3036	6072
c	Size 300 mm	no	2	9625	19250
	RUDP 2013 19. 28 .4,2,7 + 10 % for added for class PN 1.6 page 126-127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing lowering laying, aligning, fixing in position, CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material, labour, testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar, IVC, Fouress, Vag only				
a	Size:150 mm	No	6	4664	27984
b	Size:100 mm	No	2	3036	6072
c	Size 300 mm	No	1	75130	75130
	RUIDP 2013 19..21.1.4,2, & 7+ 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated, PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material, labour, testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar, IVC, Fouress, Vag only	No			
a	Size:150 mm	No	6	28380	170280
b	Size:100 mm	No	2	17710	35420
	RUDP 2013 19.19.1.2,4 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>DI Flanged Pipe</b>				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:150 mm	m	66	3490	230340
b	Size:100 mm	m	22	2480	54560
c	Size:300 mm	m	10	7810	78100
	RUIDP SOR 2013 19.6.2,4,5 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	630	145	91350
b	above 300 mm	kg	1990	152	302480
	RUIDP 2013 19..8.2..1 & 2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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	No	6	5720	34320
b	Size:100 mm	No	2	3870	7740
	RUIDP 2013 19.2,4 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:150 mm	No	6	12980	77880
b	Size:100 mm	No	2	12100	24200
	RUIDP 2013 19.25.1.2,4 + 10 % for added for class PN 1.6 page 124-125				0
	RUIDP 2013 19.25.1.9,7 & 17 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5	4434	22170
	BSR SOR Item No. 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				
	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 8 , 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	509200	509200
	RUIDP -2013-18.9.1.2 + 18.9.4 added 20% for span 14 m page 104				
<b>11</b>	<b>Sluice Gate</b>				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
a	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 9 m (12.25 MLD)	set	2	144700	289400
	RUIDP -2013-18.7.4 + 18.7.22 page 102-103				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	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 container of 1 cim capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 12.25 MLD	set	2	101900	203800
	RUIDP 2013 18.3.15 page 100				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	27600	27600
	RUIDP -2013-18.10.1 page 104				
	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150	93	13875
	RUIDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>32,46,407</b>
<b>Say</b>					<b>32,47,000</b>

<b>SEWERAGE SYSTEM FOR GAYA CITY</b>					
<b>Cost Estimate - Mechanical Works for IPS 4</b>					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
<b>a</b>	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS, pressure gauge etc complete having <b>discharge 151.2 cum/hr. (42 LPS)102 LPS at the total head of 15 m (Head Range: 12 m-18m), 1440 RPM</b> 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.	No	6.00	1,22,800	7,36,800
	RUDP -2013-18.1.13				
<b>b</b>	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 21 LPS at the total head of 15 m (Head Range: 12 m-18 m), 1440 RPM</b> 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.	no	2.00	1,13,900	2,27,800
	RUDP 2013 18.1.6				
<b>2</b>	<b>Dismantling Joint</b>				
	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 10 kg/cm <sup>2</sup> 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.				
<b>a</b>	Size:200 mm	No	6	6,490	38,940
<b>b</b>	Size:100 mm	No	2	3,036	6,072
<b>c</b>	Size:300 mm	No	1	9,625	9,625
<b>d</b>	Size: 500 mm	No	1.00	29,370	29,370
	RUDP 2013 19. 28..2,6, 7 ,11 + 10 % for added for class PN 1.6 page 127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing lowering laying , aligning , fixing in position , CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
<b>a</b>	Size:200 mm	No	6	44,110	2,64,660
	Size:100 mm	No	2	22,880	45,760
<b>b</b>	Size: 500 mm	No	1	1,66,540	1,66,540
	RUDP 2013 19..21.1..2 & 11 + 10 % for added for class PN 1.6 page 123				
<b>4</b>	<b>Sluice Valve</b>				

	Providing PN-1 rating, double flange manually operated Sluice Valve without bypass arrangement conforming to IS-2906/14846, including worn gear arrangement as per test pressure stainless steel spindle, caps including all taxes transportation etc. complete & lowering, laying and jointing in position following C.I. D/F Sluice valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic testing, etc. complete.	No			
a	Size:200 mm	No	6	49,500	2,97,000
	Size:100 mm	No	2	17,710	35,420
b	Size: 500 mm	No	1	3,46,720	3,46,720
	RUDP 2013 1919.1.2 & 11 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>DI Flanged Pipe</b>				
	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:200 mm	m	66.00	4,790	54,560
b	Size:100 mm	m	22.00	2,480	3,16,140
c	size: 300 mm	m	0.50	7,810	3,905
d	Size: 500 mm	m	11.00	16,500	1,81,500
	RUDP 2013 19.6.1 ,5, 9 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	370.00	145	53,650
b	above 300 mm	kg	4100.00	152	6,23,200
	RUDP 2013 19..8.2..1 & 2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:200 mm	No	6	8,240	49,440
	Size:100 mm	No	2	3,870	7,740
	RUDP 2013 19.34., 8 & 5 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:200 mm	No	6	43,890	2,63,340
	Size:100 mm	No	2	12,100	24,200
	RUDP 2013 19.25.1.2, 4 & 11 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5.0	4,434	22,170
	BSR SOR Item no 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				

	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 8 , 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	1.00	5,09,200	5,09,200
	RUDP -2013-18.9.1.2 + 18.9.4 added 20% for span 14 m page 104				
<b>11</b>	<b>Sluice Gate</b>				
	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 ( 20.22 MLD)	set	2.00	1,51,100	3,02,200
	RUDP -2013-18.7.6+ 18.7.22 page 103				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 20.22 MLD	set	2.00	1,21,000	2,42,000
	RUIDP 2013 18.3.12 page 100				
<b>12</b>	<b>Lifting arrangement at screen chamber</b>				
<b>a</b>	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	1.00	27,600	27,600
	RUDP -2013-18.10.1 page 104				
	<b>Derbies collection bucket</b>				
<b>b</b>	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150.00	93	13,875
	RUDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>48,85,552</b>
<b>Say</b>					<b>48,86,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 4A					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, Cl Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 421cum/hr (117 LPS ) at the total head of 17 m (Head Range: 14 m-20m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications. (40.46 MLD)	No	6.00	3,18,600	19,11,600
	RUDP -2013-18.1.36 page 98				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, Cl Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 212.4 cum/hr (59 LPS ) at the total head of 17 m (Head Range: 14 m-20m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2.00	2,92,100	5,84,200
	RUDP 2013 18.1.24 page 97				
<b>2</b>	<b>Dismantling Joint</b>				
	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 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:300 mm	No	6.00	9,625	57,750
b	Size:200 mm	No	2.00	6,490	12,980
	Size:500 mm	No	1.00	29,370	29,370
c	Size: 800 mm	No	1.00	53,790	53,790
	RUDP 2013 19. 28..7,5 & 13 + 10 % for added for class PN 1.6 page 127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing PN-1.0 rating C. I. double flanged short body type manually operated Butterfly Valve, having body, disc and end cover in graded cast iron to IS-210 GrCF 200 generally conforming to IS-13095-1991, Synthetic rubber faced ring secured on disc by retaining ring with stainless steel screw stub shaft of stainless steel riding in Teflon bearing without bypass arrangement including all material, labour etc. complete & required concrete support. Lowering, laying and jointing in position Butterfly valves including cost of all labour, jointing material, including nut bolts and giving satisfactory hydraulic testing, etc. complete.				
a	Size:300 mm	No	6.00	75,130	4,50,780
b	Size:200 mm	No	2.00	44,110	88,220
c	Size: 800 mm	No	1.00	4,06,120	4,06,120
	RUDP 2013 19.21.1.7, 5 & 15 + 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				

	Providing , lowering , laying , aligning , fixing in position in pipe line , manually operated , PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only	No			
a	Size:300 mm	No	6.00	84,370	5,06,220
b	Size:200 mm	No	2.00	49,500	99,000
	RUDP 2013 19.19.1. 5, 7 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>DI Flanged Pipe</b>				
	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:300 mm	No	72.00	7,810	5,62,320
b	Size:200 mm	m	24.00	4,790	1,14,960
c	Size:500 mm	m	1.00	16,500	16,500
d	Size: 800 mm	m	10.00	34,700	3,47,000
	RUDP SOR 2013 19.5,3,7 , 9 and, 12 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	770.00	145	1,11,650
b	above 300 mm	kg	9800.00	152	14,89,600
	RUDP 2013 19..8.2..1 &2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:300 mm	No	6.00	13,600	81,600
	Size:200 mm	No	2.00	8,240	16,480
	RUDP 2013 19.34., 8 & 5 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:300 mm	No	6.00	76,450	4,58,700
b	Size:200 mm	No	2.00	43,890	87,780
	RUDP 2013 19.25.1..7.5, & 15 + 10 % for added for class PN 1.6 page 125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5.0	4,434	22,170
	BSR SOR Item no 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				
	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 8 , 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	1.00	5,09,200	5,09,200
	RUDP -2013-18.9.1.2 + 18.9.4 added 20% for span 14 m page 104				



<b>11</b>	<b>Sluice Gate</b>				
	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 9 m (53.4 MLD )	set	2.00	2,87,300	5,74,600
	RUDP -2013-18.7.12+ 18.7.22 page 103				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	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 container of 1 cim capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 53.4 MLD	set	2.00	1,73,000	3,46,000
	RUIDP 2013 18.3.12 page 100				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	1.00	27,600	27,600
	RUDP -2013-18.10.1 page 104				
	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150.00	93	13,875
	RUDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>89,66,190</b>
<b>Say</b>					<b>89,67,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for 5					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 104.4 cum/hr. (29 LPS) at the total head of 18 m (Head Range: 15 m-21 m)</b> , and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6	113900	683400
	RUIDP -2013-18.1.70 page 99				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 50.4 cum/hr (14 LPS ) at the total head of 18 m (Head Range: 15 m-21 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2	113900	227800
	RUIDP 2013 18.1.53 page 98				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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	No	6	4664	27984
b	Size:100 mm	No	2	3036	6072
c	Size 300 mm	no	1	9625	9625
d	Size 400 mm	no	1	17380	17380
	RUIDP 2013 19. 28 .9,7 & 13 + 10 % for added for class PN 1.6 & page 126-127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing lowering laying , aligning , fixing in position , CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:150 mm	No	6	30800	184800
b	Size:100 mm	No	2	22880	45760
c	Size: 400 mm	No	1	115830	115830
	RUIDP 2013 19..21.14,2,9 + 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				
	Providing , lowering , laying , aligning , fixing in position in pipe line , manually operated , PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only	No			
a	Size:150 mm	No	6	28380	170280
b	Size:100 mm	No	2	17710	35420
	RUIDP 2013 19.19.1.2,4 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>D I Flanged Pipe</b>				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:150 mm	m	66	3490	230340
b	Size:100 mm	m	22	2480	54560
c	Size: 300 mm	m	3	7810	23430
d	Size: 400 mm	m	10	11400	114000
	RUIDP SOR 2013 19.6.1,2,5,7 page 116				
<b>6</b>	<b>D I Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	2680	145	388600
b	above 300 mm	kg	2200	152	334400
	RUIDP 2013 19..8.2..1 & 2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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	No	6	5720	34320
b	Size:100 mm	No	2	3870	7740
	RUIDP 2013 19.2.4 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:150 mm	No	6	12980	77880
b	Size:100 mm	No	2	12100	24200
	RUIDP 2013 19.25.1.2,4 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5	4434	22170
	BSR SOR Item No. 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				
	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 8 , 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 3 MT capacity span 10 M & lift up to 14 m ,	Set	1	616000	616000
	RUIDP -2013-18.9.2..2 + 18.9.4 added 20% for span 15 m page 104				
<b>11</b>	<b>Sluice Gate</b>				
	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , freight , 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 wags . 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 9 m (12.71 MLD )	set	2	156700	313400
	RUIDP -2013-18.7.4 + 18.7.22 page 102-103				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	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 technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for190.18 MLD	set	2	375200	750400
	RUIDP 2013 18.3.19+ 100% for increase in capacity from 100 to 190 MLD page 100				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	27600	27600
	RUIDP -2013-18.10.1 page 104				
<b>14</b>	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150	93	13875
	RUIDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					45,57,266
<b>Say</b>					<b>45,58,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 5A					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 97.2 cum/hr (27 LPS ) at the total head of 17 m (Head Range: 14 m-20 m), 1400 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6	209200	1255200
	RUIDP -2013-18.1.47				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 50.2 cum/hr (14 LPS ) at the total head of 17 m (Head Range: 14 m-20 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2	122800	245600
	RUDP 2013 18.1.25				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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	No	6	4664	27984
b	Size:100 mm	No	2	3036	6072
c	Size:250 mm	No	1	8404	8404
d	Size: 400 mm	No	1	115830	115830
	RUIDP 2013 19. 28 4,2,9 + 10 % for added for class PN 1.6 page 126-127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing lowering laying , aligning , fixing in position , CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:150 mm	No	6	30800	184800
b	Size:100 mm	No	2	22880	45760
c	Size: 400 mm	No	1	115830	115830
	RUIDP 2013 19..21.1.4,2,9 + 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				
	Providing , lowering , laying , aligning , fixing in position in pipe line , manually operated , PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only	No			
a	Size:150 mm	No	6	28380	170280
b	Size:100 mm	No	2	17710	35420
	RUDP 2013 19.19.1.2,4 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>D I Flanged Pipe</b>				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:150 mm	m	66	3490	230340
b	Size:100 mm	m	22	2480	54560
	Size:250 mm	m	1	6380	6380
c	Size: 400 mm	m	10	11400	114000
	RUIDP SOR 2013 19.6.1,2,4,7 page 116				
<b>6</b>	<b>D I Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	4020	145	582900
b	above 300 mm	kg	2600	152	395200
	RUIDP 2013 19..8.2..1 & 2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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	No	6	5720	34320
b	Size:100 mm	No	2	3870	7740
	RUIDP 2013 19.2.4 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:150 mm	No	6	12980	77880
b	Size:100 mm	No	2	12100	24200
	RUIDP 2013 19.25.1.2,4 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5	4434	22170
	BSR SOR Item No. 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				
	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 8 , 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	509200	509200
	RUIDP -2013-18.9.1.2 + 18.9.4 added 20% for span 14 m page 104				
<b>11</b>	<b>Sluice Gate</b>				
a	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , freight , 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 wags . 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 9 m (11.38 MLD)	set	2	144700	289400
	RUIDP -2013-18.7.4 + 18.7.22 page 102-103				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 11.38 MLD	set	2	101900	203800
	RUIDP 2013 18.3.15 page 100				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	27600	27600
	RUIDP -2013-18.10.1 page 104				
	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150	93	13875
	RUIDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>48,04,745</b>
<b>Say</b>					<b>48,05,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 6					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 561.6 cum/hr (158 LPS ) at the total head of 12 m (Head Range: 9 m-15 m), 1000 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6.00	557200	3343200
	RUDP -2013-18.1.47				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 284 cum/hr (79 LPS ) at the total head of 12 m (Head Range: 9 m-15 m),, 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2.00	318600	637200
	RUDP 2013 18.1.25				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering, laying, aligning, fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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:300 mm	No	6.00	9625	57750
b	Size:250 mm	No	2.00	8404	16808
c	Size 600 mm	no	1.00	37400	37400
d	Size: 900 mm	No	1.00	59169	59169
	RUDP 2013 19. 28 .5,8, 12 & 13 + 10 % for added for class PN 1.6 & added 10% over rate of 750 mm dia for rate of 900 mm dia page 126-127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing lowering laying, aligning, fixing in position, CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:300 mm	No	6.00	75130	450780
b	Size:250 mm	No	2.00	58410	116820
c	Size: 900 mm	No	1.00	510620	510620
	RUDP 2013 19..21.1.3, 6 & 16 + 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				
	Providing , lowering , laying , aligning , fixing in position in pipe line , manually operated , PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only	No			
a	Size:300 mm	No	6.00	84370	506220
b	Size:250 mm	No	2.00	61270	122540
	RUDP 2013 19.19.1.8 , 5 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>DI Flanged Pipe</b>				



	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:300 mm	m	72.00	7810	562320
b	Size:250 mm	m	24.00	6380	153120
	Size:600 mm	m	1.00	20900	20900
c	Size: 900 mm	m	10.00	42000	420000
	RUDP SOR 2013 19.6.3, 6 ,10 & 13 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	240.00	145	34800
b	above 300 mm	kg	13200.00	152	2006400
	RUDP 2013 19..8.2..1 & 2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:300 mm	No	6.00	13600	81600
	Size:250 mm	No	2.00	10600	21200
	RUDP 2013 19.34., 8 & 5 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
	Size:300 mm	No	6.00	76450	458700
	Size:200 mm	No	2.00	76450	152900
	Size: 900 mm	No	1.00	918280	918280
	RUDP 2013 19.25.1.9,7 & 17 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5.0	4434	22170
	BSR SOR Item no 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				
	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 8 , 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	1.00	509200	509200
	RUDP -2013-18.9.1.2 + 18.9.4 added 20% for span 14 m page 104				
<b>11</b>	<b>Sluice Gate</b>				
a	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , freight , 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 wags . 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 . Duty 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 9 m (66.18 MLD)	set	2.00	317100	634200
	RUDP -2013-18.7.15 + 18.7.22 page 102-103				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				

	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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 66.18 MLD	set	2.00	180800	361600
	RUIDP 2013 18.3.15 page 100				
12	<b>Lifting arrangement at screen chamber</b>				
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	1.00	27600	27600
	RUDP -2013-18.15 page 104				
	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150.00	93	13875
	RUDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					12243497
<b>IPS 6</b>					<b>Say 12244000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for MPS- Immediate Requirement (30MLD)					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, Cl Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 670 cum/hr (186 LPS ) at the total head of 15 m (Head Range: 12 m-18 m)</b> , and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6.00	6,62,600	39,75,600
	RU DP -2013-18.1.53 page 98				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, Cl Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 335 cum/hr (93 LPS ) at the total head of 15 m (Head Range: 12 m-18 m)</b> , <b>1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2.00	3,18,600	6,37,200
	RU DP 2013 18.1.35 page 98				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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:300 mm	No	6.00	9,625	57,750
b	Size:250 mm	No	2.00	8,404	16,808
c	Size 600 mm	no	1.00	41,140	41,140
d	Size: 900 mm	No	1.00	60,514	60,514
	RU DP 2013 19. 28 .6,7,12 & 13 + 10 % for added for class PN 1.6 & added 12.5% over rate of 750 mm dia for rate of 900 mm dia page 126-127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing lowering laying , aligning , fixing in position , CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:300 mm	No	6.00	75,130	4,50,780
b	Size:250 mm	No	2.00	58,410	1,16,820
c	Size 900 mm	No	1.00	4,99,620	4,99,620
	RU DP 2013 19. .21.1.6, 7 & 16 + 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				
	Providing , lowering , laying , aligning , fixing in position in pipe line , manually operated , PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only	No			
a	Size:300 mm	No	6.00	84,370	5,06,220
b	Size:250 mm	No	2.00	61,270	1,22,540
	RU DP 2013 19.19.1.6&7 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>D I Flanged Pipe</b>				

	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:300 mm	m	72.00	7,810	5,62,320
b	Size:250 mm	m	24.00	6,380	1,53,120
c	Size: 600 mm	m	5.00	20,900	1,04,500
	RU DP SOR 2013 19.6.4,5 ,10 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	170.00	145	24,650
b	above 300 mm	kg	7500.00	152	11,40,000
	RU DP 2013 19..8.2..1 &2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:300 mm	No	6.00	13,600	81,600
	Size:250 mm	No	2.00	10,600	21,200
	RU DP 2013 19.34., 6 & 7 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
	Size:300 mm	No	6.00	76,450	4,58,700
	Size:250 mm	No	2.00	55,660	1,11,320
	RU DP 2013 19.25.1.6 & 7 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5.0	4,434	22,170
	BSR SOR Item no 4.2.2 page 88				
<b>10</b>	<b>EOT Crane</b>				
	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 8 , 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 3 MT capacity span 10 M & lift up to 14 m ,	Set	1.00	6,16,000	6,16,000
	RU DP -2013-18.9.3..2 + 18.9.4 added 20% for span 15 m page 104				
<b>11</b>	<b>Sluice Gate</b>				
	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 9 m (190.18 MLD )	set	2.00	7,72,000	15,44,000
	RU DP -2013-18.7.11 to 21(min rate per MLD)+ 18.7.22 page 103				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				

	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 190.18 MLD	set	2.00	3,75,200	7,50,400
	RUIDP 2013 18.3.19+ 100% for increase in capacity from 100 to 190 MLD page 100				
13	<b>Lifting arrangement at screen chamber</b>				
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	1.00	27,600	27,600
	RUDP -2013-18.10.1 page 104				
	<b>Derbies collection bucket</b>				
b	Fabricating ,Supply , Installation , Testing & commissioning of derbies collection bucket , fabricating out of 4 mm thick MS plate ,with ISA 25 heavy duty angle frame frame , including MS sling , ring etc of capacity 0.5 cum , including welding cutting , painting with one coat of primer & three coats of enamel paint .	kg	150.00	93	13,875
	RUDP 29.16.1				
<b>Grand Total of Mechanical Estimate in Rs.</b>					97,80,572
<b>MPS</b>					<b>Say 97,81,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for MPS- Future Requirement (60MLD)					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
a	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS , pressure gauge etc complete having <b>discharge 1336 cum/hr (371 LPS ) at the total head of 15 m (Head Range: 12 m-18 m)</b> , and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6.00	13,54,600	81,27,600
	RUUDP -2013-18.1.70 page 99				
b	Supply, delivery at site with necessary packing, receiving, unloading, insurance, shifting, storing, installation, testing and commissioning of Submersible Sewage pump set of 2% Ni, CI Cascading . Impeller of CF 8m , Shaft : SS , mechanical seal with 10 m power & control cable , 5 m galvanized chain , 10 m 50 mm GI galvanized pipe , duck foot bend , with guide wire SS etc complete having <b>discharge 670 cum/hr (186 LPS ) at the total head of 15 m (Head Range: 12 m-18 m)</b> , <b>1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2.00	6,62,600	13,25,200
	RUUDP 2013 18.1.53 page 98				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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:450 mm	No	6.00	22,770	1,36,620
b	Size:300 mm	No	2.00	9,625	19,250
c	Size 900 mm	no	1.00	59,169	59,169
d	Size: 1000 mm	No	1.00	60,514	60,514
	RUUDP 2013 19. 28 .9,7 & 13 + 10 % for added for class PN 1.6 & added 10% over rate of 750 mm dia for rate of 900 mm dia & 12.5% for rate of 1000 mm page 126-127				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing lowering laying , aligning , fixing in position , CI DF manually operated long body butterfly valve ( IS 13095) PN 1.6 class of following dia complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
a	Size:450 mm	No	6.00	1,33,760	8,02,560
b	Size:300 mm	No	2.00	75,130	1,50,260
c	Size 1000 mm	No	1.00	7,17,090	7,17,090
	RUUDP 2013 19..21.1.9, 7 & 17 + 10 % for added for class PN 1.6 page123				
<b>4</b>	<b>Sluice Valve</b>				
	Providing , lowering , laying , aligning , fixing in position in pipe line , manually operated , PN-1.6 rating, double flange Sluice Valve of approved make ( IS : 14846 amended up to date ) of following dia. complete ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only	No			
a	Size:450 mm	No	6.00	2,76,540	16,59,240
b	Size:300 mm	No	2.00	84,370	1,68,740
	RUUDP 2013 19.19.1.7, 10 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>D I Flanged Pipe</b>				

	providing . Lowering , laying in trenches . Aligning , fixing in position double flanged ( welded ) centrifugally spun DI ISI mark K 9 ( grade pipe as per IS : 8329 -200 amended up to date , including jointing & jointing material , complete including all material labour , hydraulic testing & commissioning as per technical specification & as per direction of Engineer				
a	Size:450 mm	m	72.00	13,700	9,86,400
b	Size:300 mm	m	24.00	7,810	1,87,440
c	Size: 900 mm	m	3.00	42,000	1,26,000
	RUDP SOR 2013 19.6.3, 6 ,10 & 13 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	Providing, lowering, laying aligning fixing in position, jointing at all level / depth D.I. flanged / 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				
	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				
a	up to 300 mm	kg	220.00	145	31,900
b	above 300 mm	kg	11700.00	152	17,78,400
	RUDP 2013 19..8.2.1 &2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:450 mm	No	6.00	26,300	1,57,800
	Size:300 mm	No	2.00	13,600	27,200
	RUDP 2013 19.34., 10 & 7 page 129				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	Providing , lowering, laying , aligning , and fixing 7 jointing in position in pipe line dual plate check valve as per API : 594 & API 598 of PN 1.6 rating of following dia generally conforming to IS-5312 ( including jointing & jointing material ) including all material , labour , testing & commissioning along with pipe line as per technical specifications and as per direction of Engineer Category A Make Kirloskar , IVC , Fouress , Vag only				
	Size:450 mm	No	6.00	1,80,180	10,81,080
	Size:300 mm	No	2.00	76,450	1,52,900
	RUDP 2013 19.25.1.9,7 & 10 + 10 % for added for class PN 1.6 page 124-125				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5.0	4,434	22,170
	BSR SOR Item no 4.2.2 page 88				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>177,77,533</b>
<b>MPS</b>				<b>Say</b>	<b>177,78,000</b>

## SEWERAGE SYSTEM FOR GAYA CITY

### Cost Summary - Pumping Main

Cost in Rs. Lakh

Sr. No.	Description	Estimated Cost	Carriage Cost	Total Cost
	<b>Pumping Mains</b>			
A	Pumping Main from IPS2 to Manhole 1668 of Zone B1A	129.35	0.61	129.96
A1	Outlet Collection Chamber (IPS2 PM)	1.86	0.03	1.89
	Total A			<b>131.85</b>
B	Pumping Main from IPS2A to Manhole 2554 of Zone B6	317.01	1.07	318.08
B1	Outlet Collection Chamber (IPS2A PM)	2.15	0.03	2.18
	Total B			<b>320.26</b>
C	Pumping Main from IPS3 to Manhole 7678 of Zone B3	214.33	1.16	215.49
C1	Outlet Collection Chamber (IPS3 PM)	1.72	0.03	1.75
	Total C			<b>217.24</b>
D	Pumping Main from IPS5 to Manhole 3373 of Zone B5	141.59	0.67	142.26
D1	Outlet Collection Chamber (IPS5 PM)	1.86	0.03	1.89
	Total D			<b>144.15</b>
E	Pumping Main from IPS5A to Manhole 3371 of Zone B5	114.77	0.55	115.32
E1	Outlet Collection Chamber (IPS5APM)	1.86	0.03	1.89
	Total E			<b>117.21</b>
F	Pumping Main from IPS4 to IPS4A	146.82	0.55	147.37
	<b>Total A</b>			<b>147.37</b>
G	Pumping Main from IPS4A to Manhole of B6	656.33	1.80	658.13
G1	Outlet Collection Chamber (IPS4A PM)	2.74	0.04	2.78
	<b>Total B</b>			<b>660.91</b>
H	Pumping Main from IPS6 to Manhole of B6	144.97	0.38	145.35
H1	Outlet Collection Chamber (IPS6 PM)	3.05	0.04	3.09
	<b>Total C</b>			<b>148.44</b>
I	Pumping Main from MPS1 to STP (Module 1)	16.53	0.15	16.68
	<b>Total D</b>			<b>16.68</b>
	<b>Total for Pumping Main</b>	1896.94	7.17	<b>1904.11</b>
	Future Reuirement for pumping main			
J	Pumping Main from MPS1 to STP (Modules 2 & 3)	26.07	0.15	26.22



## SEWERAGE SYSTEM FOR GAYA CITY

### Cost Summary - Pumping Main

Cost in Rs. Lakh

Sr. No.	Description	Estimated Cost	Carriage Cost	Total Cost
	<b>Pumping Mains</b>			
A	Pumping Main from IPS2 to Manhole 1668 of Zone B1A	129.35	0.61	129.96
A1	Outlet Collection Chamber (IPS2 PM)	1.86	0.03	1.89
	Total A			<b>131.85</b>
B	Pumping Main from IPS2A to Manhole 2554 of Zone B6	317.01	1.07	318.08
B1	Outlet Collection Chamber (IPS2A PM)	2.15	0.03	2.18
	Total B			<b>320.26</b>
C	Pumping Main from IPS3 to Manhole 7678 of Zone B3	214.33	1.16	215.49
C1	Outlet Collection Chamber (IPS3 PM)	1.72	0.03	1.75
	Total C			<b>217.24</b>
D	Pumping Main from IPS5 to Manhole 3373 of Zone B5	141.59	0.67	142.26
D1	Outlet Collection Chamber (IPS5 PM)	1.86	0.03	1.89
	Total D			<b>144.15</b>
E	Pumping Main from IPS5A to Manhole 3371 of Zone B5	114.77	0.55	115.32
E1	Outlet Collection Chamber (IPS5APM)	1.86	0.03	1.89
	Total E			<b>117.21</b>
	<b>Total for Pumping Main</b>	<b>926.50</b>	<b>4.21</b>	<b>930.71</b>

Note: Enhancements in rate for BSR 2012-13 and 2013-14 are considered 7.31% and 6.16% respectively.

**Summary for Carriage of Material: Pumping Mains**

Pumping Main from IPS2 to Manhole 1668 of Zone B1A				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.29	79		80.58
Aggregate	0.71	161	401	563.27
Bricks	7.61			7.61

Pumping Main from IPS2A to Manhole 2554 of Zone B6				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.29	138		139.29
Aggregate	0.71	281	713	994.26
Bricks	7.61			7.61

Pumping Main from IPS3 to Manhole 7678 of Zone B3				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.29	146		146.82
Aggregate	0.71	296	787	1083.76
Bricks	7.61			7.61

Pumping Main from IPS5 to Manhole 3373 of Zone B5				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.29	85		86.59
Aggregate	0.71	173	442	616.34
Bricks	7.61			7.61

Pumping Main from IPS5A to Manhole 3371 of Zone B5				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.29	75		76.07
Aggregate	0.71	152	353	505.55
Bricks	7.61			7.61

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Cost Estimate - Pumping Main from IPS2 to Manhole 1668 of Zone B1A**

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 <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S pipes</b> 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 400mm	m	1517.00	<b>5750.30</b>	8723205
	BSR-BCD-18-Item 18.72.21; Pg-231				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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	<b>40048.00</b>	40048
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> 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	<b>8573.00</b>	8573
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	1529.81	<b>319.60</b>	488928
	b) From 1.5 m to 3.0 m	Cum	92.01	<b>360.60</b>	33179
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	998.48	<b>103.30</b>	103143
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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 <b>R.C.C. slab cover. SVC</b>	No	1.00	<b>21349.04</b>	21349
	(Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357				

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, <b>M-20 grde reinforced cement concrete</b> : All work upto plinth level:				
	ii) M-20 (Thrust Block) BSR-BCD-18;Item-5.33A.1, Pg-87	Cum	19.00	<b>4924.00</b>	93556
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b>				
	BSR-BCD-18; Item-5.22.7; Pg-86	Kg	998.00	<b>76.00</b>	75848
9	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	<b>92.20</b>	230500
	BSR-BCD-18-Item 2.25; Pg-75				
10	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
	i) Foundations, footings, bases of columns etc. for mass concrete BSR-BCD-18; Sr. No Item-5.9.1, Pg-84	Sq.m	118.00	<b>186.30</b>	21983
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	cum	208.48	<b>217.00</b>	45240
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge. BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	414.87	<b>262.50</b>	108902
<b>G) ROAD RESTORATION AND DISMENTLING WORKS</b>					
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b> RCD/SOR-18; Item-2.5-II A; Pg-29	cum	347.00	342.00	118674
14	<b>Dismantling of cement concrete pavement</b> 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. RCD/SOR-18; Item-2.6; Pg-29	cum	208.00	1520.00	316160
<b>Cement concrete road Restoration</b>					
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment). BSR-BCD-18; Item-2.39, Pg-77	Cum	83.00	10.00	830
16	Filling with available <b>fly ash and earth</b> (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. BSR-BCD-18; Item-2.40, Pg-77	Cum	69.00	103.30	7128

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
17	<b>Cement Concrete Pavement</b> (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	139.00	4461.00	620079
	RCD-18-Item-6.2, pg.138				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	69.00	904.00	62376
	<b>Grading III:</b> 100 mm thick	cum	69.00	949.00	65481
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-14-Item 4.9 A(iii) a, Pg-71				
19	<b>Prime coat</b> (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	695.00	30.30	21059
	BSR-RCD-18-Item 5.1, Pg-87				
20	<b>Tack Coat:</b> 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	695.00	11.10	7715
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	28.00	5406.00	151368
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	695.00	246.00	170970
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	695.00	129.00	89655
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	555
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>11626503</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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.	15% of Pipe cost	0.00		1308481
				<b>Sub Total A</b>	<b>12934984</b>
26	<b>Carriage of Material</b>				
	Sand	t.km	805.80	9.4	7575
	Aggregate	t.km	5632.70	9.4	52947
	Bricks	t.km	76.10	9.4	715
				<b>Sub Total B</b>	<b>61237</b>
	<b>Total Cost (A+B)</b>				<b>12996221</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Cost Estimate - Pumping Main from IPS2A to Manhole 2554 of Zone B6**

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 <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S pipes</b> 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) 500mm	m	2422.00	<b>8389.90</b>	20320338
	BSR-BCD-18-Item 18.72.23; Pg-231				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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	<b>40048.00</b>	40048
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> 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	<b>8573.00</b>	8573
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	2712.39	<b>319.60</b>	866881
	b) From 1.5 m to 3.0 m	Cum	3698.39	<b>360.60</b>	1333641
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	12557.48	<b>103.30</b>	1297188
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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 <b>R.C.C. slab cover</b> . SVC	No	1.00	<b>21349.04</b>	21349

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
	(Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357				
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, <b>M-20 grade reinforced cement concrete</b> : All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	28.00	4924.00	137872
	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. <b>Thermo-Mechanically Treated bars TMT-500</b>				
	BSR-BCD-18; Item-5.22.7; Pg-86	Kg	1478.00	76.00	112328
9	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	92.20	230500
	BSR-BCD-18-Item 2.25; Pg-75				
10	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	167.00	186.30	31112
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	cum	369.84	217.00	80255
	BSR - RCD-18- Item- 12.3, P-222				
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	880.26	262.50	231067
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	616.00	342.00	210672
	RCD/SOR-18; Item-2.5-II A; Pg-29				
14	<b>Dismantling of cement concrete pavement</b> 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	370.00	1520.00	562400
	RCD/SOR-18; Item-2.6; Pg-29				
	<b>Cement concrete road Restoration</b>				
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	148.00	10.00	1480
	BSR-BCD-18; Item-2.39, Pg-77				
16	Filling with available <b>fly ash and earth</b> (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	123.00	103.30	12706
	BSR-BCD-18; Item-2.40, Pg-77				
17	<b>Cement Concrete Pavement</b> (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	247.00	4461.00	1101867



Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
	RCD-18-Item-6.2, pg.138				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	123.00	904.00	111192
	<b>Grading III:</b> 100 mm thick	cum	123.00	949.00	116727
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-71				
19	<b>Prime coat</b> (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	1233.00	30.30	37360
	BSR-RCD-18-Item 5.1, Pg-87				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
20	<b>Tack Coat:</b> 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	1233.00	11.10	13686
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	49.00	5406.00	264894
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	1233.00	246.00	303318
	BSR-RCD-18-Item 5.4 A, Pg-84				
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	1233.00	129.00	159057
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	555
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>27607066</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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.	15% of Pipe cost	0.00		3048051

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
26	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 saddle 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.				
	BSR-RUIDP-17.78 - Item 17.66.1.5. Pg-92				
	1000 mm dia 12 mm thick casing pipe	M	20.00	52300.00	1046000
				<b>Sub Total A</b>	<b>31701116</b>
26	<b>Carriage of Material</b>				
	Sand	t.km	1392.90	9.4	13093
	Aggregate	t.km	9942.60	9.4	93460
	Bricks	t.km	76.10	9.4	715
				<b>Sub Total B</b>	<b>107269</b>
	<b>Total Cost (A+B)</b>				<b>31808385</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Cost Estimate -Pumping Main from IPS3 to Manhole 7678 of Zone B3**

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 <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S pipes</b> 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) 350mm	m	3140.00	<b>4491.10</b>	14102054
	BSR-BCD-18-Item 18.72.20; Pg-231				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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	<b>40048.00</b>	40048
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> 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	<b>8573.00</b>	8573
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	2985.32	<b>319.60</b>	954110
	b) From 1.5 m to 3.0 m	Cum	38.89	<b>360.60</b>	14022
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	2805.48	<b>103.30</b>	289806
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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.				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
a)	1.2 x 1.2 M internal size and depth upto 2.0 M with precast <b>R.C.C. slab cover. SVC</b> (Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357	No	1.00	<b>21349.04</b>	21349
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, <b>M-20 grade reinforced cement concrete</b> : All work upto plinth level: ii) M-20 (Thrust Block)	Cum	19.00	<b>4924.00</b>	93556
	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. <b>Thermo-Mechanically Treated bars TMT-500</b>	Kg	998.00	<b>76.00</b>	75848
	BSR-BCD-18; Item-5.22.7; Pg-86				
9	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	<b>92.20</b>	230500
	BSR-BCD-18-Item 2.25; Pg-75				
10	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	118.00	<b>186.30</b>	21983
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	cum	407.13	<b>217.00</b>	88347
	BSR - RCD-18- Item- 12.3, P-222				
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	734.60	<b>262.50</b>	192833
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	679.00	342.00	232218
	RCD/SOR-18; Item-2.5-II A; Pg-29				
14	<b>Dismantling of cement concrete pavement</b> 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	407.00	1520.00	618640
	RCD/SOR-18; Item-2.6; Pg-29				
	<b>Cement concrete road Restoration</b>				
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	163.00	10.00	1630
	BSR-BCD-18; Item-2.39, Pg-77				
16	Filling with available <b>fly ash and earth</b> (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	136.00	103.30	14049
	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	<b>Cement Concrete Pavement</b> (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	271.00	4461.00	1208931
	RCD-18-Item-6.2, pg.138				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	136.00	904.00	122944
	<b>Grading III:</b> 100 mm thick	cum	136.00	949.00	129064
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-71				
19	<b>Prime coat</b> (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	1357.00	30.30	41117
	BSR-RCD-18-Item 5.1, Pg-87				
20	<b>Tack Coat:</b> 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	1357.00	11.10	15063
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	54.00	5406.00	291924
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	1357.00	246.00	333822
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	1357.00	129.00	175053
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	555
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>19318039</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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		2115308
				<b>Sub Total A</b>	<b>21433347</b>
26	<b>Carriage of Material</b>				
	Sand	t.km	1468.20	9.4	13801
	Aggregate	t.km	10837.60	9.4	101873
	Bricks	t.km	76.10	9.4	715
				<b>Sub Total B</b>	<b>116390</b>
	<b>Total Cost (A+B)</b>				<b>21549737</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Cost Estimate - Pumping Main from IPS5 to Manhole 3373 of Zone B5**

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 <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S pipes</b> 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 400mm	m	1668.00	<b>5750.30</b>	9591500
	BSR-BCD-18-Item 18.72.21; Pg-231				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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	<b>40048.00</b>	40048
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> 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	<b>8573.00</b>	8573
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	1681.33	<b>319.60</b>	537354
	b) From 1.5 m to 3.0 m	Cum	101.17	<b>360.60</b>	36481
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	1097.11	<b>103.30</b>	113332
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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 <b>R.C.C. slab cover. SVC</b>	No	1.00	<b>21349.04</b>	21349
	(Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357				



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, <b>M-20 grde reinforced cement concrete</b> : All work upto plinth level:				
	ii) M-20 (Thrust Block) BSR-BCD-18;Item-5.33A.1, Pg-87	Cum	17.00	<b>4924.00</b>	83708
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b>				
	BSR-BCD-18; Item-5.22.7; Pg-86	Kg	919.00	<b>76.00</b>	69844
9	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	<b>92.20</b>	230500
	BSR-BCD-18-Item 2.25; Pg-75				
10	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
	i) Foundations, footings, bases of columns etc. for mass concrete BSR-BCD-18; Sr. No Item-5.9.1, Pg-84	Sq.m	115.00	<b>186.30</b>	21425
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	cum	229.23	<b>217.00</b>	49743
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge. BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	456.16	<b>262.50</b>	119742
<b>G) ROAD RESTORATION AND DISMENTLING WORKS</b>					
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b> RCD/SOR-18; Item-2.5-II A; Pg-29	cum	382.00	342.00	130644
14	<b>Dismantling of cement concrete pavement</b> 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. RCD/SOR-18; Item-2.6; Pg-29	cum	229.00	1520.00	348080
<b>Cement concrete road Restoration</b>					
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment). BSR-BCD-18; Item-2.39, Pg-77	Cum	92.00	10.00	920
16	Filling with available <b>fly ash and earth</b> (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. BSR-BCD-18; Item-2.40, Pg-77	Cum	76.00	103.30	7851

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
17	<b>Cement Concrete Pavement</b> (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	153.00	4461.00	682533
	RCD-18-Item-6.2, pg.138				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	76.00	904.00	68704
	<b>Grading III:</b> 100 mm thick	cum	76.00	949.00	72124
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-71				
19	<b>Prime coat</b> (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	764.00	30.30	23149
	BSR-RCD-18-Item 5.1, Pg-87				
20	<b>Tack Coat:</b> 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	764.00	11.10	8480
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	31.00	5406.00	167586
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	764.00	246.00	187944
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	764.00	129.00	98556
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	555
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>12720724</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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.	15% of Pipe cost	0.00		1438725
				<b>Sub Total A</b>	<b>14159449</b>
26	<b>Carriage of Material</b>				
	Sand	t.km	865.90	9.4	8139
	Aggregate	t.km	6163.40	9.4	57936
	Bricks	t.km	76.10	9.4	715
				<b>Sub Total B</b>	<b>66791</b>
	<b>Total Cost (A+B)</b>				<b>14226240</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Cost Estimate - Pumping Main from IPS5A to Manhole 3371 of Zone B5**

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 <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S pipes</b> 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 400mm	m	1332.00	<b>5750.30</b>	7659400
	BSR-BCD-18-Item 18.72.21; Pg-231				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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	<b>40048.00</b>	40048
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> 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	<b>8573.00</b>	8573
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	1342.57	<b>319.60</b>	429085
	b) From 1.5 m to 3.0 m	Cum	80.79	<b>360.60</b>	29133
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	876.02	<b>103.30</b>	90493
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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 <b>R.C.C. slab cover. SVC</b>	No	1.00	<b>21349.04</b>	21349
	(Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357				

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, <b>M-20 grde reinforced cement concrete</b> : All work upto plinth level:				
	ii) M-20 (Thrust Block) BSR-BCD-18;Item-5.33A.1, Pg-87	Cum	27.00	<b>4924.00</b>	132948
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b>				
	BSR-BCD-18; Item-5.22.7; Pg-86	Kg	1239.00	<b>76.00</b>	94164
9	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	2500.00	<b>92.20</b>	230500
	BSR-BCD-18-Item 2.25; Pg-75				
10	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
	i) Foundations, footings, bases of columns etc. for mass concrete BSR-BCD-18; Sr. No Item-5.9.1, Pg-84	Sq.m	139.00	<b>186.30</b>	25896
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	cum	183.06	<b>217.00</b>	39724
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge. BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	364.28	<b>262.50</b>	95623
<b>G) ROAD RESTORATION AND DISMENTLING WORKS</b>					
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b> RCD/SOR-18; Item-2.5-II A; Pg-29	cum	305.00	342.00	104310
14	<b>Dismantling of cement concrete pavement</b> 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. RCD/SOR-18; Item-2.6; Pg-29	cum	183.00	1520.00	278160
<b>Cement concrete road Restoration</b>					
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment). BSR-BCD-18; Item-2.39, Pg-77	Cum	73.00	10.00	730
16	Filling with available <b>fly ash and earth</b> (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. BSR-BCD-18; Item-2.40, Pg-77	Cum	61.00	103.30	6301

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
17	<b>Cement Concrete Pavement</b> (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	122.00	4461.00	544242
	RCD-18-Item-6.2, pg.138				
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	61.00	904.00	55144
	<b>Grading III:</b> 100 mm thick	cum	61.00	949.00	57889
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-71				
19	<b>Prime coat</b> (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	610.00	30.30	18483
	BSR-RCD-18-Item 5.1, Pg-87				
20	<b>Tack Coat:</b> 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	610.00	11.10	6771
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	24.00	5406.00	129744
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	610.00	246.00	150060
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	610.00	129.00	78690
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	555
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>10328013</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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.	15% of Pipe cost	0.00		1148910
				<b>Sub Total A</b>	<b>11476923</b>
26	<b>Carriage of Material</b>				
	Sand	t.km	760.70	9.4	7151
	Aggregate	t.km	5055.50	9.4	47522
	Bricks	t.km	76.10	9.4	715
				<b>Sub Total B</b>	<b>55388</b>
	<b>Total Cost (A+B)</b>				<b>11532310</b>

**SEWERAGE SYSTEM FOR GAYA CITY**

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

Pumping Main dia	Qty. from Estimate Sheet											RCC, Flooring and Sand Filling						Bricks				Plaster				Total Quantity in MT					
	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		Sand	Aggregate	Bricks		
	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				
1	IPS2 (400 dia to B1A)		8.05		10.46	-	-	-				-	3.8	5.4	4.9	9.0	9.8	18.4	-	-	-	-	-	-	-	-	-	9.0	18.4	-	
1	IPS2A (500 dia to B6)		9.64		11.93	-	-	-				-	4.4	6.3	5.7	10.6	11.5	21.5	-	-	-	-	-	-	-	-	-	10.6	21.5	-	
1	IPS3 (350 dia to B3)		7.28		9.75	-	-	-				-	3.5	5.0	4.5	8.3	9.0	16.9	-	-	-	-	-	-	-	-	-	8.3	16.9	-	
1	IPS5 (400 dia to B5)		8.05		10.46	-	-	-				-	3.8	5.4	4.9	9.0	9.8	18.4	-	-	-	-	-	-	-	-	-	9.0	18.4	-	
2	IPS5A (400 dia to B5)		8.05		10.46	-	-	-				-	3.8	5.4	4.9	9.0	9.8	18.4	-	-	-	-	-	-	-	-	-	9.0	18.4	-	
<b>Total</b>		-	16.1	-	20.92	-	-	-	-	-	-	-	7.5	10.8	9.8	18.1	19.7	36.8	-	-	-	-	-	-	-	-	-	90.5	183.8	-	
																											Rate (Rs/T.KM)		94	94	94
																											Amount (Rs.)		8502	17273	0
																											Total amount (INR Lakh)		0.26		



**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- Outlet Collection Chamber (400 dia) IPS2**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	19.76	319.60	6314.66
b)	From 1.5 m to 3.0 m	Cum	14.36	360.60	5177.31
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	14.65	103.30	1513.59
	BSR-BCD-18-Item 2.26; Pg-75				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	19.46	262.50	5109.07
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>PCC:</b> 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	8.05	4151.40	33406.23
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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-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	10.46	5270.50	55132.80
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	0.84	76000.00	63600.69
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.28	186.30	611.06
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	39.95	321.30	12835.94
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	4.53	362.60	1642.58
	BSR - BCD-18- Item- 5.9.3, Pg-84				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	722.70
	BSR-BCD-18; Item-19.16; Pg-245				
				<b>Sub Total A</b>	<b>186066.63</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	90.30	9.4	848.82
	Aggregate	t.km	183.80	9.4	1727.72
	Bricks	t.km		9.4	0.00
				<b>Sub Total B</b>	<b>2576.54</b>
	<b>Total Cost (A+B)</b>				<b>188643.17</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- Outlet Collection Chamber (500 dia) IPS2A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	21.48	319.60	6864.24
b)	From 1.5 m to 3.0 m	Cum	18.26	360.60	6583.10
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	16.47	103.30	1701.48
	BSR-BCD-18-Item 2.26; Pg-75				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	23.26	262.50	6106.35
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>PCC:</b> 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	9.64	4151.40	40007.66
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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 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:				
	RCC Grade M -30	Cum	11.93	5270.50	62862.41
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	0.95	76000.00	72517.50
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.46	186.30	644.60
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	46.25	321.30	14860.13
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	5.22	362.60	1892.77
	BSR - BCD-18- Item- 5.9.3, Pg-84				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	722.70
	BSR-BCD-18; Item-19.16; Pg-245				
				<b>Sub Total A</b>	<b>214762.94</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	90.30	9.4	848.82
	Aggregate	t.km	183.80	9.4	1727.72
	Bricks	t.km		9.4	0.00
				<b>Sub Total B</b>	<b>2576.54</b>
	<b>Total Cost (A+B)</b>				<b>217339.48</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- Outlet Collection Chamber (350 dia) IPS3**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	18.92	319.60	6045.59
b)	From 1.5 m to 3.0 m	Cum	12.55	360.60	4524.70
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	13.77	103.30	1421.94
	BSR-BCD-18-Item 2.26; Pg-75				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	17.70	262.50	4645.89
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>PCC:</b> 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	7.28	4151.40	30219.32
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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-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	9.75	5270.50	51402.32
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	0.78	76000.00	59297.24
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.18	186.30	592.43
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	36.91	321.30	11859.18
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	4.20	362.60	1522.92
	BSR - BCD-18- Item- 5.9.3, Pg-84				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	722.70
	BSR-BCD-18; Item-19.16; Pg-245				
				<b>Sub Total A</b>	<b>172254.23</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	90.30	9.4	848.82
	Aggregate	t.km	183.80	9.4	1727.72
	Bricks	t.km		9.4	0.00
				<b>Sub Total B</b>	<b>2576.54</b>
	<b>Total Cost (A+B)</b>				<b>174830.77</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- Outlet Collection Chamber (400 dia) IPS5**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	19.76	319.60	6314.66
b)	From 1.5 m to 3.0 m	Cum	14.36	360.60	5177.31
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	14.65	103.30	1513.59
	BSR-BCD-18-Item 2.26; Pg-75				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	19.46	262.50	5109.07
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>PCC:</b> 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	8.05	4151.40	33406.23
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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-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	10.46	5270.50	55132.80
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	0.84	76000.00	63600.69
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.28	186.30	611.06
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	39.95	321.30	12835.94
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	4.53	362.60	1642.58
	BSR - BCD-18- Item- 5.9.3, Pg-84				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	722.70
	BSR-BCD-18; Item-19.16; Pg-245				
				<b>Sub Total A</b>	<b>186066.63</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	90.30	9.4	848.82
	Aggregate	t.km	183.80	9.4	1727.72
	Bricks	t.km		9.4	0.00
				<b>Sub Total B</b>	<b>2576.54</b>
	<b>Total Cost (A+B)</b>				<b>188643.17</b>



**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- Outlet Collection Chamber (400 dia) IPS5A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	19.76	319.60	6314.66
b)	From 1.5 m to 3.0 m	Cum	14.36	360.60	5177.31
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	14.65	103.30	1513.59
	BSR-BCD-18-Item 2.26; Pg-75				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	19.46	262.50	5109.07
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>PCC:</b> 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	8.05	4151.40	33406.23
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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-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	10.46	5270.50	55132.80
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	0.84	76000.00	63600.69
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.28	186.30	611.06
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	39.95	321.30	12835.94
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	4.53	362.60	1642.58
	BSR - BCD-18- Item- 5.9.3, Pg-84				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	722.70
	BSR-BCD-18; Item-19.16; Pg-245				
				<b>Sub Total A</b>	<b>186067</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	90.30	9.4	848.82
	Aggregate	t.km	183.80	9.4	1727.72
	Bricks	t.km	0.00	9.4	0.00
				<b>Sub Total B</b>	<b>2576.54</b>
	<b>Total Cost (A+B)</b>				<b>188643.17</b>

## SEWERAGE SYSTEM FOR GAYA CITY

### Cost Summary - Pumping Main

Cost in Rs. Lakh

Sr. No.	Description	Estimated Cost	Carriage Cost	Total Cost
	<b>Pumping Mains</b>			
A	Pumping Main from IPS4 to IPS4A	146.82	0.55	147.37
	<b>Total A</b>			<b>147.37</b>
B	Pumping Main from IPS4A to Manhole of B6	656.33	1.80	658.13
B1	Outlet Collection Chamber (IPS4A PM)	2.74	0.04	2.78
	<b>Total B</b>			<b>660.91</b>
C	Pumping Main from IPS6 to Manhole of B6	144.97	0.38	145.35
C1	Outlet Collection Chamber (IPS6 PM)	3.05	0.04	3.09
	<b>Total C</b>			<b>148.44</b>
D	Pumping Main from MPS1 to STP (Modules 2 & 3)	26.07	0.15	26.22
D1	Pumping Main from MPS1 to STP (Module 1)	16.53	0.15	16.68
	<b>Total D</b>			<b>42.90</b>
	<b>Total for Pumping Main</b>	996.51	3.11	<b>999.62</b>

**Summary for Carriage of Material: Pumping Mains**

IPS4 to IPS4A				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.29	71		72.04
Aggregate	0.71	144	365	509.37
Bricks	7.61			7.61

IPS4A to MPS (MH18)				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	1.29	225		226.10
Aggregate	0.71	457	1222	1679.82
Bricks	7.61			7.61

IPS6 to MPS (MH623)				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	2.59	48		50.26
Aggregate	1.42	97	239	337.51
Bricks	15.21			15.21

MPS to STP (Module 1 & 2)				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand	0	51		51.19
Aggregate	0	104		104.05
Bricks	0			0.00

MPS to STP (Module 3)				
Item	Valve Chamber	Pavement & TB	Road works: Grannular bedding	Total
Sand		50		50.18
Aggregate		102		102.01
Bricks				0.00

**SEWERAGE SYSTEM FOR GAYA CITY**  
**Cost Estimate - Pumping Main from IPS 4 to IPS4A**

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-18 Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S</b> 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) 500mm	m	1236.00	<b>8389.90</b>	10369916.40
	BSR-BCD-18-Item 18.72.23; Pg-231				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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: (Kirkoskar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd., VAG)				
	200 mm dia PN-1.0	No.	1.00	<b>40048.00</b>	40048.00
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> 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	<b>8573.00</b>	8573.00
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	1386.71	<b>319.60</b>	443192.26
	b) From 1.5 m to 3.0 m	Cum	214.03	<b>360.60</b>	77178.60
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	1464.31	<b>103.30</b>	151263.01
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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 <b>R.C.C. slab cover. SVC</b>	No	1.00	<b>21349.04</b>	21349.04
	(Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357				
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, <b>M-20 grde reinforced cement concrete</b> : All work upto plinth level:				
	ii) M-20 (Thrust Block)	Cum	15.00	<b>4924.00</b>	73860.00
	BSR-BCD-18;Item-5.33A.1, Pg-87				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-18 Rs.	Amount in Rs.
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b>				
	BSR-BCD-18; Item-5.22.7; Pg-86	Kg	755.00	76.00	57380.00
9	<b>Pumping out water</b> 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	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete	Sq.m	80.00	186.30	14904.00
	BSR-BCD-18; Sr. No Item-5.9.1, Pg-84				
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	cum	189.07	217.00	41028.19
	BSR - RCD-18- Item- 12.3, P-222				
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	451.36	262.50	118481.87
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum	315.00	342.00	107730.00
	RCD/SOR-18; Item-2.5-II A; Pg-29				
14	<b>Dismantling of cement concrete pavement</b> 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	189.00	1520.00	287280.00
	RCD/SOR-18; Item-2.6; Pg-29				
	<b>Cement concrete road Restoration</b>				
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment).	Cum	76.00	10.00	760.00
	BSR-BCD-18; Item-2.39, Pg-77				
16	Filling with available <b>fly ash and earth</b> (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	63.00	103.30	6507.90
	BSR-BCD-18; Item-2.40, Pg-77				
17	<b>Cement Concrete Pavement</b> (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	126.00	4461.00	562086.00
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	63.00	904.00	56952.00
	<b>Grading III:</b> 100 mm thick	cum	63.00	949.00	59787.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-71				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-18 Rs.	Amount in Rs.
19	<b>Prime coat</b> (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	630.00	30.30	19089.00
	BSR-RCD-18-Item 5.1, Pg-87				
20	<b>Tack Coat:</b> 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	630.00	11.10	6993.00
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	25.00	5406.00	135150.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	630.00	246.00	154980.00
	BSR-RCD-18-Item 5.4 A, Pg-84				
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	630.00	129.00	81270.00
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	554.50
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>13126813.77</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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		1555487.46
				<b>Sub Total A</b>	<b>14682301.23</b>
26	<b>Carriage of Material</b>				
	Sand	t.km	720.40	9.4	6771.76
	Aggregate	t.km	5093.70	9.4	47880.78
	Bricks	t.km	76.10	9.4	715.34
				<b>Sub Total B</b>	<b>55367.88</b>
	<b>Total Cost (A+B)</b>				<b>14737669.11</b>

**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 <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S</b> 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	<b>15380.60</b>	48987211.00
	BSR-BCD-18-Item 18.72.27; Pg-232				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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	<b>40048.00</b>	40048.00
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> 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	<b>8573.00</b>	8573.00
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	4636.54	<b>319.60</b>	1481839.30
	b) From 1.5 m to 3.0 m	Cum	1995.39	<b>360.60</b>	719539.34
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	<b>103.30</b>	553425.31
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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.				



Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
a)	1.2 x 1.2 M internal size and depth upto 2.0 M with precast <b>R.C.C. slab cover. SVC</b> (Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357	No	1.00	<b>21349.04</b>	21349.04
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, <b>M-20 grade reinforced cement concrete</b> : All work upto plinth level:				
	ii) M-20 (Thrust Block) BSR-BCD-18;Item-5.33A.1, Pg-87	Cum	26.00	<b>4924.00</b>	128024.00
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b> BSR-BCD-18; Item-5.22.7; Pg-86	Kg	979.00	<b>76.00</b>	74404.00
9	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like. BSR-BCD-18-Item 2.25; Pg-75	KL	2500.00	<b>92.20</b>	230500.00
10	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete BSR-BCD-18; Sr. No Item-5.9.1, Pg-84	Sq.m	120.00	<b>186.30</b>	22356.00
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	cum	632.25	<b>217.00</b>	137198.25
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge. BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	2328.23	<b>262.50</b>	611160.70
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b> RCD/SOR-18; Item-2.5-II A; Pg-29	cum	1054.00	342.00	360468.00
14	<b>Dismantling of cement concrete pavement</b> 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. RCD/SOR-18; Item-2.6; Pg-29	cum	632.00	1520.00	960640.00
	<b>Cement concrete road Restoration</b>				
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment). BSR-BCD-18; Item-2.39, Pg-77	Cum	253.00	10.00	2530.00
16	Filling with available <b>fly ash and earth</b> (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. BSR-BCD-18; Item-2.40, Pg-77	Cum	211.00	103.30	21796.30

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
17	<b>Cement Concrete Pavement</b> (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	4461.00	1882542.00
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	211.00	904.00	190744.00
	<b>Grading III:</b> 100 mm thick	cum	211.00	949.00	200239.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-71				
19	<b>Prime coat</b> (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	30.30	63872.40
	BSR-RCD-18-Item 5.1, Pg-87				
20	<b>Tack Coat:</b> 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	11.10	23398.80
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	5406.00	454104.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	246.00	518568.00
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	129.00	271932.00
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	554.50
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>58284448.22</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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		7348081.65
				<b>Sub Total A</b>	<b>65632529.87</b>
<b>26</b>	<b>Carriage of Material</b>				
	Sand	t.km	2261.00	9.4	21253.40
	Aggregate	t.km	16798.20	9.4	157903.08
	Bricks	t.km	76.10	9.4	715.34
				<b>Sub Total B</b>	<b>179871.82</b>
	<b>Total Cost (A+B)</b>				<b>65812401.69</b>

**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 <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S</b> 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	<b>18561.10</b>	10765438.00
	BSR-BCD-18-Item 18.72.28; Pg-232				
2	Providing, lowering, erecting Cast Steel/ Spheroidal Graphite (S.G.) Iron D/F <b>Sluice Valves / Butterfly Valves</b> 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	<b>40048.00</b>	40048.00
	MJP, Section-I (XIII), Sr. 11, Pg 237				
3	Dismantling joint: Providing, erecting and commissioning <b>M.S. Dismantling joint</b> as per requirement and Department's approved drawing and specifications, including machining and rubber rings and suitable for 16 kg/cm <sup>2</sup> 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	<b>8573.00</b>	8573.00
	MJP, PW6				
4	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
	a) Upto 1.5 m	Cum	908.92	<b>319.60</b>	290492.11
	b) From 1.5 m to 3.0 m	Cum	475.47	<b>360.60</b>	171454.31
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
5	<b>Filling available</b> 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	1077.48	<b>103.30</b>	111303.82
6	Providing and constructing <b>B.B. masonry valve chamber</b> 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.				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
a)	1.2 x 1.2 M internal size and depth upto 2.0 M with precast <b>R.C.C. slab cover. SVC</b> (Item No.1, Section 1 xx, MJP DSR 2018-19), pg.357	No	1.00	<b>21349.04</b>	21349.04
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, <b>M-20 grade reinforced cement concrete</b> : All work upto plinth level:				
	ii) M-20 (Thrust Block) BSR-BCD-18;Item-5.33A.1, Pg-87	Cum	12.00	<b>4924.00</b>	59088.00
8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b> BSR-BCD-18; Item-5.22.7; Pg-86	Kg	481.00	<b>76.00</b>	36556.00
9	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like. BSR-BCD-18-Item 2.25; Pg-75	KL	2500.00	<b>92.20</b>	230500.00
10	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete BSR-BCD-18; Sr. No Item-5.9.1, Pg-84	Sq.m	59.00	<b>186.30</b>	10991.70
11	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification BSR - RCD-18- Item- 12.3, P-222	cum	123.99	<b>217.00</b>	26905.83
12	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge. BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	513.92	<b>262.50</b>	134904.58
<b>G)</b>	<b>ROAD RESTORATION AND DISMENTLING WORKS</b>				
13	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b> RCD/SOR-18; Item-2.5-II A; Pg-29	cum	207.00	342.00	70794.00
14	<b>Dismantling of cement concrete pavement</b> 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. RCD/SOR-18; Item-2.6; Pg-29	cum	124.00	1520.00	188480.00
	<b>Cement concrete road Restoration</b>				
15	Supply and stacking of <b>Fly ash</b> conforming to IRC- 58 at site, excluding carriage,loading , unloading & stacking up to any lead (measured stacks will be reduced by20% for payment). BSR-BCD-18; Item-2.39, Pg-77	Cum	50.00	10.00	500.00
16	Filling with available <b>fly ash and earth</b> (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. BSR-BCD-18; Item-2.40, Pg-77	Cum	41.00	103.30	4235.30

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
17	<b>Cement Concrete Pavement</b> (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	4461.00	370263.00
	<b>Reconstruction of Bituminous Asphalt Roads</b>				
18	<b>Water Bound Macadam:</b> (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)				
	<b>Grading II:</b> 100 mm thick	cum	41.00	904.00	37064.00
	<b>Grading III:</b> 100 mm thick	cum	41.00	949.00	38909.00
	BSR-RCD-18-Item 4.9 A (ii) a, Pg-71, BSR-RCD-18-Item 4.9 A(iii) a, Pg-71				
19	<b>Prime coat</b> (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	30.30	12513.90
	BSR-RCD-18-Item 5.1, Pg-87				
20	<b>Tack Coat:</b> 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	11.10	4584.30
	BSR-RCD-18-Item 5.2, Pg-87				
21	<b>Bituminous Macadam</b> (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	5406.00	91902.00
	BSR-RCD-18-Item 5.3 (I), Pg-84				
22	<b>Bituminous Penetration Macadam</b> (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	246.00	101598.00
	BSR-RCD-18-Item 5.4 A, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rate BSR-14 Rs.	Amount in Rs.
23	<b>20mm thick Open-Graded Premix Carpet</b> 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	129.00	53277.00
	SOR-RCD-GoB-18-Item 5.9 B, Pg- 131				
24	<b>Making connection of drain or sewer line</b> 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	554.50	554.50
	BSR - BCD-18-Item- 19.21.3, P-246				
				<b>Sub Total</b>	<b>12882279.39</b>
25	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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		1614815.70
				<b>Sub Total A</b>	<b>14497095.09</b>
26	<b>Carriage of Material</b>				
	Sand	t.km	502.60	9.4	4724.44
	Aggregate	t.km	3375.10	9.4	31725.94
	Bricks	t.km	152.10	9.4	1429.74
				<b>Sub Total B</b>	<b>37880.12</b>
	<b>Total Cost (A+B)</b>				<b>14534975.21</b>

**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-14 Rs.	Amount in Rs.
1	Providing, lowering, laying in trenches, aligning, fixing in position and jointing <b>Ductile Iron (DI) ISI marked K-9 grade S&amp;S pipes</b> 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 BSR-BCD-18-Item 18.72.28; Pg-232	RM	77.00	<b>20875.80</b>	1607436.60
2	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	158.04	<b>319.60</b>	50511.02
b)	From 1.5 m to 3.0 m	Cum	71.33	<b>360.60</b>	25721.87
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	<b>Filling available</b> 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	<b>103.30</b>	16157.40
	BSR-BCD-18-Item 2.26; Pg-75				
4	Providing and laying in position machine batched, machine mixed and machine vibrated <b>design mix cement concrete</b> 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) BSR-BCD-18;Item-5.33A.1, Pg-87	Cum	102.00	<b>4924.00</b>	502248.00
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b>				
	BSR-BCD-18; Item-5.22.7; Pg-86	Kg	1470.00	<b>76.00</b>	111720.00
6	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete BSR-BCD-18; Sr. No Item-5.9.1, Pg-84	Sq.m	161.00	<b>186.30</b>	29994.30
7	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	cum	15.80	<b>217.00</b>	3429.57
	BSR - RCD-18- Item- 12.3, P-222				
8	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	72.96	<b>262.50</b>	19152.74
				<b>Sub Total</b>	<b>2366371.50</b>
9	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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			241115.49
				<b>Sub Total A</b>	<b>2607486.99</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	511.90	9.4	4811.86
	Aggregate	t.km	1040.50	9.4	9780.70
	Bricks	t.km	0.00	9.4	0.00
				<b>Sub Total B</b>	<b>14592.56</b>
	<b>Total Cost (A+B)</b>				<b>2622079.55</b>



**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 <b>Ductile Iron (DI) ISI marked K-9 grade</b> 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 BSR-BCD-18-Item 18.72.28; Pg-232	RM	42.00	<b>20875.80</b>	876783.60
2	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	70.55	<b>319.60</b>	22546.95
b)	From 1.5 m to 3.0 m	Cum	27.05	<b>360.60</b>	9755.16
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
3	<b>Filling available</b> 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	<b>103.30</b>	7061.53
	BSR-BCD-18-Item 2.26; Pg-75				
4	Providing and laying in position machine batched, machine mixed and machine vibrated <b>design mix cement concrete</b> 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) BSR-BCD-18;Item-5.33A.1, Pg-87	Cum	100.00	<b>4924.00</b>	492400.00
5	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated bars TMT-500</b>				
	BSR-BCD-18; Item-5.22.7; Pg-86	Kg	1400.00	<b>76.00</b>	106400.00
6	<b>Centring and shuttering</b> including strutting,propping etc. and removal of form for.				
i)	Foundations, footings, bases of columns etc. for mass concrete BSR-BCD-18; Sr. No Item-5.9.1, Pg-84	Sq.m	150.00	<b>186.30</b>	27945.00
7	<b>Sand Filling</b> in Foundation Trenches as per Drawing & Technical Specification	cum	7.05	<b>217.00</b>	1530.88
	BSR - RCD-18- Item- 12.3, P-222				
8	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.				
	BSR - RCD-18- Item- 3.11, P-45 & RA	Cum	29.24	<b>262.50</b>	7675.64
				<b>Sub Total</b>	<b>1552098.76</b>
9	Providing and supplying ISI standard <b>D.I. specials and fittings</b> 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			100830.11
				<b>Sub Total A</b>	<b>1652928.87</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	511.90	9.4	4811.86
	Aggregate	t.km	1040.50	9.4	9780.70
	Bricks	t.km	0.00	9.4	0.00
				<b>Sub Total B</b>	<b>14592.56</b>
	<b>Total Cost (A+B)</b>				<b>1667521.43</b>

**SEWERAGE SYSTEM FOR GAYA CITY**

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

Pumping Main dias	Qty. from Estimate Sheet													RCC, Flooring and Sand Filling						Bricks				Plaster				Total Quantity in MT																															
	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		Sand	Aggregate	Bricks																												
	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																																
1	800 dia		9.83		15.73	-	-	-	-	-	-	-	-	5.3	7.7	6.7	12.4	13.5	25.2	-	-	-	-	-	-	-	-	-	12.4	25.2	-																												
2	900 dia		12.43		17.06	-	-	-	-	-	-	-	-	6.0	8.7	7.8	14.4	15.6	29.2	-	-	-	-	-	-	-	-	-	14.4	29.2	-																												
	<b>Total</b>	-	22.3	-	32.79	-	-	-	-	-	-	-	-	11.4	16.4	14.6	26.8	29.1	54.5	-	-	-	-	-	-	-	-	26.8	54.5	-																													
																										Rate (Rs./MT.KM)		94		94		94																											
																										Amount (Rs.)		2518		44322		0																											
																										Total amount (INR Lakh)		5118.30																															

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- Outlet Collection Chamber (800 dia) IPS4A PM**

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
1	Earth work in excavation in <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	24.91	319.60	7960.44
b)	From 1.5 m to 3.0 m	Cum	24.91	360.60	8981.64
c)	From 3.0 m to 4.5 m	Cum	5.75	401.60	2307.32
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	103.30	2582.34
	BSR-BCD-18-Item 2.26; Pg-75				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	30.56	262.50	8022.51
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>PCC:</b> 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	9.83	4151.40	40790.91
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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-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	15.73	5270.50	82907.73
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.26	76000.00	95641.59
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	3.83	186.30	713.53
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	64.69	321.30	20784.90
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	6.57	362.60	2382.28
	BSR - BCD-18- Item- 5.9.3, Pg-84				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	722.70
	BSR-BCD-18; Item-19.16; Pg-245				
				<b>Sub Total A</b>	<b>273798</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	124.00	9.4	1165.60
	Aggregate	t.km	252.10	9.4	2369.74
	Bricks	t.km		9.4	0.00
				<b>Sub Total B</b>	<b>3535.34</b>
	<b>Total Cost (A+B)</b>				<b>277333.23</b>

**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 <b>foundation trenches</b> 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.				
	<b>All types of Soil</b>				
a)	Upto 1.5 m	Cum	26.99	319.60	8624.89
b)	From 1.5 m to 3.0 m	Cum	26.99	360.60	9731.33
c)	From 3.0 m to 4.5 m	Cum	6.85	401.60	2752.80
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Excavation work</b> 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.				
	<b>Ordinary Rock (Blasting Prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
	<b>Hard rock (blasting prohibited)</b>				
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-18-Item 2.9.1 and 2.9.3 pg 73, 2.27.2 pg 75				
3	<b>Filling available</b> 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	103.30	2705.53
	BSR-BCD-18-Item 2.26; Pg-75				
4	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	34.64	262.50	9092.10
	BSR - RCD-18- Item- 3.11, P-45 & RA				
5	<b>PCC:</b> 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	12.43	4151.40	51607.02
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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:				
	RCC Grade M -30	Cum	17.06	5270.50	89925.18
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	1.36	76000.00	103736.86
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting,propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	4.02	186.30	748.93
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc.	Sqm	69.14	321.30	22214.68
	BSR - BCD-18- Item- 5.9.2, Pg-84				
	Suspended floors, roofs, landings, balconies and access platform.	Sqm	7.49	362.60	2715.87
	BSR - BCD-18- Item- 5.9.3, Pg-84				
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> 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	722.70
	BSR-BCD-18; Item-19.16; Pg-245				
				<b>Sub Total A</b>	<b>304578</b>
10	<b>Carriage of Material</b>				
	Sand	t.km	143.90	9.4	1352.66
	Aggregate	t.km	292.30	9.4	2747.62
	Bricks	t.km	0.00	9.4	0.00
				<b>Sub Total B</b>	<b>4100.28</b>
	<b>Total Cost (A+B)</b>				<b>308678.17</b>

**SEWERAGE SYSTEM FOR GAYA CITY****Cost Summary - For STP and Miscellaneous Work**

<b>IMMEDIATE REQUIREMENT</b>		<b>Cost in Rs. Lakh</b>
<b>Sr. No.</b>	<b>Name of Sub-work</b>	<b>STP Location</b>
<b>A</b>	<b>Capital Cost for STP (1 Nos. of 30 MLD Module)</b>	2655.00
<b>B</b>	<b>Miscellaneous Works</b>	
1	Internal Road	15.66
2	Approach Road	18.01
3	Compound Wall	85.77
4	Treated Wastewater Disposal Pipes 1000 dia	122.96
5	Material Carrying Charges	5.13
	<b>Total for STP and Miscellaneous Work</b>	<b>2902.53</b>

**SEWERAGE SYSTEM FOR GAYA CITY**

I. Statement of Materials for Sand, Coarse Aggregate, Bricks for Pumping Stations																																			
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 (40 mm thk) M15	Sand Filling	Aggregate for Internal Road Works (m3)				Cement		Sand		Aggregate		Brick Masonry (MT)	Cement	Sand	Bricks	Cement		Sand		Sand	Aggregate	Bricks	Sand (9.40 Rs./7.km)	Aggregate (9.40 Rs./7.km)	Bricks (9.40 Rs./1.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 (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./7.km)	Aggregate (9.40 Rs./7.km)	Bricks (9.40 Rs./1.km)	Total (Rs. in Lakhs)		
<b>4 STP</b>																																			
Common Collection Chamber		1.93		27.35	-	-	-	-				-	7.11	10.24	7.39	13.60	14.78	27.64	-	-	-	-	-	-	-	-	-	13.60	27.64	-	0.01	0.03	-	0.04	
Treated Wastewater Disposal Pipe		1.00	50.00						180.00																										-
Internal Roads									600.00	270.00	90.00	1,795.20															-	1,795.20	-	-	-	1.69	-	1.69	
Approach Roads									690.00	310.50	103.50	2,064.48															-	2,064.48	-	-	-	1.94	-	1.94	
Compound Wall (including MPS)		101.68	319.15		403.54	4,178.72	-	-				-	72.55	104.47	116.09	213.61	232.18	434.18	774.80	16.84	67.37	690.58	12.54	18.06	37.61	69.20	350.18	434.18	774.80	0.33	0.41	0.73	1.47		
<b>Total</b>	-	104.61	369.15	27.35	403.54	4,178.72	-	-	180.00	1,290.00	580.50	193.50	3,859.68	88.90	128.02	317.40	584.02	274.81	513.89	774.80	16.84	67.37	690.58	12.54	18.06	37.61	69.20	<b>363.78</b>	<b>4,373.57</b>	<b>774.80</b>	<b>0.34</b>	<b>4.11</b>	<b>0.73</b>	<b>5.13</b>	



**SEWERAGE SYSTEM FOR GAYA TOWN**  
**COST ESTIMATE- INTERNAL ROAD- STP Site**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	600.00	637.00	382200
	SOR-RCD-18; Item-4.2 (iii); Pg.-61				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	270.00	888.00	239760
	SOR-RCD-18; Item-4.12 ; Pg.-63				
3	<b>Prime coat</b> (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	1800.00	30.30	54540
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	1800.00	11.10	19980
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	90.00	5406.00	486540
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case - II : Type B)	Sqm	1800.00	44.00	79200
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	45.00	6743.00	303435
	BSR-RCD-2018-Item-5.7(i) P-84				
				<b>Total</b>	<b>1565655</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- APPROACH ROAD- STP Site**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	690.00	637.00	439530
	SOR-RCD-18; Item-4.2 (iii); Pg.-61				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	310.50	888.00	275724
	SOR-RCD-18; Item-4.12 ; Pg.-63				
3	<b>Prime coat</b> (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	2070.00	30.30	62721
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	2070.00	11.10	22977
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	103.50	5406.00	559521
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A and B seal coats (Case - II : Type B)	Sqm	2070.00	44.00	91080
	RCD/SOR-2018-Item-5.12(ii); pg.-85				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	51.75	6743.00	348950
	BSR-RCD-2018-Item-5.7(i) P-84				
				<b>Total</b>	<b>1800503</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- COMPOUND WALL- STP Site**

Sr.	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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 <sup>3</sup>	2018.01	319.60	644957.33
2	<b>PCC:</b> 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				
	BSR-BCD-18; Item 4.1.3; Pg-79	m <sup>3</sup>	101.68	4151.40	422101.64
3	<b>Brick work</b> 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	m <sup>3</sup>	403.54	5739.40	2316085.08
	BSR - BCD-18- Item- 6.1.12/1 + 6.3 A; P-93				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-18;Item-13.11.2; Pg-167	m <sup>2</sup>	4178.72	139.90	584602.93
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	353.37	262.50	92759.95
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	1664.64	103.30	171957.62
	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 <sup>3</sup>	206.44	4924.00	1016498.25
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	112.71	5373.10	605610.43
	BSR-BCD-18; Item-5.33A.1, 5.33A.2.1, Pg-87				
8	<b>Centering &amp; Shuttering</b> Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	550.50	186.30	102558.15
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	m <sup>2</sup>	431.60	335.30	144713.80
	BSR - BCD-18- Item- 5.9.5, Pg-84				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	1009.25	425.80	429738.65
	BSR - BCD-18- Item- 5.9.6, Pg-84				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	25.53	76000	1940426.22
	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 <sup>3</sup>	4178.72	15.90	66441.65
	Cost of Compound Wall (without gates)				8538452
			Boundary length		1030
			Cost of 1 m Compound Wall (without gates)		8289.76
11	<b>Gates:</b> 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	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
	<b>Cost of Compound Wall (with gates)</b>				<b>8577407</b>

## SEWERAGE SYSTEM FOR GAYA CITY

## Cost Estimate - Gravity Pipe: STP to River Falgu (1000 dia)

Item No.	Description	Unit	Rate (Rs.)	Quantity	Amount (Rs.)
<b>1</b>	<b>Excavation for Pipeline Trenches</b>				
	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				
<b>a</b>	Upto 1.5 m	Cum	319.60	1,150	3,67,640
<b>b</b>	From 1.5 m to 3.0 m	Cum	360.60	1,074	3,87,149
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
<b>2</b>	<b>Bare Pipe:</b> Manufacturing, providing and supplying spirally welded/ ERW / SAW/ fabricated M.S. pipes (Commercial Quality) including procurement of plates, gas cutting to required size, rolling, tack welding, assembling in suitable lengths to form pipes, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes (Central and local), railway freight, insurance, unloading from railway wagon, loading into truck, transport to stores/ site, unloading, stacking, etc. complete as per IS-3589 and IS-5504 as applicable as per specifications (No negative tolerance in thickness is permissible)	RM	15,388.00	500	76,94,000
	MJP: Section I: (XIV): MS Pipes, Page 263				
<b>3</b>	<b>L, L&amp; J of MS Pipe (Outside Coating &amp; Inside Lining/Epoxy):</b> Excavation, Lowering, Laying, Jointing, Welding in position to correct line and level MS pipe with outer coating and inside cement mortar lining on pedestal upon prepared formation or prepared bedding in trenches the rates include conveyance from store to site of work loading, unloading, joint plastering, hydrotesting etc. complete.	LS	40% of Pipe cost	0.40	30,77,600
<b>4</b>	<b>MS Specials:</b> Providing and supplying ISI standard MS specials and fittings, including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc.	LS	10% of Pipe cost	0.10	7,69,400
<b>Total for 1000mm Dia. Pumping Main</b>					<b>122,95,790</b>

**SEWERAGE SYSTEM FOR GAYA CITY****Cost Summary - For STP and Miscellaneous Work**

		Cost in Rs. Lakh
Sr. No.	Name of Sub-work	STP Location
<b>A</b>	<b>Capital Cost for STP (3 Nos. of 30 MLD Module)</b>	7965.00
<b>B</b>	<b>Miscellaneous Works</b>	
1	Internal Road	26.99
2	Approach Road	17.74
3	Compound Wall	85.77
4	Common Chamber	4.27
5	Treated Wastewater Disposal Pipes 1400 dia	137.58
6	Treated Wastewater Disposal Pipes 1000 dia	122.96
7	Material Carrying Charges	6.45
	<b>Total for STP and Miscellaneous Work</b>	<b>8366.76</b>

**SEWERAGE SYSTEM FOR GAYA CITY**

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 (m <sup>3</sup> )	Plaster (m <sup>2</sup> )	Flooring (40 mm thick) M15		Sand Filling	Aggregate for Internal Road Works (m <sup>3</sup> )				Cement		Sand		Aggregate		Brick Masonry (MT)	Cement	Sand	Bricks	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 (m <sup>2</sup> )	Volume (m <sup>3</sup> )	Volume (m <sup>3</sup> )	WMM Road (Item 1)	WMM Road (Item 2)	BM Road (Item 5)	All Wt (MT) 1870kg/ m <sup>3</sup>	Volume (m <sup>3</sup> )	Wt (MT) 1440kg/ m <sup>3</sup>	Volume (m <sup>3</sup> )	Wt (MT) 1840kg/ m <sup>3</sup>	Volume (m <sup>3</sup> )	Wt (MT) 1870kg/ m <sup>3</sup>	Wt (MT) 1920kg/ m <sup>3</sup>	MT	MT	MT	Volume (m <sup>3</sup> )	Wt (MT) 1440kg/ m <sup>3</sup>	Volume (m <sup>3</sup> )	Wt (MT) 1840kg/ m <sup>3</sup>	Sand	Aggregate	Bricks	Sand (9.40 Rs./km)	Aggregate (9.40 Rs./km)	Bricks (9.40 Rs./km)	Total (Rs. In Lakhs)	
4	<b>STP</b>																																			
	Common Collection Chamber		1.93		27.35	-	-	-	-				-	7.11	10.24	7.39	13.60	14.78	27.64	-	-	-	-	-	-	-	-	-	-	13.60	27.64	-	0.01	0.03	-	0.04
	Treated Wastewater Disposal Pipe		1.00	50.00					180.00																											
	Internal Roads									1,050.00	472.50	157.50	3,141.60																-	3,141.60	-	-	2.95	-	2.95	
	Approach Roads									690.00	310.50	103.50	2,064.48																-	2,064.48	-	-	1.94	-	1.94	
	Compound Wall (including MPS)		101.68	319.15		403.54	4,178.72	-	-				-	72.55	104.47	116.09	213.61	232.18	434.18	774.80	16.84	67.37	690.58	12.54	18.06	37.61	69.20	350.18	434.18	774.80	0.33	0.41	0.73	1.47		
	<b>Total</b>	-	104.61	369.15	27.35	403.54	4,178.72	-	-	180.00	1,740.00	783.00	261.00	5,206.08	88.90	128.02	317.40	584.02	274.81	513.89	774.80	16.84	67.37	690.58	12.54	18.06	37.61	69.20	<b>363.78</b>	<b>5,719.97</b>	<b>774.80</b>	0.34	5.38	0.73	6.45	

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- INTERNAL ROAD- STP Site**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	1050.00	637.00	668850
	SOR-RCD-18; Item-4.2 (iii); Pg.-61				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	472.50	888.00	419580
	SOR-RCD-18; Item-4.12 ; Pg.-63				
3	<b>Prime coat</b> (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	3150.00	30.30	95445
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	3150.00	11.10	34965
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	157.50	5406.00	851445
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying <b>Tack Coat with bitumen emulsion grade 60/70 for BUSG @ 5Kg/10Sqm.</b> 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	3150.00	31.05	97808
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	78.75	6743.00	531011
	BSR-RCD-2018-Item-5.7(i) P-84				
				<b>Total</b>	<b>2699104</b>

**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- APPROACH ROAD- STP Site**

Sr. No.	Item Description	Unit	Qty.	Rate (Rs.)	Amount (Rs)
1	Construction of Granular Sub-Base with Coarse Graded Material (Table- 400-2) : <b>Construction of granular sub-base</b> 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	690.00	637.00	439530
	SOR-RCD-18; Item-4.2 (iii); Pg.-61				
2	Providing, laying, spreading and compacting <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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	310.50	888.00	275724
	SOR-RCD-18; Item-4.12 ; Pg.-63				
3	<b>Prime coat</b> (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	2070.00	30.30	62721
	BSR-RCD-18-Item 5.1, Pg-84				
4	<b>Tack Coat:</b> 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	2070.00	11.10	22977
	BSR-RCD-18-Item 5.2, Pg-84				
5	<b>Bituminous Macadam</b> (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	103.50	5406.00	559521
	BSR-RCD-18-Item 5.3 (i), Pg-84				
6	Providing and applying <b>Tack Coat with bitumen emulsion grade 60/70 for BUSG @ 5Kg/10Sqm.</b> 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	2070.00	31.05	64274
	PWD SoR 2012-13 Item No. 5.2.2; pg no. 51+15%				
7	Providing and laying <b>semi dense bituminous concrete</b> 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.	Cum	51.75	6743.00	348950
	BSR-RCD-2018-Item-5.7(i) P-84				
				<b>Total</b>	<b>1773697</b>



**SEWERAGE SYSTEM FOR GAYA TOWN  
COST ESTIMATE- COMPOUND WALL- STP Site**

Sr.	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
1	Earth work in excavation in <b>foundation trenches</b> 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 <sup>3</sup>	2018.01	319.60	644957.33
2	<b>PCC:</b> 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				
	BSR-BCD-18; Item 4.1.3; Pg-79	m <sup>3</sup>	101.68	4151.40	422101.64
3	<b>Brick work</b> 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	m <sup>3</sup>	403.54	5739.40	2316085.08
	BSR - BCD-18- Item- 6.1.12/1 + 6.3 A; P-93				
4	Plastering: 12 mm cement plaster 1:4 (1 cement:4 coarsed sand)				
	BSR-BCD-18;Item-13.11.2; Pg-167	m <sup>2</sup>	4178.72	139.90	584602.93
5	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	m <sup>2</sup>	353.37	262.50	92759.95
	BSR - RCD-18- Item- 3.11, P-45 & RA				
6	<b>Filling available</b> 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 <sup>3</sup>	1664.64	103.30	171957.62
	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 <sup>3</sup>	206.44	4924.00	1016498.25
	RCC Grade M -20 Above Plinth	m <sup>3</sup>	112.71	5373.10	605610.43
	BSR-BCD-18; Item-5.33A.1, 5.33A.2.1, Pg-87				
8	<b>Centering &amp; Shuttering</b> Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	m <sup>2</sup>	550.50	186.30	102558.15
	BSR - BCD-18- Item- 5.9.1, Pg-84				
	Lintels, beams, plinth bams, griders, bressumers and contilevers.	m <sup>2</sup>	431.60	335.30	144713.80
	BSR - BCD-18- Item- 5.9.5, Pg-84				
	Columns, Pillars, Piers, Abutments, Posts and Struts.	m <sup>2</sup>	1009.25	425.80	429738.65
	BSR - BCD-18- Item- 5.9.6, Pg-84				
9	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	25.53	76000	1940426.22
	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 <sup>3</sup>	4178.72	15.90	66441.65
	Cost of Compound Wall (without gates)				8538452
	Boundary length				1030
	Cost of 1 m Compound Wall (without gates)				8290
11	<b>Gates:</b> 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	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
	<b>Cost of Compound Wall (with gates)</b>				<b>8577407</b>

**SEWERAGE SYSTEM FOR GAYA CITY**  
**COST ESTIMATE- COMMON COLLECTION CHAMBER AT STP**

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	33.06	319.60	10566
b)	From 1.5 m to 3.0 m	Cum	33.06	360.60	11921
c)	From 3.0 m to 4.5 m	Cum	33.06	401.60	13277
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
2	<b>Filling available</b> 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	42.75	103.30	4416
	BSR-BCD-18-Item 2.26; Pg-75				
3	<b>Removal of unserviceable soil</b> with Disposal up to 8 Km etc. complete and as per direction of engineer in charge.	Cum	56.43	262.50	14813
	BSR - RCD-18- Item- 3.11, P-45 & RA				
4	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	100.00	92.20	9220
	BSR-BCD-18-Item 2.25; Pg-75				
5	<b>PCC:</b> 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	1.93	4151.40	8012
	BSR-BCD-18; Item 4.1.3; Pg-79				
6	<b>RCC:</b> 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-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	27.35	5270.50	144148
	BSR-BCD-18; Item-5.33.1 + Item- 5.34.1, Pg-88				
7	<b>Reinforcement</b> for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. <b>Thermo-Mechanically Treated TMT -500</b>	MT	2.19	76000.00	166288
	BSR-BCD-18; Item-5.22.7, Pg-86				
8	<b>Centering &amp; Shuttering</b>				
	Centring and shuttering including strutting, propping etc. and removal of form for.				
	Foundations, footings, bases of columns etc. for mass concrete.	Sqm	6.72	186.30	1252
	BSR - BCD-18- Item- 5.9.1, Pg-84				

Sr. No.	Item Description as per BSR	Unit	Qty	Rates (Rs.)	Amount in Rs.
	Walls (any thickness) including attached pilasters. Butteresses, plinth and string courses etc. BSR - BCD-18- Item- 5.9.2, Pg-84	Sqm	124.20	321.30	39905
9	Providing orange colour <b>safety foot rest of minimum 6 mm thick plastic encapsulated</b> as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786 BSR-BCD-18; Item-19.16; Pg-245	each	12.00	240.90	2891
10	<b>Painting:</b> 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	19.16	15.90	305
	<b>Total</b>				<b>427014</b>

## SEWERAGE SYSTEM FOR GAYA CITY

## Cost Estimate - Gravity Pipe: STP to River Falgu (1400 dia)

Item No.	Description	Unit	Rate (Rs.)	Quantity	Amount (Rs.)
<b>1</b>	<b>Excavation for Pipeline Trenches</b>				
	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				
<b>a</b>	Upto 1.5 m	Cum	319.60	1,208	3,85,917
<b>b</b>	From 1.5 m to 3.0 m	Cum	360.60	1,127	4,06,396
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
<b>2</b>	<b>Bare Pipe:</b> Manufacturing, providing and supplying spirally welded/ ERW / SAW/ fabricated M.S. pipes (Commercial Quality) including procurement of plates, gas cutting to required size, rolling, tack welding, assembling in suitable lengths to form pipes, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes (Central and local), railway freight, insurance, unloading from railway wagon, loading into truck, transport to stores/ site, unloading, stacking, etc. complete as per IS-3589 and IS-5504 as applicable as per specifications (No negative tolerance in thickness is permissible)	RM	21,610.00	400	86,44,000
	MJP: Section I: (XIV): MS Pipes, Page 265				
<b>3</b>	<b>L, L&amp; J of MS Pipe (Outside Coating &amp; Inside Lining/Epoxy):</b> Excavation, Lowering, Laying, Jointing, Welding in position to correct line and level MS pipe with outer coating and inside cement mortar lining on pedestal upon prepared formation or prepared bedding in trenches the rates include conveyance from store to site of work loading, unloading, joint plastering, hydrotesting etc. complete.	LS	40% of Pipe cost	0.40	34,57,600
<b>4</b>	<b>MS Specials:</b> Providing and supplying ISI standard MS specials and fittings, including cost of all labour and material and transportation to stores/ site, loading, unloading including all taxes, etc.	LS	10% of Pipe cost	0.10	8,64,400
<b>Total for 1400mm Dia. Pumping Main</b>					<b>137,58,314</b>

## SEWERAGE SYSTEM FOR GAYA CITY

## Cost Estimate - Gravity Pipe: STP to River Falgu (1000 dia)

Item No.	Description	Unit	Rate (Rs.)	Quantity	Amount (Rs.)
<b>1</b>	<b>Excavation for Pipeline Trenches</b>				
	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				
<b>a</b>	Upto 1.5 m	Cum	319.60	1,150	3,67,640
<b>b</b>	From 1.5 m to 3.0 m	Cum	360.60	1,074	3,87,149
	BSR-BCD-18-Item 2.8.1; Pg-72 & 2.27.1; Pg.-75				
<b>2</b>	<b>Bare Pipe:</b> Manufacturing, providing and supplying spirally welded/ ERW / SAW/ fabricated M.S. pipes (Commercial Quality) including procurement of plates, gas cutting to required size, rolling, tack welding, assembling in suitable lengths to form pipes, welding on automatic welding machine and forming 'V' edge on both ends of pipes including all taxes (Central and local), railway freight, insurance, unloading from railway wagon, loading into truck, transport to stores/ site, unloading, stacking, etc. complete as per IS-3589 and IS-5504 as applicable as per specifications (No negative tolerance in thickness is permissible)	RM	15,388.00	500	76,94,000
	MJP: Section I: (XIV): MS Pipes, Page 263				
<b>3</b>	<b><u>L, L&amp; J of MS Pipe (Outside Coating &amp; Inside Lining/Epoxy):</u></b> Excavation, Lowering, Laying, Jointing, Welding in position to correct line and level MS pipe with outer coating and inside cement mortar lining on pedestal upon prepared formation or prepared bedding in trenches the rates include conveyance from store to site of work loading, unloading, joint plastering, hydrotesting etc. complete.	LS	40% of Pipe cost	0.40	30,77,600
<b>4</b>	<b><u>MS Specials:</u></b> Providing and supplying ISI standard MS specials and fittings, including cost of all labour and material and transportation to stores / site, loading, unloading including all taxes, etc.	LS	10% of Pipe cost	0.10	7,69,400
<b>Total for 1000mm Dia. Pumping Main</b>					<b>122,95,790</b>

**Operation and Maintenance Cost (in Rs. Lakhs)****A. For Seven Years O&M****I Without Power**

Sr.	O&M Cost in Lakh Rs.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	Collection System	111.34	111.34	111.34	111.34	111.34	111.34	111.34
2	Pumping Station	104.48	104.48	104.48	104.48	104.48	104.48	104.48
3	Pumping Main	9.41	9.41	9.41	9.41	9.41	9.41	9.41
4	STP- 30 MLD SBR Process	172.98	178.74	184.50	207.52	207.52	207.52	207.52
	<b>TOTAL</b>	<b>398.22</b>	<b>403.98</b>	<b>409.73</b>	<b>432.76</b>	<b>432.76</b>	<b>432.76</b>	<b>432.76</b>

**II With Power**

Sr.	O&M Cost in Lakh Rs.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	Collection System	111.34	111.34	111.34	111.34	111.34	111.34	111.34
2	Pumping Station	259.87	274.67	282.07	326.47	437.46	467.05	504.05
3	Pumping Main	9.41	9.41	9.41	9.41	9.41	9.41	9.41
4	STP- 30 MLD SBR Process	318.56	334.71	350.86	415.48	415.48	415.48	415.48
	<b>TOTAL</b>	<b>699.18</b>	<b>730.13</b>	<b>753.69</b>	<b>862.70</b>	<b>973.69</b>	<b>1003.29</b>	<b>1040.29</b>

**B. For Two Years O&M****I Without Power**

Sr.	O&M Cost in Lakh Rs.	Year 2021	Year 2022
1	Collection System	111.34	111.34
2	Pumping Station	104.48	104.48
3	Pumping Main	9.41	9.41
4	STP- 30 MLD SBR Process	172.98	178.74
	<b>TOTAL</b>	<b>398.22</b>	<b>403.98</b>

**II With Power**

Sr.	O&M Cost in Lakh Rs.	Year 2021	Year 2022
1	Collection System	111.34	111.34
2	Pumping Station	259.87	274.67
3	Pumping Main	9.41	9.41
4	STP- 30 MLD SBR Process	318.56	334.71
	<b>TOTAL</b>	<b>699.18</b>	<b>730.13</b>

**III Power Cost**

S. No	O&M Cost in Lakh Rs.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	Pumping Station	155.39	170.19	177.59	221.98	332.97	362.57	399.57
2	STP - 30MLD SBR process	145.57	155.97	166.37	207.96	207.96	207.96	207.96
	<b>TOTAL</b>	<b>300.96</b>	<b>326.16</b>	<b>343.95</b>	<b>429.94</b>	<b>540.93</b>	<b>570.53</b>	<b>607.53</b>

**Operation and Maintenance Cost (in Rs. Lakhs): Without Power**

Sr.	O&M Cost in Lakh Rs.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
<b>1</b>	<b>Collection System</b>						Amount in Lakhs	
	IPS2 (B1)	7.82	7.82	7.82	7.82	7.82	7.82	7.82
	IPS2A (B1A)	7.48	7.48	7.48	7.48	7.48	7.48	7.48
	IPS3 (B2)	7.34	7.34	7.34	7.34	7.34	7.34	7.34
	IPS4 (B3)	10.04	10.04	10.04	10.04	10.04	10.04	10.04
	IPS4A (B3A)	16.85	16.85	16.85	16.85	16.85	16.85	16.85
	IPS5 (B4)	5.83	5.83	5.83	5.83	5.83	5.83	5.83
	IPS5A (B4A)	5.27	5.27	5.27	5.27	5.27	5.27	5.27
	IPS6 (B5)	15.72	15.72	15.72	15.72	15.72	15.72	15.72
	MPS	34.98	34.98	34.98	34.98	34.98	34.98	34.98
	<b>Sub Total</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>
<b>2</b>	<b>Pumping Station</b>							
	IPS2 (B1)	10.23	10.23	10.23	10.23	10.23	10.23	10.23
	IPS2A (B1A)	11.81	11.81	11.81	11.81	11.81	11.81	11.81
	IPS3 (B2)	10.24	10.24	10.24	10.24	10.24	10.24	10.24
	IPS4 (B3)	10.65	10.65	10.65	10.65	10.65	10.65	10.65
	IPS4A (B3A)	11.75	11.75	11.75	11.75	11.75	11.75	11.75
	IPS5 (B4)	11.25	11.25	11.25	11.25	11.25	11.25	11.25
	IPS5A (B4A)	12.01	12.01	12.01	12.01	12.01	12.01	12.01
	IPS6 (B5)	12.50	12.50	12.50	12.50	12.50	12.50	12.50
	MPS	14.05	14.05	14.05	14.05	14.05	14.05	14.05
	<b>Sub Total</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>	<b>104.48</b>
<b>3</b>	<b>Pumping Main</b>							
	IPS2 to Zone B1A (MH 1668)	0.67	0.67	0.67	0.67	0.67	0.67	0.67
	IPS2A to Zone B6 (MH 2554)	1.60	1.60	1.60	1.60	1.60	1.60	1.60
	IPS3 to Zone B3 (MH 7678)	1.08	1.08	1.08	1.08	1.08	1.08	1.08
	IPS4 to IPS4A	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	IPS4A to Zone B6 (MH 18)	3.20	3.20	3.20	3.20	3.20	3.20	3.20
	IPS5 to Zone B5 (MH 3373)	0.74	0.74	0.74	0.74	0.74	0.74	0.74
	IPS5A to Zone B5 (MH 3371)	0.60	0.60	0.60	0.60	0.60	0.60	0.60
	IPS6 to Zone B6 (MH 623)	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	MPS to STP	0.08	0.08	0.08	0.08	0.08	0.08	0.08
	<b>Sub Total</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>
<b>4</b>	<b>STP</b>	172.98	178.74	184.50	207.52	207.52	207.52	207.52
	<b>TOTAL</b>	<b>398.22</b>	<b>403.98</b>	<b>409.73</b>	<b>432.76</b>	<b>432.76</b>	<b>432.76</b>	<b>432.76</b>

Sr.	Components	Year 2018	Year 2019	Year 2020
1	Collection System	25%	45%	30%
2	Pumping Station	25%	75%	
3	Pumping Main	35%	65%	
4	STP	20%	45%	35%
5	Sewer Cleaning Equipment	-	-	100%

Sr.	Components	Year 2018	Year 2019	Year 2020
1	Collection System	5567.21	10020.98	6680.65
2	Pumping Station	743.43	2230.29	
3	Pumping Main	658.60	1223.12	
4	STP	587.48	1321.83	1028.09
5	Sewer Cleaning Equipment	-	-	78.90
	<b>Sub Total</b>	<b>7556.72</b>	<b>14796.22</b>	<b>7787.64</b>
	<b>Total</b>	<b>30140.58</b>		

**Operation and Maintenance Cost (in Rs. Lakhs): With Power**

Sr.	O&M Cost in Lakh Rs.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
<b>1</b>	<b>Collection System</b>						Amount in Lakhs	
	IPS2 (B1)	7.82	7.82	7.82	7.82	7.82	7.82	7.82
	IPS2A (B1A)	7.48	7.48	7.48	7.48	7.48	7.48	7.48
	IPS3 (B2)	7.34	7.34	7.34	7.34	7.34	7.34	7.34
	IPS4 (B3)	10.04	10.04	10.04	10.04	10.04	10.04	10.04
	IPS4A (B3A)	16.85	16.85	16.85	16.85	16.85	16.85	16.85
	IPS5 (B4)	5.83	5.83	5.83	5.83	5.83	5.83	5.83
	IPS5A (B4A)	5.27	5.27	5.27	5.27	5.27	5.27	5.27
	IPS6 (B5)	15.72	15.72	15.72	15.72	15.72	15.72	15.72
	MPS	34.98	34.98	34.98	34.98	34.98	34.98	34.98
	<b>Sub Total</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>	<b>111.34</b>
<b>2</b>	<b>Pumping Station</b>							
	IPS2 (B1)	12.78	13.02	13.15	13.88	15.70	16.19	16.80
	IPS2A (B1A)	15.93	16.32	16.51	17.69	20.63	21.41	22.39
	IPS3 (B2)	12.05	12.22	12.31	12.82	14.11	14.46	14.89
	IPS4 (B3)	22.16	23.26	23.81	27.10	35.32	37.51	40.26
	IPS4A (B3A)	34.79	36.98	38.08	44.66	61.11	65.49	70.98
	IPS5 (B4)	13.80	14.04	14.16	14.89	16.71	17.20	17.80
	IPS5A (B4A)	14.35	14.57	14.68	15.35	17.03	17.47	18.03
	IPS6 (B5)	35.53	37.72	38.82	45.40	61.85	66.23	71.72
	MPS	98.49	106.54	110.56	134.69	195.00	211.09	231.19
	<b>Sub Total</b>	<b>259.87</b>	<b>274.67</b>	<b>282.07</b>	<b>326.47</b>	<b>437.46</b>	<b>467.05</b>	<b>504.05</b>
<b>3</b>	<b>Pumping Main</b>							
	IPS2 to Zone B1A (MH 1668)	0.67	0.67	0.67	0.67	0.67	0.67	0.67
	IPS2A to Zone B6 (MH 2554)	1.60	1.60	1.60	1.60	1.60	1.60	1.60
	IPS3 to Zone B3 (MH 7678)	1.08	1.08	1.08	1.08	1.08	1.08	1.08
	IPS4 to IPS4A	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	IPS4A to Zone B6 (MH 18)	3.20	3.20	3.20	3.20	3.20	3.20	3.20
	IPS5 to Zone B5 (MH 3373)	0.74	0.74	0.74	0.74	0.74	0.74	0.74
	IPS5A to Zone B5 (MH 3371)	0.60	0.60	0.60	0.60	0.60	0.60	0.60
	IPS6 to Zone B6 (MH 623)	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	MPS to STP	0.08	0.08	0.08	0.08	0.08	0.08	0.08
	<b>Sub Total</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>	<b>9.41</b>
<b>4</b>	<b>STP</b>	318.56	334.71	350.86	415.48	415.48	415.48	415.48
	<b>TOTAL</b>	<b>699.18</b>	<b>730.13</b>	<b>753.69</b>	<b>862.70</b>	<b>973.69</b>	<b>1003.29</b>	<b>1040.29</b>

Sr.	Components	Year 2018	Year 2019	Year 2020
1	Collection System	25%	45%	30%
2	Pumping Station	25%	75%	
3	Pumping Main	35%	65%	
4	STP	20%	45%	35%
5	Sewer Cleaning Equipment	-	-	100%

Sr.	Components	Year 2018	Year 2019	Year 2020
1	Collection System	5567.21	10020.98	6680.65
2	Pumping Station	743.43	2230.29	
3	Pumping Main	658.60	1223.12	
4	STP	587.48	1321.83	1028.09
5	Sewer Cleaning Equipment	-	-	78.90
	<b>Sub Total</b>	<b>7556.72</b>	<b>14796.22</b>	<b>7787.64</b>
	<b>Total</b>	<b>30140.58</b>		



**Table: Operation and Maintenance Charges for Collection System**

Cost in Rs.Lakh

<b>Sr. No.</b>	<b>Description</b>	<b>Zones</b>	<b>Total cost</b>	<b>Maintenance charges (0.5% of total cost)</b>
1	O and M Charges for sewage collection system	B1 (IPS2)	1564.09	7.82
2	O and M Charges for sewage collection system	B1 (IPS2A)	1496.70	7.48
3	O and M Charges for sewage collection system	B2	1468.72	7.34
4	O and M Charges for sewage collection system	B3 (IPS4)	2007.38	10.04
5	O and M Charges for sewage collection system	B3 (IPS4A)	3369.40	16.85
6	O and M Charges for sewage collection system	B4 (IPS5)	1166.45	5.83
7	O and M Charges for sewage collection system	B4A (IPS5A)	1054.69	5.27
8	O and M Charges for sewage collection system	B5	3144.87	15.72
9	O and M Charges for sewage collection system	B6	6996.54	34.98
<b>Annual expected expenditure (Rs. In Lakh)</b>				<b>111.34</b>

**Operation and Maintenance Cost - IPS and MPS**

**Table 1: Manpower Cost**

(Cost in Lakh INR)

S. No.	PS	Avg. Flow (MLD) 2033	Position	No.	Salary (Rs./Month)	Watchman	Salary (Rs./Month)	Total Cost (Rs.) monthly	Total Cost yearly
1	IPS2 (B1)	4.20	Operators	3	12,000	2	8,000	52000	6.24
2	IPS2A (B1A)	8.10	Operators	3	12,000	2	8,000	52000	6.24
3	IPS3 (B2)	2.50	Operators	3	12,000	2	8,000	52000	6.24
4	IPS4 (B3)	6.80	Operators	3	12,000	2	8,000	52000	6.24
5	IPS4A (B3A)	18.90	Operators	3	12,000	2	8,000	52000	6.24
6	IPS5 (B4)	4.20	Operators	3	12,000	2	8,000	52000	6.24
7	IPS5A (B4A)	4.00	Operators	3	12,000	2	8,000	52000	6.24
8	IPS6 (B5)	25.50	Operators	3	12,000	2	8,000	52000	6.24
9	MPS (B6)	72.50	Operators	3	12,000	2	8,000	52000	6.24
								<b>Total</b>	<b>56.16</b>

**Table 2: Maintenance Cost**

S. No.	PS	Breakup of Capital Cost						Maint. Cost	Maint. cost. Yearly
		Capital Cost	Civil	Mech.	Elect.	I&C	Maint. Cost		
			55%	15%	15%	15%	0.5%		
1	IPS2 (B1)	245.27	134.90	36.79	36.79	36.79	3.99	3.99	
2	IPS2A (B1A)	342.84	188.56	51.43	51.43	51.43	5.57	5.57	
3	IPS3 (B2)	246.40	135.52	36.96	36.96	36.96	4.00	4.00	
4	IPS4 (B3)	271.08	149.09	40.66	40.66	40.66	4.41	4.41	
5	IPS4A (B3A)	339.38	186.66	50.91	50.91	50.91	5.51	5.51	
6	B4 (IPS5)	308.15	169.48	46.22	46.22	46.22	5.01	5.01	
7	B4A (IPS5A)	354.96	195.23	53.24	53.24	53.24	5.77	5.77	
8	IPS6 (B5)	385.02	211.76	57.75	57.75	57.75	6.26	6.26	
9	MPS (B6)	480.61	264.34	72.09	72.09	72.09	7.81	7.81	
								<b>Total</b>	<b>48.32</b>

**Table 3: Power Cost**

S. No.	PS	Avg. Flow 2033 MLD	Pump Config.	Motor kW	Total Units/ day (KWh)	Ave. (KWh/mon)	Ave. power (KWh/ Yr)	Power Unit Cost (Rs./Kwh)	Power Cost, Yearly
1	IPS2 (B1)	4.20	4W+0S	15	1380	41400	110244	8	8.82
2	IPS2A (B1A)	8.10	4W+0S	30	2760	82800	177528	8	14.20
3	IPS3 (B2)	2.50	4W+0S	15	1380	41400	77880	8	6.23
4	IPS4 (B3)	6.80	4W+0S	15	1380	41400		8	39.74
5	IPS4A (B3A)	18.90	4W+0S	30	2760	82800		8	79.49
6	IPS5 (B4)	4.20	4W+0S	15	1380	41400	110004	8	8.80
7	IPS5A (B4A)	4.00	4W+0S	15	1380	41400	101028	8	8.08
8	IPS6 (B5)	25.50	4W+0S	30	2760	82800		8	79.49
9	MPS (B6)	72.50	4W+0S	110	10120	303600		8	291.46
								<b>Total</b>	<b>536.31</b>
<b>Total O&amp;M Cost (Rs. Lakh)</b>									<b>640.79</b>

**Flow Generation**

**Manpower Cost**

Year	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027	Remarks
MLD	21.00	23.00	24.00	30.00	45.00	49.00	54.00	72.48
% applied	29%	32%	33%	41%	62%	68%	75%	
S. No.								
1	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
2	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
3	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
4	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
5	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
6	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
7	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
8	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
9	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24

**Maintenance Cost**

S. No.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	3.99	3.99	3.99	3.99	3.99	3.99	3.99
2	5.57	5.57	5.57	5.57	5.57	5.57	5.57
3	4.00	4.00	4.00	4.00	4.00	4.00	4.00
4	4.41	4.41	4.41	4.41	4.41	4.41	4.41
5	5.51	5.51	5.51	5.51	5.51	5.51	5.51
6	5.01	5.01	5.01	5.01	5.01	5.01	5.01
7	5.77	5.77	5.77	5.77	5.77	5.77	5.77
8	6.26	6.26	6.26	6.26	6.26	6.26	6.26
9	7.81	7.81	7.81	7.81	7.81	7.81	7.81

**Power Cost**

S. No.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	2.56	2.80	2.92	3.65	5.48	5.96	6.57
2	4.11	4.51	4.70	5.88	8.82	9.60	10.58
3	1.81	1.98	2.06	2.58	3.87	4.21	4.64
4	11.52	12.61	13.16	16.45	24.68	26.87	29.61
5	23.03	25.22	26.32	32.90	49.35	53.74	59.22
6	2.55	2.79	2.91	3.64	5.46	5.95	6.56
7	2.34	2.56	2.68	3.35	5.02	5.46	6.02
8	23.03	25.22	26.32	32.90	49.35	53.74	59.22
9	84.45	92.49	96.51	120.64	180.95	197.04	217.14

**Total Cost**

S. No.	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
1	12.78	13.02	13.15	13.88	15.70	16.19	16.80
2	15.93	16.32	16.51	17.69	20.63	21.41	22.39
3	12.05	12.22	12.31	12.82	14.11	14.46	14.89
4	22.16	23.26	23.81	27.10	35.32	37.51	40.26
5	34.79	36.98	38.08	44.66	61.11	65.49	70.98
6	13.80	14.04	14.16	14.89	16.71	17.20	17.80
7	14.35	14.57	14.68	15.35	17.03	17.47	18.03
8	35.53	37.72	38.82	45.40	61.85	66.23	71.72
9	98.49	106.54	110.56	134.69	195.00	211.09	231.19
<b>Total for 7 Years</b>		<b>259.87</b>	<b>274.67</b>	<b>282.07</b>	<b>326.47</b>	<b>437.46</b>	<b>504.05</b>

### Operation and Maintenance Charges for Pumping Mains

Cost in Rs.Lakh

Sr. No.	Description	IPS	Total cost	Maintenance charges (0.5% of total cost)
1	Pumping Main from IPS2 to Zone B1A (MH 1668)	IPS2	134.92	0.67
2	Pumping Main from IPS2A to Zone B6 (MH 2554)	IPS2A	319.79	1.60
3	Pumping Main from IPS3 to Zone B3 (MH 7678)	IPS3	215.40	1.08
4	Pumping Main from IPS4 to IPS4A	IPS4	144.85	0.72
5	Pumping Main from IPS4A to Zone B6 (Manhole No. 18)	IPS4A	639.66	3.20
6	Pumping Main from IPS5 to Zone B5 (MH 3373)	IPS5	147.64	0.74
7	Pumping Main from IPS5A to Zone B5 (MH 3371)	IPS5A	119.77	0.60
8	Pumping Main from IPS6 to Zone B6 (Manhole No. 623)	IPS6	143.54	0.72
9	Pumping Main from MPS to STP	MPS	16.16	0.08
<b>Annual expected expenditure (Rs. In Lakh)</b>				<b>9.41</b>

**Table: Operation and Maintenance Cost STP**

Table 1: Manpower Cost				Flow MLD	30
Sl.	Personnel	Nos.	Salary Rs./month	Total Cost Rs./month	
1	Plant Manager (Common for all modules)	1	30,000	30,000	
2	Chemist	1	15,000	15,000	
3	Mechanic/Fitter (One for each Modules)	1	12,000	12,000	
4	Electrician (One for each Modules)	1	12,000	12,000	
5	Plant Operators (4 for each module)	4	12,000	48,000	
6	Helpers (4 for each Module)	4	8,000	32,000	
7	Watchmen ( Common)	9	8,000	72,000	
8	Gardener ( Common)	3	6,000	18,000	
	Total (Rs./month)			2,39,000	
	Total Cost, yearly (INR in Lakh)				<b>28.68</b>

**Table 2: Chemical Consumption Cost**

Sr. No	Chemical	Qty Kg/Day	Rate Rs/Kg	Total Cost Rs./day
1	Chlorine @ 3 mg/l	90	18	1,620
2	Dewatering Polymer @ 1.50 kg/ton of dry solids	14.34	350	5,019
	Total Rs. /Day			6,639
	Total Rs./m <sup>3</sup>			0.221
	Total Cost, yearly (INR in Lakh)			<b>24.23</b>

**Table 3: Sludge Disposal Cost**

Sr. No	Description	Qty (m3/day)	Unit rate (Rs./m3)	Amount (Rs.)
1	Dewatered Sludge (Qty (m3/day) = Sludge (Kg/day)/Consistency 20%/1000)	47.790	500	23,895
2	Fine Screenings @ 45 lts/MLD (Qty(m3/day)= Flow (MLD)x 0.045)	1.350	500	675
3	Grit @ 0.004-0.037 m <sup>3</sup> /MLD (Qty (m3/day)= Flow (MLD)x0.022)	0.660	500	330
	Total (Rs./day)			24,900
	Total (Rs. /m <sup>3</sup> )			0.830
	Total Cost, yearly (INR in Lakh)			<b>90.89</b>

**Table 4: Maintenance Cost**

Breakup of Capital Cost (From design and estimate)		Break up of Maintenance cost, Yearly	
Civil	Mechanical, Electrical and Instrumentation works	Civil	Mech., Elec. and Instru. works (INR in Lakh)
		1.5%	3.0%
1062	1593	15.93	47.79
			<b>63.72</b>

**Table 5: Power Cost**

S. No.	Capacity (MLD)	Total Units in a day (Kwh)	Power Charges (Rs./Kwh)	Power Cost, Yearly (INR in Lakhs)
1	30 MLD	7122	8	<b>207.96</b>

Total amount (in Rs. Lakh) 30 MLD **415.48**

Flow Generation								
Sr. No	Year	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	Year 2027
	MLD	21	23	24	30	30	30	30
	% of flow generation	70%	75%	80%	100%	100%	100%	100%
1	Manpower	28.68	28.68	28.68	28.68	28.68	28.68	28.68
2	Chemical Consumption	16.96	18.17	19.38	24.23	24.23	24.23	24.23
3	Sludge Disposal	63.62	68.17	72.71	90.89	90.89	90.89	90.89
4	Maintenance	63.72	63.72	63.72	63.72	63.72	63.72	63.72
5	Power Cost	145.57	155.97	166.37	207.96	207.96	207.96	207.96
6	<b>Total</b>	<b>318.56</b>	<b>334.71</b>	<b>350.86</b>	<b>415.48</b>	<b>415.48</b>	<b>415.48</b>	<b>415.48</b>

**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/m <sup>3</sup>	Volume (m3)	Wt (MT) 1840kg/m <sup>3</sup>	Volume (m3)	Wt (MT) 1870kg/m <sup>3</sup>	25 thk m2 (1:3)	Volume (m3)	Sand Wt (MT) 1840kg/m <sup>3</sup>	No. of MH	Sand (MT)	Aggregate (MT)	No. of MH	Sand (MT)	Aggregate (MT)	No. of MH	Sand (MT)	Aggregate (MT)	No. of MH
900	D	2.0	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900	D	2.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
900	D	3.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
900	D	3.5	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	0.00	0.00	0.00	0.00	0.00	0.00	2
900	D	4.0	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	0.00	0.00	0.00	0.00	0.00	0.00	7
900	D	4.5	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	0.00	0.00	7	23.45	42.77	13	
900	D	5.0	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	0.00	5	18.10	32.75	16		
900	D	5.5	1.19	5.62	1.19	1.71	1.87	3.44	3.74	6.99	13.14	0.33	0.46	0.00	0.00	5	19.5	34.95	0.00	0.00	0.00	0.00	0.00	0.00	10	
900	D	6.0	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	0.00	0.00	0.00	0.00	5	
900	D	6.5	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	0.00	0.00	0.00	0.00	1	
900	D	7.0	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	0.00	0.00	0.00	0.00	1	
900	D	7.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
900	D	8.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
900	D	8.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
900	D	9.0	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1
900	D	9.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	2.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	2.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	3.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	3.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	4.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	4.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	5.0	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	0.00	3	12.51	22.62	0.00	0.00	1
1000/1100	E	5.5	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	0.00	0.00	0.00	14	62.44	112.28	0.00	0.00	2
1000/1100	E	6.0	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	0.00	0.00	0.00	3	14.37	25.53	0.00	0.00	5
1000/1100	E	6.5	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	0.00	0.00	0.00	0.00	0.00	0.00	3
1000/1100	E	7.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	8.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1000/1100	E	8.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	2.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	2.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	3.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	3.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	4.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	4.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	5.0	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	0.00	0.00	0.00	2	9.92	17.96	0.00	0.00	1
1200	F	5.5	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	0.00	0.00	0.00	6	31.86	57.24	0.00	0.00	1
1200	F	6.0	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	0.00	0.00	0.00	4	22.64	40.40	0.00	0.00	1
1200	F	6.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1200	F	7.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	2.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	2.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	3.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	3.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	4.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	4.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	5.0	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	5.5	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	0.00	0.00	0.00	0.00	0.00	0.00	1
1400	G	6.0	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										

	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		45
	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		20
	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		10
	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		7
	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		2
	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		1
	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		2
	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		4
	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		3
	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		12
	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		15
	<b>Total</b>																	<b>0</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>149</b>	<b>264.9</b>	<b>44</b>	<b>195</b>	<b>351.55</b>	<b>208</b>

Summary

	B3	B3A	B5	B6
Sand	0	148.54	195.29	1445.97
Aggregate	0	264.9	351.55	2608.29
Bricks	-	-	-	-

Zone B6		
Sand (MT)	Aggregate (MT)	(MT= 1000 kg)
0.00	0.00	
2.40	4.60	
2.88	5.46	
5.90	10.96	
21.56	39.69	
43.55	79.43	
57.92	104.80	
39.00	69.90	
20.85	37.20	
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	
0.00	0.00	
0.00	0.00	
8.92	16.04	
23.95	42.55	
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	
6.11	10.60	
77.76	134.40	
48.23	82.60	
7.27	12.40	
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	

#####	807.75	
#####	367.20	
99.00	187.90	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
65.66	124.11	
19.10	36.12	
0.00	0.00	
0.00	0.00	
0.00	0.00	
5.68	9.35	
11.98	19.44	
25.24	40.48	
19.89	31.47	
83.40	130.32	
#####	168.60	
<b>1446</b>	<b>2608.29</b>	



## Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -E)									
S.no	DEPTH - D=2 m	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Exacavation</b>								
	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
						<b>12.26</b>	Cum		
<b>2</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>3</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>4</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>2.71</b>	Cum.	4902.30	13299.35
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>298.00</b>	Kg	76.00	22648.00
<b>6</b>	<b>Shuttering</b>								
	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					<b>23.37</b>	Sqm.	186.30	4353.38
<b>7</b>	<b>CI Steps-5 Kg</b>	3	-	-	-	<b>3.00</b>	No's	240.9	722.70
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	8.26			8.26	Cum	262.5	2166.98
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>1528.10</b>
<b>10</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		2.69				Sqm	343.22	<b>922.32</b>
<b>11</b>	<b>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</b>		4.00				Cum	103.3	<b>413.42</b>
	<b>Total Cost</b>								<b>55618.98</b>

Detailed Estimate : RCC M 20 Manholes for Sewers= 900 mm dia (TYPE -E)									
								2.5	
S.No.	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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	<b>0.24</b>		401.60	94.66
						14.38	Cum		
<b>2</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	<b>0.22</b>			
						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			
						<b>1.67</b>			
						1.19	Cum	4151.40	4924.06
<b>3</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	<b>-0.05</b>			
						0.11	Cum	4681.30	509.59
<b>4</b>	<b>RCC - M20 Grade</b>								
	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			
	For walls	1	5.34	0.15	2.30	1.84			
		1	0.15	0.50	1.15	<b>0.09</b>			
						<b>3.15</b>	Cum.	4902.30	15446.82
<b>5</b>	<b>Reinforcement Steel</b>	1.00	-	-	-	<b>347.00</b>	Kg	76.00	26372.00
<b>6</b>	<b>Shuttering</b>								
	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			<b>1.89</b>			
	<b>Total</b>					<b>28.39</b>	Sqm.	186.30	5288.36
<b>7</b>	<b>CI Steps-5 Kg</b>	4	-	-	-	4.00	No's	240.9	963.60
8	Disposal of Surplus earth upto 8km lead beyond 50m intial lead	1.00	9.03			9.03	Cum	262.5	2371.06
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>1528.10</b>
<b>10</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		4.18				Sqm	343.22	<b>1434.72</b>
<b>11</b>	<b>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</b>		5.35				Cum	103.3	<b>552.26</b>
	<b>Total Cost</b>								<b>64295.28</b>

Detailed Estimate : RCC M 20 Manholes for Sewers=900 mm dia (TYPE -E)									
DEPTH - D=3.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	<b>Earthwork Excavation</b>								
	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	<b>2.59</b>		401.60	1041.31
						16.74	Cum		
2	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		0.55	2.59		126.4	327.74
						<b>2.59</b>	Sqm.		
3	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	<b>For channel portion(Circular portion)</b>	1	0.48		1.55	<b>0.74</b>			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						<b>1.19</b>	Cum	4151.40	4924.06
4	<b>PCC - M20 Grade</b>								
	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
5	<b>RCC - M20 Grade</b>								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	2.69		0.20	<b>0.54</b>			
	<b>For circular opening</b>	-1	0.25		0.20	<b>-0.05</b>			
	<b>For walls</b>	1.00	5.34	0.15	2.80	<b>2.24</b>			
		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	<b>Shuttering</b>								
	<b>For foundation</b>	1	6.44		0.30	<b>1.93</b>			
	<b>For RCC - wall</b>	2	5.34		2.80	29.91			
	For coverslab	1.00	1.89			1.89			
	<b>Total</b>					33.73	Sqm.	186.30	6283.33
8	<b>CI Steps-5 Kg</b>	6.00	-	-	-	6.00	No's	240.9	1445.40
9	<b>Disposal of Surplus earth upto 8km lead</b>	1.00	10.05			10.05	Cum	262.5	2637.02
10	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
11	<b>Internal Lining by High Alumina Cement (1:3)</b>		<b>5.67</b>				Sqm	343.22	1947.13
12	<b>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</b>		<b>6.69</b>				Cum	<b>103.3</b>	<b>691.09</b>
	<b>Total Cost</b>								<b>75706.08</b>

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -E)									
DEPTH - D=3.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	<b>Earthwork Excavation</b>								
	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	<b>4.95</b>		401.60	1987.95
						19.09	Cum		
2	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.05	4.95		126.4	625.69
						<b>4.95</b>	Sqm.		
3	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						2.86			
	Deductions								
	<b>For channel portion(Circular portion)</b>	1	0.48		1.55	<b>0.74</b>			
	Rectangular portion	1	1.10	1.55	0.55	0.94			
						1.67			
						<b>1.19</b>	Cum	4151.40	4924.06
4	<b>PCC - M20 Grade</b>								
	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
5	<b>RCC - M20 Grade</b>								
	For foundation	1	3.30		0.35	1.16			
	For coverslab	1	0.58		0.20	<b>0.12</b>			
	<b>For circular opening</b>	-1	0.25		0.20	<b>-0.05</b>			
	<b>For walls</b>	1.00	5.34	0.15	3.30	<b>2.64</b>			
		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	<b>Shuttering</b>								
	<b>For foundation</b>	1	6.44		0.30	<b>1.93</b>			
	<b>For RCC - wall</b>	2	5.34		3.30	35.25			
	For coverslab	1.00	1.89			1.89			
	<b>Total</b>					39.07	Sqm.	186.30	7278.31
8	<b>CI Steps-5 Kg</b>	8.00	-	-	-	8.00	No's	240.9	1927.20
9	<b>Disposal of Surplus earth upto 8km lead</b>	1.00	11.06			11.06	Cum	262.5	2902.98
10	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
11	<b>Internal Lining by High Alumina Cement (1:3)</b>		7.17				Sqm	343.22	2459.53
12	<b>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</b>		8.03				Cum	103.3	829.93
	<b>Total Cost</b>								<b>82618.14</b>

Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -F)									
DEPTH - D=4 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	<b>Earthwork Excavation</b>								
	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
	<b>4.5m to 6.0m</b>	1	4.71		0.05	0.24		442.60	104.33
						21.45	Cum		
2	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.4	893.84
	<b>4.5m to 6.0m</b>	1	4.71		0.05	0.24		134.6	31.73
						7.31	Sqm.		
3	<b>PCC - M15 Grade</b>								
	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	<b>PCC - M20 Grade</b>								
	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
5	<b>RCC - M20 Grade</b>								
	<b>For foundation</b>	1	3.30		0.35	1.16			
	<b>walls for conical portion</b>	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	<b>Reinforcement Steel</b>	1.00	-	-	-	462.00	Kg	76.00	35112.00
7	<b>Shuttering</b>								
	<b>For foundation</b>	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		2.25	24.03			
	<b>walls for conical portion</b>	2.00	3.79		1.80	13.63			
	<b>Total</b>					39.59	Sqm.	186.30	7376.27
8	<b>CI Steps-5 Kg</b>	9.00	-	-	-	9.00	No's	240.9	2168.10
9	<b>Disposal of Surplus earth upto 8km lea</b>	1.00	13.19			13.19	Cum	262.5	3462.44
10	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
11	<b>Internal Lining by High Alumina Cement (1:3)</b>		8.66				Sqm	343.22	2971.93
12	<b>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</b>		8.26				Cum	103.3	853.27
	<b>Total Cost</b>								87587.20

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=4.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>							4.5	
	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
						<b>23.81</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	1	4.71		0.55	2.59		134.60	349.00
						<b>9.66</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>4.64</b>	Cum.	4902.30	22724.03
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>510.00</b>	Kg	76.00	38760.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>44.93</b>	Sqm.	186.30	8371.24
<b>8</b>	<b>CI Steps-5 Kg</b>	11	-	-	-	<b>11.00</b>	No's	240.9	2649.90
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	14.20			14.20	Cum	262.5	3728.39
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		10.15				Sqm	343.22	<b>3484.33</b>
<b>12</b>	<b>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</b>		9.60				Cum	103.3	<b>992.10</b>
	<b>Total Cost</b>								<b>97137.17</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=5.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>26.16</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	1	4.71		1.05	4.95		134.60	666.28
						<b>12.02</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.07</b>	Cum.	4902.30	24871.50
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>558.00</b>	Kg	76.00	42408.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>50.27</b>	Sqm.	186.30	9366.22
<b>8</b>	<b>CI Steps-5 Kg</b>	13	-	-	-	<b>13.00</b>	No's	240.9	3131.70
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	15.22			15.22	Cum	262.5	3994.35
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		11.64				Sqm	343.22	<b>3996.73</b>
<b>12</b>	<b>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</b>		10.95				Cum	103.3	<b>1130.94</b>
	<b>Total Cost</b>								<b>106687.19</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=5.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>							5.5	
	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	<b>0.24</b>		483.60	113.99
						28.52	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	1	4.71		1.50	<b>7.07</b>		134.60	951.83
	<b>6m to 7.5m</b>	1	4.71		0.05	0.24		142.80	33.66
						14.38	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	<b>2.64</b>			
	<b>For Foundation</b>	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	<b>1.55</b>	0.55	<b>0.94</b>			
						<b>1.67</b>			
						1.19	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	<b>0.16</b>			
	<b>For collar portion</b>	-1	2.23	0.15	0.15	-0.05			
						0.11	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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	<b>3.00</b>			
		1	0.15	0.50	4.40	<b>0.33</b>			
						<b>5.51</b>	Cum.	4902.30	27018.97
<b>6</b>	<b>Reinforcement Steel</b>	1.00	-	-	-	551.00	Kg	76.00	41876.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	6.44		0.30	1.93			
	For RCC - wall	2.00	5.34		3.75	<b>40.06</b>			
	<b>walls for conical portion</b>	2	3.79		1.80	<b>13.63</b>			
	<b>Total</b>					55.62	Sqm.	186.30	10361.19
<b>8</b>	<b>Cl Steps-5 Kg</b>	14.00	-	-	-	14.00	No's	240.9	3372.60
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lea</b>	1.00	16.23			16.23	Cum	262.5	4260.30
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	13.14					Sqm	343.22	<b>4509.14</b>
<b>12</b>	<b>Filling available excavated earth (excluding roc</b>		12.29				Cum	103.3	<b>1269.77</b>
	<b>Total Cost</b>								<b>111827.88</b>



Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=6.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>30.88</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>16.74</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.95</b>	Cum.	4902.30	29166.43
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>595.00</b>	Kg	76.00	45220.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>60.96</b>	Sqm.	186.30	11356.16
<b>8</b>	<b>CI Steps-5 Kg</b>	16	-	-	-	<b>16.00</b>	No's	240.9	3854.40
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	17.24			17.24	Cum	262.5	4526.26
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	14.63					Sqm	343.22	<b>5021.54</b>
<b>12</b>	<b>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</b>		13.64				Cum	103.3	<b>1408.61</b>
	<b>Total Cost</b>								<b>121189.85</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=6.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>							6.5	
	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
						<b>33.24</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>19.09</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>6.39</b>	Cum.	4902.30	31313.90
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>703.00</b>	Kg	76.00	53428.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>66.30</b>	Sqm.	186.30	12351.14
<b>8</b>	<b>CI Steps-5 Kg</b>	18	-	-	-	<b>18.00</b>	No's	240.9	4336.20
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	18.26			18.26	Cum	262.5	4792.21
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	16.12					Sqm	343.22	<b>5533.94</b>
<b>12</b>	<b>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</b>		14.98				Cum	103.3	<b>1547.45</b>
	<b>Total Cost</b>								<b>135415.82</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=7.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>35.59</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>21.45</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>6.83</b>	Cum.	4902.30	33461.37
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>751.00</b>	Kg	76.00	57076.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>71.64</b>	Sqm.	186.30	13346.11
<b>8</b>	<b>CI Steps-5 Kg</b>	19	-	-	-	<b>19.00</b>	No's	240.9	4577.10
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	19.27			19.27	Cum	262.5	5058.17
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.62					Sqm	343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>		16.32				Cum	103.3	<b>1686.28</b>
	<b>Total Cost</b>								<b>144852.48</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=7.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>							7.5	
	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
						<b>37.95</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>23.81</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.26</b>	Cum.	4902.30	35608.84
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>799.00</b>	Kg	76.00	60724.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>76.98</b>	Sqm.	186.30	14341.08
<b>8</b>	<b>CI Steps-5 Kg</b>	21	-	-	-	<b>21.00</b>	No's	240.9	5058.90
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	20.28			20.28	Cum	262.5	5324.12
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.62					Sqm	343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>		17.67				Cum	103.3	<b>1825.12</b>
	<b>Total Cost</b>								<b>154122.02</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=8.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								8
	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
						<b>40.31</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>26.16</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.70</b>	Cum.	4902.30	37756.30
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>847.00</b>	Kg	76.00	64372.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>82.32</b>	Sqm.	186.30	15336.06
<b>8</b>	<b>CI Steps-5 Kg</b>	23	-	-	-	<b>23.00</b>	No's	240.9	5540.70
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	21.30			21.30	Cum	262.5	5590.08
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.62					Sqm	343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>		19.01				Cum	103.3	<b>1963.96</b>
	<b>Total Cost</b>								<b>163391.57</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)									
DEPTH - D=8.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>							8.5	
	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
						<b>42.66</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>28.52</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.14</b>	Cum.	4902.30	39903.77
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>895.00</b>	Kg	76.00	68020.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>87.66</b>	Sqm.	186.30	16331.03
<b>8</b>	<b>CI Steps-5 Kg</b>	24	-	-	-	<b>24.00</b>	No's	240.9	5781.60
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intital lead</b>	1	22.31			22.31	Cum	262.5	5856.03
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.62					Sqm	343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>		20.36				Cum	103.3	<b>2102.79</b>
	<b>Total Cost</b>								<b>172420.19</b>

DEPTH - D=9.0 m									9
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>45.02</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>30.88</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.58</b>	Cum.	4902.30	42051.24
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>944.00</b>	Kg	76.00	71744.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>93.00</b>	Sqm.	186.30	17326.01
<b>8</b>	<b>CI Steps-5 Kg</b>	26	-	-	-	<b>26.00</b>	No's	240.9	6263.40
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	23.32			23.32	Cum	262.5	6121.99
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.62					Sqm	343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>		21.70				Cum	103.3	<b>2241.63</b>
	<b>Total Cost</b>								<b>181765.76</b>

DEPTH - D=9.5m								9.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>47.38</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	4.71		1.50	7.07		126.40	893.84
	4.5m to 6.0m	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
						<b>33.24</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	1.89		1.40	2.64			
	For Foundation	1	2.19		0.10	0.22			
						<b>2.86</b>			
	<b>Deductions</b>								
	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			
						<b>1.19</b>	Cum	4151.40	4924.06
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>9.02</b>	Cum.	4902.30	44198.71
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>992.00</b>	Kg	76.00	75392.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>98.34</b>	Sqm.	186.30	18320.98
<b>8</b>	<b>CI Steps-5 Kg</b>	28	-	-	-	<b>28.00</b>	No's	240.9	6745.20
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	24.34			24.34	Cum	262.5	6387.95
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.62					Sqm	343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>		23.04				Cum	103.3	<b>2380.47</b>
	<b>Total Cost</b>								<b>191035.30</b>



## Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
DEPTH - D=2 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	<b>Earthwork Excavation</b>								
	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	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	<b>Deductions</b>								
	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	<b>PCC - M20 Grade</b>								
	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	<b>RCC - M20 Grade</b>								
	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	<b>Reinforcement Steel</b>	1	-	-	-	342.00	Kg	76.00	25992.00
6	<b>Shuttering</b>								
	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	<b>CI Steps-5 Kg</b>	2	-	-	-	2.00	No's	240.9	481.80
8	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	9.40			9.40	Cum	262.5	2467.78
9	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
10	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
11	<b>Internal Lining by High Alumina</b>	2.60					Sqm	343.22	893.20
12	<b>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</b>		4.94				Cum	103.3	510.21
	<b>Total Cost</b>								64264.29

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
DEPTH - D=2.5 m									
Sr no	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		319.60	<b>2644.11</b>
	1.5m to 3.0	1	5.52		1.50	8.27		360.60	<b>2983.31</b>
	3.0m to 4.5m	1	5.52		0.05	0.28		401.60	<b>110.75</b>
						<b>16.82</b>	Cum		
<b>2</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	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			
						<b>1.51</b>	Cum	4151.40	<b>6274.12</b>
<b>3</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	<b>509.59</b>
<b>4</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>3.59</b>	Cum.	4902.30	<b>17602.23</b>
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>395.00</b>	Kg	76.00	<b>30020.00</b>
<b>6</b>	<b>Shuttering</b>								
	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					<b>31.98</b>	Sqm.	186.30	<b>5958.50</b>
<b>7</b>	<b>CI Steps-5 Kg</b>	4	-	-	-	<b>4.00</b>	No's	240.9	<b>963.60</b>
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	10.23			10.23	Cum	262.5	<b>2686.09</b>
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>11</b>	<b>Internal Lining by High Alumina</b>	4.41					Sqm	343.22	<b>1513.47</b>
<b>12</b>	<b>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</b>		6.59				Cum	103.3	<b>680.69</b>
	<b>Total Cost</b>								<b>74114.11</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>19.58</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		0.55	3.03		126.40	383.43
						<b>3.03</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>4.62</b>	Cum.	4902.30	22647.33
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>508.00</b>	Kg	76.00	38608.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>37.95</b>	Sqm.	186.30	7070.53
<b>8</b>	<b>CI Steps-5 Kg</b>	5	-	-	-	<b>5.00</b>	No's	240.9	1204.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	11.34			11.34	Cum	262.5	2976.78
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	6.22					Sqm	343.22	2133.75
<b>13</b>	<b>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</b>		8.24				Cum	103.3	851.17
	<b>Total Cost</b>								<b>91672.52</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>22.34</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.05	5.79		126.40	732.01
						<b>5.79</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>4.56</b>	Cum.	4902.30	22359.20
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>502.00</b>	Kg	76.00	38152.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>43.92</b>	Sqm.	186.30	8182.56
<b>8</b>	<b>CI Steps-5 Kg</b>	7	-	-	-	<b>7.00</b>	No's	240.9	1686.30
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	12.45			12.45	Cum	262.5	3267.48
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	8.02					Sqm	343.22	2754.02
<b>13</b>	<b>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</b>		9.89				Cum	103.3	1021.64
	<b>Total Cost</b>								95059.75

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
DEPTH - D=4 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to 6.0m	1	5.52		0.05	0.28		134.6	37.12
						8.55	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	<b>Deductions</b>								
	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
<b>4</b>	<b>PCC - M20 Grade</b>								
	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
<b>5</b>	<b>RCC - M20 Grade</b>								
	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
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	519.00	Kg	76.00	39444.00
<b>7</b>	<b>Shuttering</b>								
	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
<b>8</b>	<b>CI Steps-5 Kg</b>	9	-	-	-	9.00	No's	240.9	2168.10
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	15.17			15.17	Cum	262.5	3981.77
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	9.83					Sqm	343.22	3374.30
<b>13</b>	<b>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</b>		9.93				Cum	103.3	1025.43
	<b>Total Cost</b>								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
<b>1</b>	<b>Earthwork Excavation</b>								
	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		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to 6.0m	1	5.52		0.55	3.03		134.6	408.31
						11.31	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	<b>Deductions</b>								
	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
<b>4</b>	<b>PCC - M20 Grade</b>								
	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
<b>5</b>	<b>RCC - M20 Grade</b>								
	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
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	572.00	Kg	76.00	43472.00
<b>7</b>	<b>Shuttering</b>								
	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
<b>8</b>	<b>CI Steps-5 Kg</b>	10	-	-	-	10.00	No's	240.9	2409.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	16.28			16.28	Cum	262.5	4272.47
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	11.64					Sqm	343.22	3994.58
<b>13</b>	<b>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</b>		11.58				Cum	103.3	1195.90
	<b>Total Cost</b>								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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>30.61</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to 6.0m	1	5.52		1.05	5.79		134.6	779.50
						<b>14.06</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.69</b>	Cum.	4902.30	27881.67
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>626.00</b>	Kg	76.00	47576.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>55.68</b>	Sqm.	186.30	10372.89
<b>8</b>	<b>CI Steps-5 Kg</b>	12	-	-	-	<b>12.00</b>	No's	240.9	2890.80
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	17.38			17.38	Cum	262.5	4563.16
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	13.45					Sqm	343.22	4614.85
<b>13</b>	<b>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</b>		13.23				Cum	103.3	1366.38
	<b>Total Cost</b>								<b>121555.47</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>33.37</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to 6.0m	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
						<b>16.82</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	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			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>6.17</b>	Cum.	4902.30	30260.16
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>679.00</b>	Kg	76.00	51604.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>61.65</b>	Sqm.	186.30	11484.92
<b>8</b>	<b>CI Steps-5 Kg</b>	14	-	-	-	<b>14.00</b>	No's	240.9	3372.60
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	18.49			18.49	Cum	262.5	4853.86
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	15.25					Sqm	343.22	5235.13
<b>13</b>	<b>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</b>		14.88				Cum	103.3	1536.86
	<b>Total Cost</b>								132242.57



Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
Sno	DEPTH - D=6.0 m	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
								6	
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>36.13</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to 6.0m	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
						<b>19.58</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	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			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>6.66</b>	Cum.	4902.30	32638.64
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>732.00</b>	Kg	76.00	55632.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>67.62</b>	Sqm.	186.30	12596.95
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	240.9	3613.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	19.60			19.60	Cum	262.5	5144.55
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	17.06					Sqm	343.22	5855.40
<b>13</b>	<b>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</b>		16.53				Cum	103.3	1707.34
	<b>Total Cost</b>								<b>142810.86</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>38.88</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.4	1045.73
	4.5m to 6.0m	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
						<b>22.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.14</b>	Cum.	4902.30	35017.12
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>786.00</b>	Kg	76.00	59736.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>73.59</b>	Sqm.	186.30	13708.98
<b>8</b>	<b>CI Steps-5 Kg</b>	17	-	-	-	<b>17.00</b>	No's	240.9	4095.30
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	20.71			20.71	Cum	262.5	5435.25
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	18.87					Sqm	343.22	6475.68
<b>13</b>	<b>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</b>		18.18				Cum	103.3	1877.82
	<b>Total Cost</b>								<b>153696.08</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>41.64</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	1045.73
	4.5m to 6.0m	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
						<b>25.10</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.63</b>	Cum.	4902.30	37395.60
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>839.00</b>	Kg	76.00	63764.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>79.55</b>	Sqm.	186.30	14821.01
<b>8</b>	<b>CI Steps-5 Kg</b>	19	-	-	-	<b>19.00</b>	No's	240.9	4577.10
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	21.81			21.81	Cum	262.5	5725.94
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	7095.95
<b>13</b>	<b>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</b>		19.83				Cum	103.3	2048.29
	<b>Total Cost</b>								<b>164518.82</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>44.40</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	1045.73
	4.5m to 6.0m	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
						<b>27.85</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.11</b>	Cum.	4902.30	39774.09
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>892.00</b>	Kg	76.00	67792.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>85.52</b>	Sqm.	186.30	15933.04
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	240.9	4818.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	22.92			22.92	Cum	262.5	6016.64
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	7095.95
<b>13</b>	<b>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</b>		21.48				Cum	103.3	2218.77
	<b>Total Cost</b>								<b>174602.55</b>

DEPTH - D=8.0 m								8	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>47.16</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	1045.73
	4.5m to 6.0m	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
						<b>30.61</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	4151.40	6274.12
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.60</b>	Cum.	4902.30	42152.57
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>946.00</b>	Kg	76.00	71896.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>91.49</b>	Sqm.	186.30	17045.07
<b>8</b>	<b>CI Steps-5 Kg</b>	22	-	-	-	<b>22.00</b>	No's	240.9	5299.80
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	24.03			24.03	Cum	262.5	6307.33
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	7095.95
<b>13</b>	<b>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</b>		23.13				Cum	103.3	2389.25
	<b>Total Cost</b>								<b>185003.15</b>

DEPTH - D=8.5 m								8.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		126.40	1045.73
	4.5m to 6.0m	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.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	<b>Deductions</b>								
	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
<b>4</b>	<b>PCC - M20 Grade</b>								
	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
<b>5</b>	<b>RCC - M20 Grade</b>								
	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
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	999.00	Kg	76.00	75924.00
<b>7</b>	<b>Shuttering</b>								
	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
<b>8</b>	<b>CI Steps-5 Kg</b>	24	-	-	-	24.00	No's	240.9	5781.60
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	25.14			25.14	Cum	262.5	6598.03
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	7095.95
<b>13</b>	<b>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</b>		24.78				Cum	103.3	2559.73
	<b>Total Cost</b>								195327.75

## Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=2 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
1	<b>Earthwork Excavation</b>								
	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	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						5.81			
	<b>Deductions</b>								
	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	<b>PCC - M20 Grade</b>								
	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	<b>RCC - M20 Grade</b>								
	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	<b>Reinforcement Steel</b>	1	-	-	-	400.00	Kg	76.00	30400.00
6	<b>Shuttering</b>								
	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	<b>CI Steps-5 Kg</b>	1	-	-	-	1.00	No's	240.9	240.90
8	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	10.93			10.93	Cum	262.5	2868.13
9	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
10	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	meter	134.95	1214.55
11	<b>Internal Lining by High Alumina Cement (1:3)</b>	2.46					Sqm	343.22	845.73
12	<b>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</b>		6.25				Cum	103.3	645.35
	<b>Total Cost</b>								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	<b>Earthwork Excavation</b>								
	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
						<b>20.15</b>	Cum		
2	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
3	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
4	<b>RCC - M20 Grade</b>								
	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			
						<b>4.18</b>	Cum.	4902.30	20472.01
5	<b>Reinforcement Steel</b>	1	-	-	-	<b>459.00</b>	Kg	76.00	34884.00
6	<b>Shuttering</b>								
	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					<b>36.57</b>	Sqm.	186.30	6812.64
7	<b>CI Steps-5 Kg</b>	3	-	-	-	<b>3.00</b>	No's	240.9	722.70
8	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	11.82			11.82	Cum	262.5	3103.06
9	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
10	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
11	<b>Internal Lining by High Alumina Cement (1:3)</b>	4.66					Sqm	343.22	<b>1600.85</b>
12	<b>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</b>		8.32				Cum	103.3	<b>859.94</b>
	<b>Total Cost</b>								<b>86756.87</b>



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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>23.45</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		0.55	3.63		126.40	415.24
						<b>3.63</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	7006.19
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	407.26
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.43</b>	Cum.	4902.30	21093.77
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>598.00</b>	Kg	76.00	43175.60
<b>7</b>	<b>Shuttering</b>								
	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					<b>43.32</b>	Sqm.	186.30	7221.87
<b>8</b>	<b>CI Steps-5 Kg</b>	5	-	-	-	<b>5.00</b>	No's	240.9	1008.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	13.05			13.05	Cum	262.5	3587.76
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>3262.50</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	6.86					Sqm	343.22	<b>2265.22</b>
<b>13</b>	<b>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</b>		10.40				Cum	103.3	<b>690.70</b>
	<b>Total Cost</b>								<b>96951.66</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>26.75</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.05	6.94		126.40	876.64
						<b>6.94</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.26</b>	Cum.	4902.30	25806.51
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>579.00</b>	Kg	76.00	44004.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>50.08</b>	Sqm.	186.30	9329.34
<b>8</b>	<b>CI Steps-5 Kg</b>	6	-	-	-	<b>6.00</b>	No's	240.9	1445.40
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	14.27			14.27	Cum	262.5	3746.30
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	9.06					Sqm	343.22	<b>3111.09</b>
<b>13</b>	<b>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</b>		12.48				Cum	103.3	<b>1289.13</b>
	<b>Total Cost</b>								<b>110562.73</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=4 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>30.05</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to 6.0m	1	6.61		0.05	0.33		134.6	44.45
						<b>10.24</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.40</b>	Cum.	4902.30	26485.39
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>594.00</b>	Kg	76.00	45144.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>48.92</b>	Sqm.	186.30	9114.55
<b>8</b>	<b>CI Steps-5 Kg</b>	8	-	-	-	<b>8.00</b>	No's	240.9	1927.20
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	17.82			17.82	Cum	262.5	4678.49
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	11.26					Sqm	343.22	<b>3866.21</b>
<b>13</b>	<b>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</b>		12.23				Cum	103.3	<b>1263.45</b>
	<b>Total Cost</b>								<b>116070.27</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>33.36</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to 6.0m	1	6.61		0.55	3.63		134.6	488.98
						<b>13.54</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.95</b>	Cum.	4902.30	29152.64
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>654.00</b>	Kg	76.00	49704.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>55.68</b>	Sqm.	186.30	10372.89
<b>8</b>	<b>CI Steps-5 Kg</b>	10	-	-	-	<b>10.00</b>	No's	240.9	2409.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	19.05			19.05	Cum	262.5	5000.11
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	13.46					Sqm	343.22	<b>4621.32</b>
<b>13</b>	<b>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</b>		14.31				Cum	103.3	<b>1478.04</b>
	<b>Total Cost</b>								<b>128235.24</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=5.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>36.66</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to 6.0m	1	6.61		1.05	6.94		134.6	933.51
						<b>16.84</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>6.49</b>	Cum.	4902.30	31819.89
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>714.00</b>	Kg	76.00	54264.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>62.43</b>	Sqm.	186.30	11631.24
<b>8</b>	<b>CI Steps-5 Kg</b>	11	-	-	-	<b>11.00</b>	No's	240.9	2649.90
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	20.27			20.27	Cum	262.5	5321.73
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	15.66					Sqm	343.22	<b>5376.44</b>
<b>13</b>	<b>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</b>		16.39				Cum	103.3	<b>1692.63</b>
	<b>Total Cost</b>								<b>140159.33</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>39.96</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to 6.0m	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
						<b>20.15</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.03</b>	Cum.	4902.30	34487.15
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>774.00</b>	Kg	76.00	58824.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>69.19</b>	Sqm.	186.30	12889.59
<b>8</b>	<b>CI Steps-5 Kg</b>	13	-	-	-	<b>13.00</b>	No's	240.9	3131.70
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	21.50			21.50	Cum	262.5	5643.35
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.86					Sqm	343.22	<b>6131.56</b>
<b>13</b>	<b>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</b>		18.46				Cum	103.3	<b>1907.23</b>
	<b>Total Cost</b>								<b>152340.59</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>43.26</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to 6.0m	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
						<b>23.45</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.58</b>	Cum.	4902.30	37154.40
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>834.00</b>	Kg	76.00	63384.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>75.94</b>	Sqm.	186.30	14147.94
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	240.9	3613.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	22.72			22.72	Cum	262.5	5964.97
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>1528.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.06					Sqm	343.22	<b>6886.68</b>
<b>13</b>	<b>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</b>		20.54				Cum	103.3	<b>2121.82</b>
	<b>Total Cost</b>								<b>165243.07</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>46.57</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.4	1252.35
	4.5m to 6.0m	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
						<b>26.75</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						<b>3.70</b>			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.12</b>	Cum.	4902.30	39821.65
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>894.00</b>	Kg	76.00	67944.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>82.70</b>	Sqm.	186.30	15406.29
<b>8</b>	<b>CI Steps-5 Kg</b>	16	-	-	-	<b>16.00</b>	No's	240.9	3854.40
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	23.95			23.95	Cum	262.5	6286.59
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	22.27					Sqm	343.22	<b>7641.80</b>
<b>13</b>	<b>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</b>		22.62				Cum	103.3	<b>2336.41</b>
	<b>Total Cost</b>								<b>176754.65</b>



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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>49.87</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.40	1252.35
	4.5m to 6.0m	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
						<b>30.05</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.67</b>	Cum.	4902.30	42488.90
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>953.00</b>	Kg	76.00	72428.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>89.45</b>	Sqm.	186.30	16664.64
<b>8</b>	<b>CI Steps-5 Kg</b>	18	-	-	-	<b>18.00</b>	No's	240.9	4336.20
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	25.17			25.17	Cum	262.5	6608.21
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	29.36					Sqm	343.22	<b>10077.42</b>
<b>13</b>	<b>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</b>		24.70				Cum	103.3	<b>2551.01</b>
	<b>Total Cost</b>								<b>190702.88</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=7.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>53.17</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.40	1252.35
	4.5m to 6.0m	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
						<b>33.36</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>9.21</b>	Cum.	4902.30	45156.16
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1013.00</b>	Kg	76.00	76988.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>96.20</b>	Sqm.	186.30	17922.99
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	240.9	4818.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	26.40			26.40	Cum	262.5	6929.83
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	29.36					Sqm	343.22	<b>10077.42</b>
<b>13</b>	<b>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</b>		26.77				Cum	103.3	<b>2765.60</b>
	<b>Total Cost</b>								<b>202437.74</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=8.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>56.47</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		126.40	1252.35
	4.5m to 6.0m	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
						<b>36.66</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	4151.40	8752.52
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>9.76</b>	Cum.	4902.30	47823.41
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1073.00</b>	Kg	76.00	81548.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>102.96</b>	Sqm.	186.30	19181.34
<b>8</b>	<b>CI Steps-5 Kg</b>	21	-	-	-	<b>21.00</b>	No's	240.9	5058.90
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	27.62			27.62	Cum	262.5	7251.45
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	29.36					Sqm	343.22	<b>10077.42</b>
<b>13</b>	<b>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</b>		28.85				Cum	103.3	<b>2980.19</b>
	<b>Total Cost</b>								<b>213931.68</b>

## 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	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>19.62</b>	Cum			
<b>2</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>3</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>4</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>4.07</b>	Cum.	4902.30	19953.34	
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>448.00</b>	Kg	76.00	34048.00	
<b>6</b>	<b>Shuttering</b>									
	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					<b>33.35</b>	Sqm.	186.30	6212.73	
<b>7</b>	<b>CI Steps-5 Kg</b>	1	-	-	-	<b>1.00</b>	No's	240.9	240.90	
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	12.22			12.22	Cum	262.5	3207.90	
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	8.39					Sqm	343.22	<b>2878.79</b>	
<b>12</b>	<b>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</b>		7.40				Cum	103.3	<b>764.77</b>	
	<b>Total Cost</b>								<b>86648.59</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=2.5 m								2.5	
Srno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>23.02</b>	Cum			
<b>2</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>3</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>4</b>	<b>RCC - M20 Grade</b>									
	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				
	For walls	1	7.38	0.15	2.30	2.55				
		1	0.15	0.50	0.58	0.04				
						<b>4.66</b>	Cum.	4902.30	22851.61	
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>513.00</b>	Kg	76.00	38988.00	
<b>6</b>	<b>Shuttering</b>									
	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					<b>40.31</b>	Sqm.	186.30	7509.13	
<b>7</b>	<b>CI Steps-5 Kg</b>	2	-	-	-	<b>2.00</b>	No's	240.9	481.80	
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	13.16			13.16	Cum	262.5	3455.19	
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	10.90					Sqm	343.22	<b>3741.78</b>	
<b>12</b>	<b>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</b>		9.86				Cum	103.3	<b>1018.31</b>	
	<b>Total Cost</b>								<b>98628.22</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=3.0 m								3	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>26.79</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		0.55	4.15		126.40	474.48	
						<b>4.15</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	For channel portion(Circular portion)	1	1.10		2.20	2.41				
	Rectangular portion	1	1.67	2.20	0.84	3.07				
						<b>5.48</b>				
						<b>2.42</b>	Cum	4151.40	8046.95	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	407.26	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>6.12</b>	Cum.	4902.30	23745.89	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>673.00</b>	Kg	76.00	48590.60	
<b>7</b>	<b>Shuttering</b>									
	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					<b>47.69</b>	Sqm.	186.30	7949.82	
<b>8</b>	<b>CI Steps-5 Kg</b>	4	-	-	-	<b>4.00</b>	No's	240.9	806.80	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	14.48			14.48	Cum	262.5	3982.58	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						<b>9.00</b>	Meter	134.95	<b>3262.50</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	13.42					Sqm	343.22	<b>4427.41</b>	
<b>13</b>	<b>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</b>		12.31				Cum	103.3	<b>817.53</b>	
	<b>Total Cost</b>								<b>110079.40</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=3.5 m								3.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>30.57</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.05	7.93		126.40	1001.73	
						<b>7.93</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	For channel portion(Circular portion)	1	1.10		2.20	2.41				
	Rectangular portion	1	1.67	2.20	0.84	3.07				
						<b>5.48</b>				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>5.84</b>	Cum.	4902.30	28648.14	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>643.00</b>	Kg	76.00	48868.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>55.07</b>	Sqm.	186.30	10259.94	
<b>8</b>	<b>CI Steps-5 Kg</b>	6	-	-	-	<b>6.00</b>	No's	240.9	1445.40	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	15.80			15.80	Cum	262.5	4147.91	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						<b>9.00</b>	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	15.93					Sqm	343.22	<b>5467.77</b>	
<b>13</b>	<b>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</b>		14.77				Cum	103.3	<b>1525.38</b>	
	<b>Total Cost</b>								<b>124977.81</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=4 m								4	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>34.34</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04	
	4.5m to 6.0m	1	7.55		0.05	0.38		134.6	50.80	
						<b>11.70</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>5.97</b>	Cum.	4902.30	29257.72	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>656.00</b>	Kg	76.00	49856.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>53.07</b>	Sqm.	186.30	9887.11	
<b>8</b>	<b>CI Steps-5 Kg</b>	7	-	-	-	<b>7.00</b>	No's	240.9	1686.30	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	20.09			20.09	Cum	262.5	5273.90	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	18.45					Sqm	343.22	<b>6330.76</b>	
<b>13</b>	<b>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</b>		14.25				Cum	103.3	<b>1472.12</b>	
	<b>Total Cost</b>								<b>130390.34</b>	



Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=4.5 m								4.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>38.12</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04	
	4.5m to 6.0m	1	7.55		0.55	4.15		134.6	558.75	
						<b>15.47</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>6.56</b>	Cum.	4902.30	32155.98	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>722.00</b>	Kg	76.00	54872.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>60.45</b>	Sqm.	186.30	11262.52	
<b>8</b>	<b>CI Steps-5 Kg</b>	9	-	-	-	<b>9.00</b>	No's	240.9	2168.10	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	21.41			21.41	Cum	262.5	5620.26	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						<b>9.00</b>	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.96					Sqm	343.22	<b>7193.75</b>	
<b>13</b>	<b>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</b>		16.71				Cum	103.3	<b>1725.65</b>	
	<b>Total Cost</b>								<b>143802.94</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=5.0 m								5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>41.89</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04	
	4.5m to 6.0m	1	7.55		1.05	7.93		134.6	1066.71	
						<b>19.25</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>7.15</b>	Cum.	4902.30	35054.25	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>787.00</b>	Kg	76.00	59812.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>67.84</b>	Sqm.	186.30	12637.92	
<b>8</b>	<b>CI Steps-5 Kg</b>	11	-	-	-	<b>11.00</b>	No's	240.9	2649.90	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	22.73			22.73	Cum	262.5	5966.62	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	23.47					Sqm	343.22	<b>8056.75</b>	
<b>13</b>	<b>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</b>		19.16				Cum	103.3	<b>1979.19</b>	
	<b>Total Cost</b>								<b>157139.57</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=5.5 m								5.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>45.66</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04	
	4.5m to 6.0m	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	
						<b>23.02</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>7.74</b>	Cum.	4902.30	37952.52	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>852.00</b>	Kg	76.00	64752.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>75.22</b>	Sqm.	186.30	14013.33	
<b>8</b>	<b>CI Steps-5 Kg</b>	12	-	-	-	<b>12.00</b>	No's	240.9	2890.80	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	24.05			24.05	Cum	262.5	6312.98	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	25.99					Sqm	343.22	<b>8919.74</b>	
<b>13</b>	<b>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</b>		21.61				Cum	103.3	<b>2232.73</b>	
	<b>Total Cost</b>								<b>170253.87</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)									
DEPTH - D=6.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
								6	
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>49.44</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04
	4.5m to 6.0m	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
						<b>26.79</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	4151.40	10052.70
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.33</b>	Cum.	4902.30	40850.79
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>917.00</b>	Kg	76.00	69692.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>82.60</b>	Sqm.	186.30	15388.73
<b>8</b>	<b>CI Steps-5 Kg</b>	14	-	-	-	<b>14.00</b>	No's	240.9	3372.60
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	25.37			25.37	Cum	262.5	6659.34
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	28.50					Sqm	343.22	<b>9782.73</b>
<b>13</b>	<b>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</b>		24.07				Cum	103.3	<b>2486.26</b>
	<b>Total Cost</b>								<b>183776.15</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=6.5 m								6.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>53.21</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		126.4	1431.04	
	4.5m to 6.0m	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	
						<b>30.57</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>8.92</b>	Cum.	4902.30	43749.05	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>982.00</b>	Kg	76.00	74632.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>89.98</b>	Sqm.	186.30	16764.14	
<b>8</b>	<b>CI Steps-5 Kg</b>	16	-	-	-	<b>16.00</b>	No's	240.9	3854.40	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	26.69			26.69	Cum	262.5	7005.70	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	31.02					Sqm	343.22	<b>10645.72</b>	
<b>13</b>	<b>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</b>		26.52				Cum	103.3	<b>2739.80</b>	
	<b>Total Cost</b>								<b>197298.45</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1400 mm dia (TYPE -E)										
	DEPTH - D=7.0 m								7	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs	
<b>1</b>	<b>Earthwork Excavation</b>									
	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	
						<b>56.98</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04	
	4.5m to 6.0m	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	
						<b>34.34</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	4151.40	10052.70	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4681.30	509.59	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>9.52</b>	Cum.	4902.30	46647.32	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1047.00</b>	Kg	76.00	79572.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>97.37</b>	Sqm.	186.30	18139.54	
<b>8</b>	<b>CI Steps-5 Kg</b>	17	-	-	-	<b>17.00</b>	No's	240.9	4095.30	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	28.01			28.01	Cum	262.5	7352.06	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	11508.72	
<b>13</b>	<b>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</b>		28.98				Cum	103.3	2993.34	
	<b>Total Cost</b>								<b>210598.41</b>	

DEPTH - D=7.5 m								7.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>60.76</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to 6.0m	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
						<b>38.12</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	4151.40	10052.70
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>10.11</b>	Cum.	4902.30	49545.59
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1112.00</b>	Kg	76.00	84512.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>104.75</b>	Sqm.	186.30	19514.95
<b>8</b>	<b>CI Steps-5 Kg</b>	19	-	-	-	<b>19.00</b>	No's	240.9	4577.10
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	29.33			29.33	Cum	262.5	7698.42
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		31.43				Cum	103.3	<b>3246.87</b>
	<b>Total Cost</b>								<b>223443.38</b>

DEPTH - D=8.0 m								8	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>64.53</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to 6.0m	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
						<b>41.89</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	4151.40	10052.70
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>10.70</b>	Cum.	4902.30	52443.86
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1177.00</b>	Kg	76.00	89452.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>112.13</b>	Sqm.	186.30	20890.35
<b>8</b>	<b>CI Steps-5 Kg</b>	21	-	-	-	<b>21.00</b>	No's	240.9	5058.90
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	30.65			30.65	Cum	262.5	8044.78
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		33.89				Cum	103.3	<b>3500.41</b>
	<b>Total Cost</b>								<b>236288.36</b>



DEPTH - D=8.5 m								8.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>68.31</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to 6.0m	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
						<b>45.66</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	4151.40	10052.70
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>11.29</b>	Cum.	4902.30	55342.13
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1242.00</b>	Kg	76.00	94392.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>119.52</b>	Sqm.	186.30	22265.76
<b>8</b>	<b>CI Steps-5 Kg</b>	22	-	-	-	<b>22.00</b>	No's	240.9	5299.80
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	31.97			31.97	Cum	262.5	8391.14
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		36.34				Cum	103.3	<b>3753.94</b>
	<b>Total Cost</b>								<b>248892.43</b>

DEPTH - D=9.0 m									9
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>72.08</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to 6.0m	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
						<b>49.44</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	4151.40	10052.70
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>11.88</b>	Cum.	4902.30	58240.39
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1307.00</b>	Kg	76.00	99332.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>126.90</b>	Sqm.	186.30	23641.16
<b>8</b>	<b>CI Steps-5 Kg</b>	24	-	-	-	<b>24.00</b>	No's	240.9	5781.60
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	33.29			33.29	Cum	262.5	8737.50
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		38.79				Cum	103.3	<b>4007.48</b>
	<b>Total Cost</b>								<b>261737.40</b>

DEPTH - D=9.5m								9.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>75.85</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		126.40	1431.04
	4.5m to 6.0m	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
						<b>53.21</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	4151.40	10052.70
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4681.30	509.59
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>12.47</b>	Cum.	4902.30	61138.66
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1372.00</b>	Kg	76.00	104272.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>134.28</b>	Sqm.	186.30	25016.57
<b>8</b>	<b>CI Steps-5 Kg</b>	26	-	-	-	<b>26.00</b>	No's	240.9	6263.40
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	34.61			34.61	Cum	262.5	9083.86
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		41.25				Cum	103.3	<b>4261.02</b>
	<b>Total Cost</b>								<b>274582.38</b>

## 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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>91.44</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to 6.0m	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
						<b>49.88</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>12.83</b>	Cum.	6434.40	82547.08
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1411.00</b>	Kg	76.00	107236.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>99.53</b>	Sqm.	186.30	18541.63
<b>8</b>	<b>Cl Steps-5 Kg</b>	13	-	-	-	<b>13.00</b>	No's	240.9	3131.70
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	53.90			53.90	Cum	262.5	14147.74
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		37.54				Cum	103.3	3878.20
	<b>Total Cost</b>							INR	<b>304203.13</b>

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
<b>1</b>	<b>Earthwork Exacavation</b>								
	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
						<b>98.37</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to 6.0m	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
						<b>56.80</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>13.28</b>	Cum.	6434.40	85442.56
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1461.00</b>	Kg	76.00	111036.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>108.95</b>	Sqm.	186.30	20297.47
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	240.9	3613.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	56.55			56.55	Cum	262.5	14843.55
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		41.82				Cum	103.3	4319.96
	<b>Total Cost</b>							INR	<b>318613.02</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>105.29</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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 9.0m	1	13.85		0.10	1.39		151.00	209.20
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>13.73</b>	Cum.	6434.40	88338.04
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1510.00</b>	Kg	76.00	114760.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>118.38</b>	Sqm.	186.30	22053.30
<b>8</b>	<b>CI Steps-5 Kg</b>	17	-	-	-	<b>17.00</b>	No's	240.9	4095.30
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	59.20			59.20	Cum	262.5	15539.36
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		46.10				Cum	103.3	4761.72
	<b>Total Cost</b>							INR	<b>333015.07</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>110.84</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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		0.50	6.93		151.00	1046.01
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>14.18</b>	Cum.	6434.40	91233.52
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1560.00</b>	Kg	76.00	118560.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>127.80</b>	Sqm.	186.30	23809.14
<b>8</b>	<b>CI Steps-5 Kg</b>	18	-	-	-	<b>18.00</b>	No's	240.9	4336.20
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	60.46			60.46	Cum	262.5	15871.50
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		50.37				Cum	103.3	5203.48
	<b>Total Cost</b>							INR	<b>346225.22</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>118.46</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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		1.05	14.55		151.00	2196.62
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>14.63</b>	Cum.	6434.40	94129.00
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1609.00</b>	Kg	76.00	122284.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>137.22</b>	Sqm.	186.30	25564.97
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	240.9	4818.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	63.81			63.81	Cum	262.5	16749.15
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		54.65				Cum	103.3	5645.24
	<b>Total Cost</b>							INR	<b>361549.76</b>



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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>125.38</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>15.60</b>	Cum.	6434.40	100367.84
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1716.00</b>	Kg	76.00	130416.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>146.65</b>	Sqm.	186.30	27320.81
<b>8</b>	<b>CI Steps-5 Kg</b>	22	-	-	-	<b>22.00</b>	No's	240.9	5299.80
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	67.75			67.75	Cum	262.5	17783.89
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						<b>12.80</b>	Meter	134.95	<b>1727.36</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	<b>6569.53</b>
	<b>Total Cost</b>							INR	<b>378253.68</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>132.31</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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 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
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>16.05</b>	Cum.	6434.40	103263.32
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1765.00</b>	Kg	76.00	134140.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>156.07</b>	Sqm.	186.30	29076.65
<b>8</b>	<b>Cl Steps-5 Kg</b>	23	-	-	-	<b>23.00</b>	No's	240.9	5540.70
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	67.30			67.30	Cum	262.5	17665.76
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
	<b>Total Cost</b>							INR	<b>391690.87</b>

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
<b>1</b>	<b>Earthwork Exacavation</b>								
	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	10928.05
	9.0 m to 10.5 m	1	13.85		1.050	14.55		553.80	8056.21
						<b>139.24</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	4151.40	22888.14
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>16.50</b>	Cum.	6434.40	106158.80
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1815.00</b>	Kg	76.00	137940.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>165.50</b>	Sqm.	186.30	30832.48
<b>8</b>	<b>Cl Steps-5 Kg</b>	25	-	-	-	<b>25.00</b>	No's	240.9	6022.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	66.85			66.85	Cum	262.5	17547.64
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
	<b>Total Cost</b>							INR	<b>405444.97</b>

## 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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>92.13</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to 6.0m	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
						<b>50.57</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.41</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						<b>5.35</b>	Cum	4151.40	22191.79
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>12.78</b>	Cum.	6434.40	82216.08
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1406.00</b>	Kg	76.00	106856.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>101.41</b>	Sqm.	186.30	18892.80
<b>8</b>	<b>CI Steps-5 Kg</b>	13	-	-	-	<b>13.00</b>	No's	240.9	3131.70
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	53.73			53.73	Cum	262.5	14105.06
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		38.40				Cum	103.3	3966.55
	<b>Total Cost</b>							INR	<b>303626.54</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>97.67</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		126.4	2626.80
	4.5m to 6.0m	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
						<b>56.11</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.41</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						<b>5.35</b>	Cum	4151.40	22191.79
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>13.14</b>	Cum.	6434.40	84532.47
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1445.00</b>	Kg	76.00	109820.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>108.95</b>	Sqm.	186.30	20297.47
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	240.9	3613.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	55.85			55.85	Cum	262.5	14661.71
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		41.82				Cum	103.3	4319.96
	<b>Total Cost</b>							INR	<b>315174.82</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>104.60</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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 9.0m	1	13.85		0.05	0.69		151.00	104.60
						<b>63.04</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.41</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						<b>5.35</b>	Cum	4151.40	22191.79
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>13.59</b>	Cum.	6434.40	87427.95
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1495.00</b>	Kg	76.00	113620.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>118.38</b>	Sqm.	186.30	22053.30
<b>8</b>	<b>CI Steps-5 Kg</b>	16	-	-	-	<b>16.00</b>	No's	240.9	3854.40
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	58.50			58.50	Cum	262.5	15357.53
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		46.10				Cum	103.3	4761.72
	<b>Total Cost</b>							INR	<b>329377.90</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>111.53</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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		0.55	7.62		151.00	1150.61
						<b>69.96</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.41</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						<b>5.35</b>	Cum	4151.40	22191.79
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>14.04</b>	Cum.	6434.40	90323.43
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1544.00</b>	Kg	76.00	117344.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>127.80</b>	Sqm.	186.30	23809.14
<b>8</b>	<b>CI Steps-5 Kg</b>	18	-	-	-	<b>18.00</b>	No's	240.9	4336.20
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	61.16			61.16	Cum	262.5	16053.34
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		50.37				Cum	103.3	5203.48
	<b>Total Cost</b>							INR	<b>344052.62</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>118.46</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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		1.05	14.55		151.00	2196.62
						<b>76.89</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.10	12.02			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.41</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.99		2.70	8.06			
						8.06			
						<b>5.35</b>	Cum	4151.40	22191.79
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>14.49</b>	Cum.	6434.40	93218.91
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1594.00</b>	Kg	76.00	121144.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>137.22</b>	Sqm.	186.30	25564.97
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	240.9	4818.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	63.81			63.81	Cum	262.5	16749.15
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		54.65				Cum	103.3	5645.24
	<b>Total Cost</b>							INR	<b>358803.32</b>



## 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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>43.01</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		0.60	7.17		126.4	905.98
						<b>7.17</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	4151.40	12706.18
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>6.44</b>	Cum.	6434.40	41448.10
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>709.00</b>	Kg	76.00	53884.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		2.80	47.50			
	Total					<b>51.79</b>	Sqm.	186.30	9648.32
<b>8</b>	<b>Cl Steps-5 Kg</b>	3	-	-	-	<b>3.00</b>	No's	240.9	722.70
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	26.56			26.56	Cum	262.5	6971.13
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						<b>11.60</b>	Meter	134.95	<b>1565.42</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>31.37</b>	Sqm	343.22	<b>10766.33</b>
<b>13</b>	<b>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</b>		16.45				Cum	103.3	<b>1699.14</b>
	<b>Total Cost</b>							INR	<b>156609.37</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>48.98</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.10	13.14		126.4	1660.96
						<b>13.14</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	4151.40	12706.18
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>6.85</b>	Cum.	6434.40	44054.04
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>753.00</b>	Kg	76.00	57228.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		3.30	55.98			
	Total					<b>60.27</b>	Sqm.	186.30	11228.57
<b>8</b>	<b>Cl Steps-5 Kg</b>	4	-	-	-	<b>4.00</b>	No's	240.9	963.60
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	29.00			29.00	Cum	262.5	7611.27
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						<b>11.60</b>	Meter	134.95	<b>1565.42</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>35.14</b>	Sqm	343.22	<b>12059.58</b>
<b>13</b>	<b>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</b>		19.98				Cum	103.3	<b>2064.23</b>
	<b>Total Cost</b>							INR	<b>169832.65</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>54.95</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.50	17.92		126.4	2264.94
						<b>17.92</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	4151.40	12706.18
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>7.25</b>	Cum.	6434.40	46659.97
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>798.00</b>	Kg	76.00	60648.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		3.80	64.47			
	Total					<b>68.75</b>	Sqm.	186.30	12808.82
<b>8</b>	<b>Cl Steps-5 Kg</b>	6	-	-	-	<b>6.00</b>	No's	240.9	1445.40
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	31.43			31.43	Cum	262.5	8251.42
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>38.90</b>	Sqm	343.22	13352.84
<b>13</b>	<b>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</b>		23.52				Cum	103.3	2429.32
	<b>Total Cost</b>							INR	<b>183270.83</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>60.92</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.50	17.92		126.4	2264.94
						<b>17.92</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	4151.40	12706.18
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>7.66</b>	Cum.	6434.40	49265.90
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>842.00</b>	Kg	76.00	63992.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		4.30	72.95			
	Total					<b>77.24</b>	Sqm.	186.30	14389.08
<b>8</b>	<b>Cl Steps-5 Kg</b>	8	-	-	-	<b>8.00</b>	No's	240.9	1927.20
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	33.87			33.87	Cum	262.5	8891.57
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>42.67</b>	Sqm	343.22	14646.09
<b>13</b>	<b>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</b>		27.05				Cum	103.3	2794.42
	<b>Total Cost</b>							INR	<b>196224.94</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>66.90</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.50	17.92		126.4	2264.94
						<b>17.92</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	4151.40	12706.18
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>8.06</b>	Cum.	6434.40	51871.83
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>887.00</b>	Kg	76.00	67412.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		4.80	81.43			
	Total					<b>85.72</b>	Sqm.	186.30	15969.33
<b>8</b>	<b>Cl Steps-5 Kg</b>	9	-	-	-	<b>9.00</b>	No's	240.9	2168.10
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	36.31			36.31	Cum	262.5	9531.72
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>46.44</b>	Sqm	343.22	15939.34
<b>13</b>	<b>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</b>		30.59				Cum	103.3	3159.51
	<b>Total Cost</b>							INR	<b>209014.14</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	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
						<b>72.87</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	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
						<b>37.03</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	4151.40	12706.18
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4681.30	272.07
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>8.47</b>	Cum.	6434.40	54477.76
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>931.00</b>	Kg	76.00	70756.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		5.30	89.91			
	Total					<b>94.20</b>	Sqm.	186.30	17549.58
<b>8</b>	<b>Cl Steps-5 Kg</b>	11	-	-	-	<b>11.00</b>	No's	240.9	2649.90
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	22.68			22.68	Cum	262.5	5952.45
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>50.21</b>	Sqm	343.22	17232.60
<b>13</b>	<b>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</b>		50.19				Cum	103.3	5185.04
	<b>Total Cost</b>							INR	<b>222040.72</b>

Reference sheet

1	Earthwork Excavation	Unit	Rate as per SOR	
	0 - 1.5 m	Cum	319.60	BCD-18, 2.8
	1.5m to 3.0	Cum	360.60	BCD-18, 2.8
	3.0m to 4.5m	Cum	401.60	BCD-18, 2.8
	4.5m to 6.0m	Cum	442.60	BCD-18, 2.8
	6.0m to 7.5m	Cum	483.60	BCD-18, 2.8
	7.5m to 9.0m	Cum	524.60	BCD-18, 2.8
2	<b>Timbering</b>			
	3.0m to 4.5m	Sqm.	126.4	BCD-18, 2.1
	4.5m to 6.0m	Sqm.	134.6	BCD-18, 2.1
	6m to 7.5m	Sqm.	142.8	BCD-18, 2.1
	7.5m to 9.0m	Sqm.	151	BCD-18, 2.1
3	<b>PCC - M15 Grade</b>	Cum	4151.40	BCD-18, 4.1
4	<b>PCC - M20 Grade</b>	Cum	4681.3	BCD-18, 4.1
5	<b>RCC - M20 Grade</b>	Cum	4902.3	BCD-18, 5.1
	<b>RCC - M25 Grade</b>	Cum	6434.40	BCD-18, 5.1
6	<b>Reinforcement Steel</b>	kg	76.00	BCD-18, 5.2
7	<b>Shuttering</b>	Sqm.	186.30	BCD-18, 5.9
8	<b>CI Steps-5 Kg</b>	No's	240.9	BCD-18, 19.
9	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	Cum	262.5	BSR - RCD-
10	<b>Cost of SFRC Manholeframe and Cover</b>		<b>953.10</b>	BCD-18, 19.
11	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	Meter	134.95	BCD-18, lte
12	<b>Internal Lining by High Alumina Cement (1:3)</b>	Sqm	343.22	RA
13	<b>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</b>	Cum	103.3	BCD-18, 2.2

.1  
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.1+4\*2.27.1  
.1+5\*2.27.1

6.3  
6.3+8.20  
6.3+2\*8.20  
6.3+3\*8.20

.3  
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15  
18- Item- 3.11, P-45 & RA

19.3.1  
m-1548



Rate Analysis of High Alumina Cement Lining			
<b>A</b>	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
	<b>Total INR (per m2)</b>	<b>INR/m2</b>	<b>343.22</b>

<b>B</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
	<b>Total INR (per m2)</b>	<b>INR/m2</b>	<b>164.75</b>

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

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

Sr.	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 <sub>2</sub> S 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

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

Sr.	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)
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.
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	

## Gaya Sewerage Project

### 6000 & 8000 LTR. CLEANWATER TANK CAPACITY, MCV CHASSIS MOUNTED SEWER AND DRAIN LINE JETTING MACHINE

Sr.No.	Description of Material / Item	Qty.	Rate (Rs.)	Amount in Rs.
1	Suction cum Jetting Machine Pump, Flow Rate & Pressure : 70 LPM & 130 Bar on 11 Ton GVW Chassis	3	1422850	4268550
2	Suction cum Jetting Machine Pump, Flow Rate & Pressure, 267 LPM & 155 Bar; 16 Ton GVW Chassis	1	2742950	2742950
		<b>Sub Total</b>		7011500
	Vat @ Central 12.5 %			876438
	Grand Total			7887938
			Say	7890000

**Rupees Seventy Eight Lakhs Eighty Eight Thousand Only**

**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	55	1100	28600	343200

**Table 3: Maitenance Cost**

S. No.	Maitence cost for 3 month	No of quarter	Cost for One Year
1	10000	4	40000
2	12000	12	144000.00

<b>Total O&amp;M Cost (Rs. Lakh)</b>	<b>1055200.00</b>
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**Operation and Maintenance Cost for Sewer Cleaning Equipments - 8000 Litre**

**COST OF MAN POWER REQUIREMENT FOR**

S.No	Man Power	Collection System			Pumping mai	
		No of staff	Monthly Salary	Monthly Expenses	No of staff	Monthly Salary
1	ITI Qualified Plumbers/Electricians	4	12000	48000	1	12000
2	Semi Skilled Labourer	4	12000	48000	1	12000
3	Unskilled Labourer	12	10000	120000	1	10000
4	Watchman /Security	0	8000	0	0	8000
5	Plant Manager	0		0	0	
6	Chemist	0		0	0	
7	Mechnic /Filter	0		0	0	
8	Plant Operators	0		0	0	
9	Gardener	0		0	0	
10	Helpers	0		0	0	
	Total			216000		
	Cost per one year			2592000		
	Cost per one year			25.92	Lakhs	

**MAINTENANCE COST FOR MATERIALS REQUIREMENT FOR OPERATION FOR COLLECTION SYSTEM , PUM**

S.No	Description	Collection System	Pumping mai
1	Materials required Cost ( 25% Materials and 75% Manpower)	864000	136000

**OPERATION**

in	Pumping station			STP			
	Monthly Expenses	No of staff	Monthly Salary	Monthly Expenses	No of staff	Monthly Salary	Monthly Expenses
	12000	27	12000	324000	1	12000	12000
	12000	18	12000	216000	0		
	10000	18	10000	180000	0		
	0	27	8000	216000	9	8000	72000
	0	0		0	1	30000	30000
	0	0		0	1	15000	15000
	0	0		0	1	12000	12000
	0	0		0	4	12000	48000
	0	0		0	3	6000	18000
	0	0		0	4	8000	32000
	34000			936000			239000
	408000			11232000			2868000
	4.08 Lakhs			112.32 Lakhs			28.68 lakhs

<b>MPING MAIN AND PUMPING STATION</b>	
in	Pumping Station
	3744000

### Energy Load Calculation IPS2

Description	Qty	Units
<b>Avg. Flow for 2033</b>	4.227	MLD
	0.049	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	9.99	MLD
	0.116	m <sup>3</sup> /sec
	416.3	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	1665	m <sup>3</sup>
Dia. of Pumping Main	350	mm
Velocity	1.202	m/sec
Length of Pumping Main	1517	m
Static Head	<b>10.68</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0037	
Frictional Losses = L x S	5.62	
In line special Losses	0.56	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>18.36</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	35.92	kW/h
<b>Power in kW/month</b>	<b>4311</b>	<b>kW/month</b>

Remaining flow	2562	cum
Assuming one (1) Pumps working to pump avg. flow	0.049	cum/s.
No. of hours one (1) pump can pump	<b>14.55</b>	Hours
Velocity for the remaining flow	0.51	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0008	
Frictinal Losses = L x S	1.14	
In line speacial Losses	0.11	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>13.50</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	11.17	kW/h
Power in kW/month	4876	kW/month
<b>Total Kwh for peak flow(4hrs)</b>	<b>4311</b>	
<b>Total Kwh for Av. flow(14.55hrs)</b>	<b>4876</b>	
<b>Total Kwh per month</b>	<b>9187</b>	



### Energy Load Calculation IPS2A

Description	Qty	Units
<b>Avg. Flow for 2033</b>	8.08	MLD
	0.094	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	19.10	MLD
	0.221	m <sup>3</sup> /sec
	795.8	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	3183	m <sup>3</sup>
Dia. of Pumping Main	500	mm
Velocity	1.126	m/sec
Length of Pumping Main	2422	m
Static Head	<b>8.47</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0022	
Frictional Losses = L x S	5.24	
In line special Losses	0.52	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>15.74</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	58.85	kW/h
<b>Power in kW/month</b>	<b>7062</b>	<b>kW/month</b>

Remaining flow	4897	cum
Assuming one (1) Pumps working to pump avg. flow	0.094	cum/s.
No. of hours one (1) pump can pump	<b>14.55</b>	Hours
Velocity for the remaining flow	0.48	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0004	
Frictional Losses = L x S	1.07	
In line special Losses	0.11	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>11.20</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	17.72	kW/h
Power in kW/month	7732	kW/month
<b>Total Kwh for peak flow(4hrs)</b>	<b>7062</b>	
<b>Total Kwh for Av. flow(14.55hrs)</b>	<b>7732</b>	
<b>Total Kwh per month</b>	<b>14794</b>	

### Energy Load Calculation IPS3

Description	Qty	Units
<b>Avg. Flow for 2033</b>	2.4902	MLD
	0.029	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	5.89	MLD
	0.068	m <sup>3</sup> /sec
	245.2	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	981	m <sup>3</sup>
Dia. of Pumping Main	350	mm
Velocity	0.708	m/sec
Length of Pumping Main	3140	m
Static Head	<b>14.47</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0014	
Frictional Losses = L x S	4.37	
In line special Losses	0.44	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>20.77</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	23.94	kW/h
<b>Power in kW/month</b>	<b>2873</b>	<b>kW/month</b>

Remaining flow	1509	cum
Assuming one (1) Pumps working to pump avg. flow	0.029	cum/s.
No. of hours one (1) pump can pump	<b>14.55</b>	Hours
Velocity for the remaining flow	0.30	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0003	
Frictinal Losses = L x S	0.89	
In line speacial Losses	0.09	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>17.00</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	8.29	kW/h
Power in kW/month	3617	kW/month
<b>Total Kwh for peak flow(4hrs)</b>	<b>2873</b>	
<b>Total Kwh for Av. flow(14.86hrs)</b>	<b>3617</b>	
<b>Total Kwh per month</b>	<b>6490</b>	

### Energy Load Calculation IPS4 of MLD

Description	Qty	Units
<b>Avg. Flow for 2033</b>	6.814	MLD
	0.079	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	14.56	MLD
	0.168	m <sup>3</sup> /sec
	606.5	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	2426	m <sup>3</sup>
Dia. of Pumping Main	500	mm
Velocity	0.858	m/sec
Length of Pumping Main	1236	m
Static Head	<b>10.88</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0013	
Frictional Losses = L x S	1.62	
In line special Losses	0.16	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>14.16</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	40.36	kW/h
Power in kW/month	<b>4843</b>	kW/month

Remaining flow	4388	cum
Assuming one (1) Pumps working to pump avg. flow	0.079	cum/s.
No. of hours one (1) pump can pump	<b>15.45</b>	Hours
Velocity for the remaining flow	0.40	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0003	
Frictinal Losses = L x S	0.40	
In line speacial Losses	0.04	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>13.00</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	17.34	kW/h
Power in kW/month	8041	kW/month
Total Kwh for peak flow(4hrs)	4843	
Total Kwh for Av. flow(14.86hrs)	8041	
<b>Total Kwh per month</b>	<b>12884</b>	

**Energy Load Calculation ISPS 4A of MLD**

Description	Qty	Units
<b>Avg. Flow for 2033</b>	18.94	MLD
	0.219	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	40.46	MLD
	0.468	m <sup>3</sup> /sec
	1685.9	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	6744	m <sup>3</sup>
Dia. of Pumping Main	800	mm
Velocity	0.932	m/sec
Length of Pumping Main	3150	m
Static Head	<b>12.50</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0009	
Frictional Losses = L x S	2.78	
In line special Losses	0.28	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>17.05</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	135.11	kW/h
Power in kW/month	<b>16213</b>	kW/month

Remaining flow	12196	cum
Assuming one (1) Pumps working to pump avg. flow	0.219	cum/s.
No. of hours one (1) pump can pump	<b>15.45</b>	Hours
Velocity for the remaining flow	0.44	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0002	
Frictinal Losses = L x S	0.68	
In line speacial Losses	0.07	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>15.00</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	55.63	kW/h
Power in kW/month	25791	kW/month
Total Kwh for peak flow(4hrs)	16213	
Total Kwh for Av. flow(14.86hrs)	25791	
<b>Total Kwh per month</b>	<b>42004</b>	

### Energy Load Calculation IPS5

Description	Qty	Units
<b>Avg. Flow for 2033</b>	4.156	MLD
	0.048	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	9.82	MLD
	0.114	m <sup>3</sup> /sec
	409.3	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	1637	m <sup>3</sup>
Dia. of Pumping Main	400	mm
Velocity	0.905	m/sec
Length of Pumping Main	1668	m
Static Head	<b>12.32</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0019	
Frictional Losses = L x S	3.13	
In line special Losses	0.31	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>17.26</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	33.19	kW/h
<b>Power in kW/month</b>	<b>3983</b>	<b>kW/month</b>

Remaining flow	2519	cum
Assuming one (1) Pumps working to pump avg. flow	0.048	cum/s.
No. of hours one (1) pump can pump	<b>14.55</b>	Hours
Velocity for the remaining flow	0.38	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0004	
Frictinal Losses = L x S	0.64	
In line speacial Losses	0.06	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>14.60</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	11.88	kW/h
Power in kW/month	5184	kW/month
<b>Total Kwh for peak flow(4hrs)</b>	<b>3983</b>	
<b>Total Kwh for Av. flow(14.86hrs)</b>	<b>5184</b>	
<b>Total Kwh per month</b>	<b>9167</b>	

### Energy Load Calculation IPS5A

Description	Qty	Units
<b>Avg. Flow for 2033</b>	3.99	MLD
	0.046	m <sup>3</sup> /sec
Peak factor	2.50	
<b>Peak flow</b>	9.43	MLD
	0.109	m <sup>3</sup> /sec
	393.0	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	1572	m <sup>3</sup>
Dia. of Pumping Main	400	mm
Velocity	0.869	m/sec
Length of Pumping Main	1322	m
Static Head	<b>12.12</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0017	
Frictional Losses = L x S	2.30	
In line special Losses	0.23	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>16.15</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	29.82	kW/h
<b>Power in kW/month</b>	<b>3578</b>	<b>kW/month</b>

Remaining flow	2418	cum
Assuming one (1) Pumps working to pump avg. flow	0.046	cum/s.
No. of hours one (1) pump can pump	<b>14.55</b>	Hours
Velocity for the remaining flow	0.37	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0004	
Frictinal Losses = L x S	0.47	
In line speacial Losses	0.05	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>14.20</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	11.09	kW/h
Power in kW/month	4841	kW/month
<b>Total Kwh for peak flow(4hrs)</b>	<b>3578</b>	
<b>Total Kwh for Av. flow(14.86hrs)</b>	<b>4841</b>	
<b>Total Kwh per month</b>	<b>8419</b>	

**Energy Load Calculation ISPS6 of 25.478MLD**

Description	Qty	Units
<b>Avg. Flow for 2033</b>	25.478	MLD
	0.295	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	54.43	MLD
	0.630	m <sup>3</sup> /sec
	2267.9	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	9072	m <sup>3</sup>
Dia. of Pumping Main	900	mm
Velocity	0.990	m/sec
Length of Pumping Main	585	m
Static Head	<b>9.31</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0009	
Frictional Losses = L x S	0.50	
In line special Losses	0.05	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>11.36</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	121.10	kW/h
Power in kW/month	<b>14533</b>	kW/month

Remaining flow	16406	cum
Assuming one (1) Pumps working to pump avg. flow	0.295	cum/s.
No. of hours one (1) pump can pump	<b>15.45</b>	Hours
Velocity for the remaining flow	0.46	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0002	
Frictinal Losses = L x S	0.12	
In line speacial Losses	0.01	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>11.00</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	54.87	kW/h
Power in kW/month	25442	kW/month
Total Kwh for peak flow(4hrs)	14533	
Total Kwh for Av. flow(14.86hrs)	25442	
<b>Total Kwh per month</b>	<b>39975</b>	

### Energy Load Calculation MPS of 30 MLD

Description	Qty	Units
<b>Avg. Flow for 2033</b>	30	MLD
	0.347	m <sup>3</sup> /sec
Peak factor	2.25	
<b>Peak flow</b>	64.09	MLD
	0.742	m <sup>3</sup> /sec
	2670.5	m <sup>3</sup> /hr
No. of pumps working	1	
Assumed peak hour of pumping	4	hr
Peak pump discharge quantity	10682	m <sup>3</sup>
Dia. of Pumping Main	900	mm
Velocity	1.166	m/sec
Length of Pumping Main	42	m
Static Head	<b>13.00</b>	m
Hazen William's coefficient 'C'	135	
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0012	
Frictional Losses = L x S	0.05	
In line special Losses	0.00	
<b>Station losses</b>	1.50	
<b>Total Head</b>	<b>15.00</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	180.05	kW/h
<b>Power in kW/month</b>	<b>21606</b>	<b>kW/month</b>

Remaining flow	19318	cum
Assuming one (1) Pumps working to pump avg. flow	0.371	cum/s.
No. of hours one (1) pump can pump	<b>14.46</b>	Hours
Velocity for the remaining flow	0.58	m/sec
$S = (V / (0.849 C R^{0.63}))^{(1/0.54)}$	0.0003	
Frictinal Losses = L x S	0.01	
In line speacial Losses	0.00	
Station losses	1.50	
<b>Total head for the remaining flow</b>	<b>14.60</b>	m
Pump Efficiency	70.00	%
Motor Efficiency	75.00	%
Power in kW	87.65	kW/h
Power in kW/month	38033	kW/month
<b>Total Kwh for peak flow(4hrs)</b>	<b>21606</b>	
<b>Total Kwh for Av. flow(14.86hrs)</b>	<b>38033</b>	
<b>Total Kwh per month</b>	<b>59639</b>	



Power Consumption charges

S.No	Location of IPS	Unit per month	Unit per Year	Rate per unit	Amount
1	IPS 2	9187	110244		
2	IPS 2A	14794	177528		
3	IPS 3	6490	77880		
4	IPS 4	12884	154608		
5	IPS 4A	42004	504048		
6	IPS 5	9167	110004		
7	IPS 5A	8419	101028		
8	IPS 6	39975	479700		
9	MPS	59639	715668		
	Total	202559	2430708	8	19445664

194.46 Lakhs

2021 year cost of power consumption charges = 29% of full Capacity  
 $=0.29*194.96$   
 = 56.39 Lakhs

2022 year cost of power consumption charges = 32% of full Capacity  
 $=0.32*194.96$   
 = 62.23 Lakhs

2023 year cost of power consumption charges = 33% of full Capacity  
 $=0.33*194.96$   
 = 64.17 Lakhs

2024 year cost of power consumption charges = 41% of full Capacity  
 $=0.41*194.96$   
 = 79.73 Lakhs

2025 year cost of power consumption charges = 62% of full Capacity  
 $=0.62*194.96$   
 = 120.57 Lakhs

2026 year cost of power consumption charges = 68% of full Capacity  
 $=0.68*194.96$   
 = 132.23 Lakhs

2027 year cost of power consumption charges = 75% of full Capacity  
 $=0.75*194.96$   
 = 145.85 Lakhs





**Cost in Lakhs**

**O&M Cost with power consumption charges for the year 2027**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
6	Power cost	0	145.85	0	207.96	353.81
	<b>Total Cost</b>	<b>34.56</b>	<b>323.54</b>	<b>5.44</b>	<b>424.36</b>	<b>787.9</b>

**O&M Cost with power consumption charges for the year 2026**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
6	Power cost	0	132.23	0	207.96	340.19
	<b>Total Cost</b>	<b>34.56</b>	<b>309.92</b>	<b>5.44</b>	<b>424.36</b>	<b>774.28</b>

**O&M Cost with power consumption charges for the year 2025**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
6	Power cost	0	120.57	0	207.96	328.53
	<b>Total Cost</b>	<b>34.56</b>	<b>298.26</b>	<b>5.44</b>	<b>424.36</b>	<b>762.62</b>

**O&M Cost with power consumption charges for the year 2024**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
6	Power cost	0	79.73	0	207.96	287.69
	<b>Total Cost</b>	<b>34.56</b>	<b>257.42</b>	<b>5.44</b>	<b>424.36</b>	<b>721.78</b>

**O&M Cost with power consumption charges for the year 2023**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171
2	Chemical	0	0	0	19.38	19.38
3	Sludge Disposal	0	0	0	72.71	72.71
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
6	Power cost	0	64.17	0	166.37	230.54
	Total Cost	34.56	241.86	5.44	359.74	641.6

**O&M Cost with power consumption charges for the year 2022**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171
2	Chemical	0	0	0	18.17	18.17
3	Sludge Disposal	0	0	0	68.17	68.17
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
6	Power cost	0	62.23	0	155.97	218.2
	Total Cost	34.56	239.92	5.44	343.59	623.51

**O&M Cost with power consumption charges for the year 2021**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171
2	Chemical	0	0	0	16.96	16.96
3	Sludge Disposal	0	0	0	63.62	63.62
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
6	Power cost	0	56.39	0	145.57	201.96
	Total Cost	34.56	234.08	5.44	327.43	601.51

**Cost in Lakhs**

**O&M Cost with out power consumption charges for the year 2027**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171.00
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
	<b>Total Cost</b>	<b>34.56</b>	<b>177.69</b>	<b>5.44</b>	<b>216.4</b>	<b>434.09</b>

**O&M Cost with out power consumption charges for the year 2026**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171.00
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
	<b>Total Cost</b>	<b>34.56</b>	<b>177.69</b>	<b>5.44</b>	<b>216.4</b>	<b>434.09</b>

**O&M Cost with out power consumption charges for the year 2025**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171.00
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
	<b>Total Cost</b>	<b>34.56</b>	<b>177.69</b>	<b>5.44</b>	<b>216.4</b>	<b>434.09</b>

**O&M Cost with out power consumption charges for the year 2024**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171.00
2	Chemical	0	0	0	24.23	24.23
3	Sludge Disposal	0	0	0	90.89	90.89
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
	<b>Total Cost</b>	<b>34.56</b>	<b>177.69</b>	<b>5.44</b>	<b>216.4</b>	<b>434.09</b>

**O&M Cost with out power consumption charges for the year 2023**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171.00
2	Chemical	0	0	0	19.38	19.38
3	Sludge Disposal	0	0	0	72.71	72.71
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
	Total Cost	34.56	177.69	5.44	193.37	411.06

**O&M Cost with out power consumption charges for the year 2022**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171.00
2	Chemical	0	0	0	18.17	18.17
3	Sludge Disposal	0	0	0	68.17	68.17
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
	Total Cost	34.56	177.69	5.44	187.62	405.31

**O&M Cost with out power consumption charges for the year 2021**

S.No	Decription	Collection system	Pumping station	Pumping main	STP	Total
1	Manpower	25.92	112.32	4.08	28.68	171.00
2	Chemical	0	0	0	16.96	16.96
3	Sludge Disposal	0	0	0	63.62	63.62
4	Maintenance Cost	8.64	37.44	1.36	63.72	111.16
5	Cost of Diesel	0	27.93	0	8.88	36.81
	Total Cost	34.56	177.69	5.44	181.86	399.55

Power Consumption Charges				Cost in Lakhs			
	2021	2022	2023	2024	2025	2026	2027
STP	145.57	155.97	166.37	207.96	207.96	207.96	207.96
Pumping station	56.39	62.23	64.17	79.73	120.57	132.23	145.85
Total	201.96	218.2	230.54	287.69	328.53	340.19	353.81

Cost First 2 years	420.16
Cost second 5 years	1540.76

O&M Cost with power consumption charges for Seven Years				Cost in Lakhs			
	2021	2022	2023	2024	2025	2026	2027
STP	327.43	343.59	359.74	424.36	424.36	424.36	424.36
Pumping station	234.08	239.92	241.86	257.42	298.26	309.92	323.54
Pumping main	5.44	5.44	5.44	5.44	5.44	5.44	5.44
Collection System	34.56	34.56	34.56	34.56	34.56	34.56	34.56
Total	601.51	623.51	641.6	721.78	762.62	774.28	787.9

Cost First 2 years	1225.02
Cost second 5 years	3688.18

O&M Cost with out power consumption charges for Seven Years				Cost in Lakhs			
	2021	2022	2023	2024	2025	2026	2027
STP	181.86	187.62	193.37	216.4	216.4	216.4	216.4
Pumping station	177.69	177.69	177.69	177.69	177.69	177.69	177.69
Pumping main	5.44	5.44	5.44	5.44	5.44	5.44	5.44
Collection System	34.56	34.56	34.56	34.56	34.56	34.56	34.56
Total	399.55	405.31	411.06	434.09	434.09	434.09	434.09

Cost First 2 years	804.86
Cost second 5 years	2147.42



### Diesel Cost for operating Generators

	IPS 2	IPS 2A	IPS 3	IPS 4	IPS 4A	IPS 5	IPS 5A
Generator capacity	100	140	160	125	140	100	100
Power shut down per day	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Diesel required per hour	21.4	32.1	42.8	21.4	32.1	21.4	21.4
Total diesel required per day	10.7	16.05	21.4	10.7	16.05	10.7	10.7
Total Diesel Required for year	3906	5858	7811	3906	5858	3906	3906
Total Diesel required for all Pumping stations	42962	<b>litres</b>				Total Diesel required Pumping station	
Cost of Diesel per litre	65						
Total Cost of Diesel per year	2792530						
	27.93	<b>Lakhs</b>					

IPS 6	MPS
160	315
0.5	0.5
42.8	74.9
21.4	37.45
7811	13669
for Main on	13669
	65
	888485
	8.88

**Litres**

**Lakhs**

**Table: Operation and Maintenance Cost STP**

Sl.	Personnel	Nos.	Flow MLD	30
			Salary Rs./month	Total Cost Rs./month
1	Plant Manager (Common for all modules)	1	30,000	30,000
2	Chemist	1	15,000	15,000
3	Mechanic/Fitter (One for each Modules)	1	12,000	12,000
4	Electrician (One for each Modules)	1	12,000	12,000
5	Plant Operators (4 for each module)	4	12,000	48,000
6	Helpers ( 4 for each Module)	4	8,000	32,000
7	Watchmen ( Common)	9	8,000	72,000
8	Gardener ( Common)	3	6,000	18,000
	Total (Rs./month)			2,39,000
	Total Cost, yearly (INR in Lakh)			<b>28.68</b>

**Table 2: Chemical Consumption Cost**

Sr. No	Chemical	Qty Kg/Day	Rate Rs/Kg	Total Cost Rs./day
1	Chlorine @ 3 mg/l	90	18	1,620
2	Dewatering Polymer @ 1.50 kg/ton of dry solids	14.34	350	5,019
	Total Rs. /Day			6,639
	Total Rs./m <sup>3</sup>			0.221
	Total Cost, yearly (INR in Lakh)			<b>24.23</b>

**Table 3: Sludge Disposal Cost**

Sr. No	Description	Qty (m3/day)	Unit rate (Rs./m3)	Amount (Rs.)
1	Dewatered Sludge (Qty (m3/day) = Sludge (Kg/day)/Consistency 20%/1000)	47.790	500	23,895
2	Fine Screenings @ 45 lts/MLD (Qty(m3/day)= Flow (MLD)x 0.045)	1.350	500	675
3	Grit @ 0.004-0.037 m <sup>3</sup> /MLD (Qty (m3/day)= Flow (MLD)x0.022)	0.660	500	330
	Total (Rs./day)			24,900
	Total (Rs. /m <sup>3</sup> )			0.830
	Total Cost, yearly (INR in Lakh)			<b>90.89</b>

**Table 4: Maintenance Cost**

Breakup of Capital Cost (From design and estimate)		Break up of Maintenance		cost, Yearly (INR in Lakh)
Civil	Mechanical, Electrical and Instrumentation works	Civil	Mech., Elec. and Instru. works	
		1.5%	3.0%	
1062	1593	15.93	47.79	<b>63.72</b>

**Table 5: Power Cost for Full Capacity**

S. No.	Capacity (MLD)	Total Units in a day (Kwh)	Power Charges (Rs./Kwh)	Power Cost, Yearly (INR in Lakhs)
1	30 MLD	7122	8	<b>207.96</b>

2021 year cost of power consumption charges = 70% of full Capacity  
= 0.70 \* 207.96

$$= 145.57 \text{ Lakhs} =$$

$$\begin{aligned} 2022 \text{ year cost of power consumption charges} &= 75\% \text{ of full Capacity} \\ &= 0.75 * 207.96 \\ &= 155.97 \text{ Lakhs} \end{aligned}$$

$$\begin{aligned} 2023 \text{ year cost of power consumption charges} &= 80\% \text{ of full Capacity} \\ &= 0.80 * 207.96 \\ &= 166.37 \text{ Lakhs} \end{aligned}$$

$$\begin{aligned} 2024 \text{ year cost of power consumption charges} &= \text{Full Capacity} \\ &= 207.96 \text{ Lakhs} \end{aligned}$$

$$\begin{aligned} 2025 \text{ year cost of power consumption charges} &= \text{Full Capacity} \\ &= 207.96 \text{ Lakhs} \end{aligned}$$

$$\begin{aligned} 2026 \text{ year cost of power consumption charges} &= \text{Full Capacity} \\ &= 207.96 \text{ Lakhs} \end{aligned}$$

$$\begin{aligned} 2027 \text{ year cost of power consumption charges} &= \text{Full Capacity} \\ &= 207.96 \text{ Lakhs} \end{aligned}$$

Sr. No.	Description of work	Units
A) 1	<b>Clearing jungle</b> 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)	<b>EXCAVATION AND REFILLING</b>	
2	Earth work in excavation in <b>foundation trenches</b> 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.	
	<b>All types of Soil</b>	
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 soils as directed, within a lead of 50 m .	
I)	<b>Ordinary Rock</b>	
a)	From 4.5 m to 6 m	cum
b)	From 6.0 m to 7.5 m	cum
II)	<b>Hard Rock (Blasting Prohibited)</b>	
a)	From 4.5 m to 6.0 m	cum
b)	From 6.0 m to 7.5 m	cum
4	<b>Filling available</b> 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	<b>Pumping out water</b> caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL
	Disposal of Excavated Earth	
6	<b>Removal of unserviceable soil</b> with Disposal above 8 Km etc. complete and as per direction of engineer in charge.	cum
C)	<b>PIPE MATERIAL</b>	
I)	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP3 class</b> (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
<b>II)</b>	Providing at site, lowering & laying in trenches, aligning & jointing of <b>RCC pipes NP4 class</b> (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
<b>7</b>	Property connection (House connection)	
	Providing, laying and jointing following <b>P.V.C.-U pipes</b> 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 conform to IS 14182)	
1)	110 mm dia	m
<b>8</b>	Providing and placing in position precast <b>RCC in vertical post</b> of size 40x90x1500 mm depth <b>at each House service connection</b> in cement mortar 1:3, cost of required form work in precasting, handling, hoisting, centring complete excluding cost of reinforcement with cement concrete grade of M-20 as per drawings and specifications	cum
<b>D)</b>	<b>MANHOLES</b>	
<b>9</b>	Constructing <b>brick masonry circular type manhole 0.91 m internal dia</b> 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 :	

	<b>0.91 m deep with S.F.R.C. cover and frame</b> (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 conforming to IS: 4885	each
	<b>Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.68 m</b>	m
	<b>For Sewer Diameter - upto 400 mm dia</b>	
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.
<b>10</b>	Constructing <b>brick masonry circular manhole 1.22 m internal dia</b> 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 :	
	<b>1.68 m deep with SFRC Cover and frame</b> (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	Each
	<b>Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :</b>	M
	<b>For Sewer Diameter - upto 700 mm dia</b>	
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.
<b>11</b>	Constructing <b>brick masonry circular manhole 1.52 m internal dia</b> 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 :	
	<b>2.30 m deep with SFRC Cover and frame</b> (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	

	<b>Extra depth</b> for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :	m
	<b>For Sewer Diameter - upto 800 mm dia</b>	
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.
<b>E)</b>	<b>Bedding</b>	
<b>12</b>	Providing and laying Compacted <b>Grannular Bedding</b> in 15cm thick layers and well compacted etc. complete ( <b>Type A bedding</b> )	cum
<b>F)</b>	<b>TIMBERING AND BARRACADING</b>	
<b>13</b>	<b>Close timbering</b> 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
<b>14</b>	Extra for <b>planking, strutting and packing</b> materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm
<b>15</b>	<b>Open timbering</b> 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>16</b>	Extra for <b>planking, strutting and packing</b> materials for cavities (in open timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm
<b>17</b>	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
<b>G)</b>	<b>ROAD RESTORATION AND DISMANTLING WORKS</b>	
<b>18</b>	<b>Dismantling of flexible pavements</b> and disposal of dismantled materials up to a lead of 1000 metres, stacking serviceable and unserviceable materials separately. <b>By Mechanical Means</b>	cum



19	<b>Dismantling of cement concrete pavement</b> 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
	<b>Cement concrete road Restoration</b>	
21	Supply and stacking of <b>Fly ash</b> 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 <b>fly ash and earth</b> (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 – in-charge, including compacting each layer by rolling/ ramming and watering , all complete as per drawing and direction of Engineer in - charge.	Cum
23	<b>Cement Concrete Pavement</b> (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
	<b>Restoration of WMM Road</b>	
24	Construction of Granular Sub-Base with Coarse Graded Material (Table-400-2) : <b>Construction of granular sub-base</b> 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 <b>150 mm graded stone aggregate to Wet Mix Macadam (WMM)</b> : 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
	<b>Reconstruction of Bituminous Asphalt Roads</b>	
26	<b>Water Bound Macadam:</b> (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)	
	<b>Grading II:</b> 100 mm thick	cum

	<b>Grading III: 100 mm thick</b>	cum
27	<b>Prime coat</b> (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	<b>Tack Coat:</b> 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	<b>Bituminous Macadam</b> (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	<b>Bituminous Penetration Macadam</b> (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	<b>20mm thick Open-Graded Premix Carpet</b> 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	<b>Demolishing stone rubble masonry</b> including stacking of serviceable material and disposal of unserviceable material within 50 meters lead.	
	In Lime Mortar	cum
	In Cement Mortar	cum
33	<b>Dismantling stone slab flooring</b> laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	sqm
34	<b>Demolishing Cement Concrete</b> including disposal of materials within 50 meter lead:	
	1:3:6 or richer mix	cum
	1:4:8 or leaner mix	cum
35	<b>Demolishing R.C.C.work</b> including stacking of steel bars and disposal of unserviceable material within 50 meters lead:	cum
36	<b>Installation of laboratory</b> for testing various materials and concrete cubes required for the project components as specofied in specifaions and as directed by Engineer in charge etc complete	L.S.
37	<b>Utility Shifting:</b> 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 masonry 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 <b>PVC-U pipes as per IS 15328 drop connection</b> 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)	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 <b>trenchless method</b> 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 <b>trenchless technology</b> , 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	<b>Carriage of Material</b>	
	Sand	MT
	Aggregate	MT
	Bricks	MT

<b>44</b>	Construction of <b>RCC Circular Manhole</b> 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.	
	<b>For sewer dia - 900 mm</b>	
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	Upto 7.0 m depth to invert	No.
	<b>For Sewer Dia-1000 mm to 1100 mm</b>	
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.
	<b>For Sewer Dia - 1200 mm</b>	
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.
	<b>For Sewer Dia 1400 mm</b>	
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.
	<b>For Sewer Dia 1600 mm</b>	
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.
	<b>For Sewer Dia 1800 mm</b>	
1)	Upto 3.0 m depth to invert	No.

2)	Upto 3.5 m depth to invert	No.
3)	Upto 4.0 m depth to invert	No.
4)	Upto 4.5 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
6.55	SOR-BCD-20; It.-2.32; Pg.- 96
	SOR-BCD-20; It.-2..8.1; Pg.-93 and 2.27.1 Pg-96
360.70	
407.00	
448.00	
489.00	
530.00	
817.90	SOR-BCD-20; It.-2.9.1; Pg.-93 and 2.27.2 Pg-96
901.00	
1417.40	SOR-BCD-20; It.-2.9.3; Pg.-93 and 2.27.2 Pg-96
1500.50	
116.50	SOR-BCD-20-Item 2.26; Pg-96
102.60	BSR-BCD-20-Item 2.25; Pg-
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	
	UADD - 1 SOR 2012-2013,Item No. 12.1 Page 133 + 30% Increase
240.50	
8677.50	UADD-I SOR 2012-13, Vol-II Item No. 5.13; pg 48 + 30% increase
	BSR-BCD'20; Item-19.9 and 19.10-Pg-295 + Rate Analysis



7034.60	
4834.92	
11972.27	
13735.33	
15179.83	
	BSR-BCD'20; Item-19.11 and 19.12-Pg-295+Rate Analysis
13772.90	
6280.70	
19084.98	
22035.67	
24820.10	
	BSR-BCD'20; Item-19.13 + 19.14-Pg-296 +rate analysis
30702.20	

14494.02

15057.10	
49363.68	
56387.03	
66586.38	
76785.74	
83241.91	
88124.42	
98470.42	
108816.42	
120741.69	
127008.19	
133358.60	
805.00	BSR-BCD-20; Sr. No.-1.1; Pg.-65+Item-0295, Pg.-7
	BSR-BCD-20; Item-2.16, Pg-94 & Pg - 95
119.40	
124.60	
137.50	
145.50	
153.50	
1593.10	BSR-BCD-20; Item-2.19, Pg-95
61.40	BSR-BCD-20; Item-2.20, Pg-95
817.90	BSR-BCD-20; Item-2.23, Pg-95
84.00	RUIDP SOR 17 Item-4.26, Pg-13
342.00	RCD/SOR-18; Item-2.5-II A; Pg-29

5.20  
12.90

1520.00	RCD/SOR-18; Item-2.6; Pg-29
84.50	BSR-BCD-20; Item-15.43.1, Pg-225
10.00	BSR-BCD-20; Item-2.39, Pg-97
116.50	BSR-BCD-20; Item-2.40, Pg-97
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 (l), 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

10102.00	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	

61394.27	
73098.58	
80045.29	
94474.03	
103911.81	
109304.42	
118596.65	
132272.88	
141561.45	
118347.67	
128915.53	
139302.84	
150074.44	
136383.79	
148433.46	
186266.08	
165912.80	
179319.02	
192725.26	
205861.55	
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				Cement Plaster Internal 1:3	Cement Plaster External Surface	Foot rest	Rate for excavation - BSR-BCD-20- Item 2.8.1; Pg- 93 & 2.27.1; Pg.-96	Rate for plaster - 12 mm thick (1:3) - BSR-BCD- 20-Item 13.11.1; Pg- 202	Providing orange colour safety foot rest - BSR-BCD-20- Item 19.16; Pg- 296	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	Excavatio n Qty, in Cum	Total Excavation Qty Cum							
<b>A</b>	252.00	910.00	0.91	1.225	1.55	1.76	3.77	950.27	2.83	4.56	4.00	407	157.4	290.5	3414.67
	223.00	910.00	0.91	1.50	1.83	1.76	4.44	990.11	3.46	5.58	4.00	407	157.4	290.5	3848.12
	52.00	910.00	0.91	1.68	2.01	1.76	4.88	253.65	3.88	6.26	5.00	407	157.4	290.5	4422.34
<b>B</b>	15.00	1220.00	1.22	1.68	2.01	2.07	6.75	101.21	4.70	7.07	5.00	407	157.4	290.5	5312.08
	102.00	1220.00	1.22	2.00	2.33	2.07	7.82	798.09	5.59	8.42	6.00	407	157.4	290.5	6252.95
	60.00	1220.00	1.22	2.30	2.63	2.07	8.83	530.04	6.43	9.68	7.00	407	157.4	290.5	7153.16
<b>C</b>	55.00	1520.00	1.52	2.65	3.03	2.84	19.16	1053.94	9.79	15.13	8.00	453.3	157.4	290.5	13391.50
	31.00	1520.00	1.52	3.00	3.38	2.84	21.38	662.77	11.46	18.04	9.00	453.3	157.4	290.5	15144.86
	55.00	1520.00	1.52	3.50	3.88	2.84	24.55	1350.08	13.85	22.19	11.00	453.3	157.4	290.5	17815.66
	50.00	1520.00	1.52	4.00	4.38	2.84	27.71	1385.72	16.24	26.35	13.00	453.3	157.4	290.5	20486.47
	15.00	1520.00	1.52	4.25	4.63	2.84	29.30	439.47	17.43	28.42	14.00	499.6	157.4	290.5	23178.37
	16.00	1520.00	1.52	4.50	4.88	2.84	30.88	494.11	18.63	30.50	14.00	499.6	157.4	290.5	24296.60
	43.00	1520.00	1.52	5.00	5.38	2.84	34.05	1464.11	21.01	34.66	16.00	499.6	157.4	290.5	27114.05
	18.00	1520.00	1.52	5.50	5.88	2.84	37.22	669.90	23.40	38.81	18.00	499.6	157.4	290.5	29931.50
	2.00	1520.00	1.52	6.00	6.38	2.84	40.38	80.77	25.79	42.97	19.00	545.9	157.4	290.5	34328.22

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

S. No.	Particulars	No.	Qty.	Unit	Total Qty.	Rate	Amount Rs.
1	<b>REPAIRING THE DOF WATER SUPPLY PIPE LINES, ELECTRICAL CABLE UTILITY LINES DURING THE EXCAVATION &amp; LAYING OF DRAINAGE PIPE ETC.</b>						
	<b>Total No. of properties in 1.00 Km length in city Area Consider property connection at 30 mtr distance</b>	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	<b>COST OF MATERIAL</b>						
	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
	<b>Total cost of Material</b>						<b>9,889.50</b>
	vii) Add 2 % Misc. Material charges						197.79
1.2	<b>COST OF LABOUR</b>						
	i) Plumber			No	1.00	323.00	323.00
	ii) Helper			No	1.00	254.00	254.00
	<b>Total cost of Labour</b>						<b>577.00</b>
1.3	<b>COST OF CABLE</b>						
	Consider 100 mtr cable replacement for 1.00 Km			LS			600.00
	<b>Total cost of Cable</b>						<b>600.00</b>
	<b>TOTAL</b>						<b>11,264.29</b>
						<b>Say Rs.</b>	<b>11,264.00</b>

Rate Analysis for Road Side Chamber					
Sr. No.	Description Of Item	Unit	Quantity	Rate in Rs. (BSR-18)	Amount (Rs.)
<b>1</b>	<b>Excavation :</b>				
	Earth work in excavation in <b>foundation trenches</b> including extra excavation for socket portion ( <b>not exceeding 1.5 m</b> 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.				
	<b>All types of Soil</b>				
<b>a)</b>	Upto 1.5 m	cum	2.12	360.70	765.69
	BSR-BCD-18-Item 2.8.1; Pg-72				
<b>2</b>	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering-all work up to plinth level.				
	<b>M - 10</b>	cum	0.32	3387.10	1090.86
	<b>M - 15</b>	cum	0.01	3832.50	22.86
	<b>M - 20</b>	cum	0.08	4380.40	350.92
	BSR-BCD-18; Sr. No.-4.1.5,4.1.3 and 4.1.2; Pg-79				
<b>3</b>	<b>Filling available</b> 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				
<b>4</b>	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				
<b>5</b>	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
<b>6</b>	<b>Disposal of Excavated Earth</b>				
	<b>Removal of unserviceable soil</b> 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				
<b>7</b>	<b>SFRC Frame Cover</b>				
	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				
<b>8</b>	<b>Miscellaneous Items :</b>				
	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
	<b>TOTAL =</b>				<b>10101.58</b>
	<b>Rate per Road Side Chamber =</b>				<b>10102.00</b>

**RATE ANALYSIS FOR GRANULAR BEDDING**

<b>Sr. No.</b>	<b>Description of item</b>	<b>Unit</b>	<b>Rate in Rs. (BSR-20)</b>
1)	Cost of 20 mm aggregates	Cum	604.91
	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	731.94
2)	Labour for laying Jointing	10%	805.14
		<b>Say Rs.</b>	<b>805.00</b>

## 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/m3	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)	No. of MH	
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		1
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		1
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		2
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		7
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	13
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	16
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	10
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	5
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	1
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		
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		
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		
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		
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		
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		
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		
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					14	62.44	112.28	2
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					3	14.37	25.53	5
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		3
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		
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		
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		
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		1
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		12
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		7
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		1
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		45
	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		20
	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		10
	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		7
	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		2
	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		1
	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		2
	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		4
	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		3
	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		12
	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		15
	<b>Total</b>																	<b>0</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>149</b>	<b>264.9</b>	<b>44</b>	<b>195</b>	<b>351.55</b>	<b>208</b>

Summary

	B3	B3A	B5	B6
Sand	0	148.54	195.29	1445.97
Aggregate	0	264.9	351.55	2608.29
Bricks	-	-	-	-



#####	807.75	
#####	367.20	
99.00	187.90	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
65.66	124.11	
19.10	36.12	
0.00	0.00	
0.00	0.00	
0.00	0.00	
5.68	9.35	
11.98	19.44	
25.24	40.48	
19.89	31.47	
83.40	130.32	
#####	168.60	
<b>1446</b>	<b>2608.29</b>	



## 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	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.15
	1.5m to 3.0		407.00	2112.33
		Cum		
<b>2</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>3</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>4</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	For coverslab			
	For circular opening			
	For walls			
		Cum.	4630.90	12563.07
<b>5</b>	<b>Reinforcement Steel</b>	Kg	68.50	20413.00
<b>6</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	For coverslab			
	Total	Sqm.	203.00	4743.61
<b>7</b>	<b>CI Steps-5 Kg</b>	No's	290.5	871.50
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	Cum	262.5	2166.98
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>10</b>	<b>Internal Lining by High Alumina Cemen</b>	Sqm	343.22	<b>922.32</b>
<b>11</b>	<b>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</b>	Cum	116.5	<b>466.25</b>
	<b>Total Cost</b>			<b>52953.65</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers= 900 mm dia (TYPE -E)</b>				
	<b>DEPTH - D=2.5 m</b>		2.5	
<b>S.No.</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	106.85
		Cum		
<b>2</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	Deductions			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>3</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>4</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	For coverslab			
	For circular opening			
	For walls			
		Cum.	4630.90	14591.65
<b>5</b>	<b>Reinforcement Steel</b>	Kg	68.50	23769.50
<b>6</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	For coverslab			
	<b>Total</b>	Sqm.	203.00	5762.41
<b>7</b>	<b>CI Steps-5 Kg</b>	No's	290.5	1162.00
8	Disposal of Surplus earth upto 8km lead beyond 50m initial lead	Cum	262.5	2371.06
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>10</b>	<b>Internal Lining by High Alumina Cemen</b>	Sqm	343.22	<b>1434.72</b>
<b>11</b>	<b>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</b>	Cum	116.5	<b>622.83</b>
	<b>Total Cost</b>			<b>61394.27</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers=900 mm dia (TYPE -E)</b>				
	<b>DEPTH - D=3.0 m</b>		<b>3</b>	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	1175.36
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.5	356.52
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	Deductions			
	<b>For channel portion(Circular portion)</b>			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	For coverslab			
	<b>For circular opening</b>			
	<b>For walls</b>			
		Cum.	4630.90	18571.83
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	27468.50
<b>7</b>	<b>Shuttering</b>			
	<b>For foundation</b>			
	<b>For RCC - wall</b>			
	For coverslab			
	<b>Total</b>	Sqm.	203.00	6846.57
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	1743.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead</b>	Cum	262.5	2637.02
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cemen</b>	Sqm	343.22	1947.13
<b>12</b>	<b>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</b>	Cum	<b>116.5</b>	<b>779.40</b>
	<b>Total Cost</b>			<b>73098.58</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -E)</b>				
	<b>DEPTH - D=3.5 m</b>		3.5	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	2243.87
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.5	680.63
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	Deductions			
	<b>For channel portion(Circular portion)</b>			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	For coverslab			
	<b>For circular opening</b>			
	<b>For walls</b>			
		Cum.	4630.90	18648.81
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	30345.50
<b>7</b>	<b>Shuttering</b>			
	<b>For foundation</b>			
	<b>For RCC - wall</b>			
	For coverslab			
	<b>Total</b>	Sqm.	203.00	7930.74
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	2324.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead</b>	Cum	262.5	2902.98
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cemen</b>	Sqm	343.22	2459.53
<b>12</b>	<b>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</b>	Cum	116.5	935.98
	<b>Total Cost</b>			<b>80045.29</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers =900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=4 m</b>		<b>4</b>	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	<b>4.5m to 6.0m</b>		499.60	117.76
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.5	972.34
	<b>4.5m to 6.0m</b>		145.7	34.34
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	Deductions			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	<b>For foundation</b>			
	<b>walls for conical portion</b>			
	For walls			
		Cum.	4630.90	19437.41
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	31647.00
<b>7</b>	<b>Shuttering</b>			
	<b>For foundation</b>			
	For RCC - wall			
	<b>walls for conical portion</b>			
	<b>Total</b>	Sqm.	203.00	8037.48
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	2614.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead</b>	Cum	262.5	3462.44
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement</b>	Sqm	343.22	2971.93
<b>12</b>	<b>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</b>	Cum	116.5	962.30
	<b>Total Cost</b>			<b>85036.27</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=4.5 m</b>		4.5	
Sno	Description	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	1295.41
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to6.0m		145.70	377.78
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	21465.99
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	34935.00
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	9121.64
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	3195.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	Cum	262.5	3728.39
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cemen</b>	Sqm	343.22	<b>3484.33</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>1118.88</b>
	<b>Total Cost</b>			<b>94474.03</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=5.0 m</b>		5	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	2473.06
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to6.0m		145.70	721.23
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	23494.57
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	38223.00
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	10205.81
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	3776.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	Cum	262.5	3994.35
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cemen</b>	Sqm	343.22	<b>3996.73</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>1275.45</b>
	<b>Total Cost</b>			<b>103911.81</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=5.5 m</b>		5.5	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	128.68
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	<b>6m to 7.5m</b>		153.90	36.28
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	<b>For Foundation</b>			
	Deductions			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	<b>For collar portion</b>			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	25523.15
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	37743.50
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	<b>walls for conical portion</b>			
	<b>Total</b>	Sqm.	203.00	11289.97
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	4067.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lea</b>	Cum	262.5	4260.30
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>4509.14</b>
<b>12</b>	<b>Filling available excavated earth (exclud</b>	Cum	116.5	<b>1432.03</b>
	<b>Total Cost</b>			<b>109304.42</b>



<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=6.0 m</b>		6	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	1415.46
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	399.05
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	27551.73
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	40757.50
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	12374.13
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	4648.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	Cum	262.5	4526.26
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>5021.54</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>1588.61</b>
	<b>Total Cost</b>			<b>118596.65</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=6.5 m</b>		6.5	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	2702.24
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	761.82
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	29580.31
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	48155.50
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	13458.30
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	5229.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	Cum	262.5	4792.21
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>5533.94</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>1745.19</b>
	<b>Total Cost</b>			<b>132272.88</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=7.0 m</b>		7	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	3860.35
	7.5m to 9.0m		592.20	139.59
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	1088.31
	7.5m to 9.0m		162.10	38.21
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	31608.89
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	51443.50
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	14542.46
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	5519.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	Cum	262.5	5058.17
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>1901.76</b>
	<b>Total Cost</b>			<b>141561.45</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=7.5 m</b>		7.5	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	3860.35
	7.5m to 9.0m		592.20	1535.51
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	1088.31
	7.5m to 9.0m		162.10	420.31
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	33637.47
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	54731.50
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	15626.62
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	6100.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	Cum	262.5	5324.12
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>2058.34</b>
	<b>Total Cost</b>			<b>150743.74</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=8.0 m</b>		<b>8</b>	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	3860.35
	7.5m to 9.0m		592.20	2931.43
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	1088.31
	7.5m to 9.0m		162.10	802.41
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	35666.05
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	58019.50
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	16710.79
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	6681.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	Cum	262.5	5590.08
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>2214.92</b>
	<b>Total Cost</b>			<b>159926.05</b>

<b>Detailed Estimate : RCC M 20 Manholes for Sewers = 900 mm dia (TYPE -F)</b>				
	<b>DEPTH - D=8.5 m</b>		8.5	
<b>Sno</b>	<b>Description</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount Rs</b>
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	3860.35
	7.5m to 9.0m		592.20	4327.35
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	1088.31
	7.5m to 9.0m		162.10	1184.50
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	37694.63
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	61307.50
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	17794.95
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	6972.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	Cum	262.5	5856.03
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>2371.50</b>
	<b>Total Cost</b>			<b>168817.83</b>

DEPTH - D=9.0 m			9	
Sno	Description	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	3860.35
	7.5m to 9.0m		592.20	5723.27
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	1088.31
	7.5m to 9.0m		162.10	1566.60
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	39723.21
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	64664.00
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	18879.12
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	7553.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	Cum	262.5	6121.99
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>2528.07</b>
	<b>Total Cost</b>			<b>178068.63</b>

DEPTH - D=9.5m		9.5		
Sno	Description	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>			
	0 - 1.5 m		360.70	2550.70
	1.5m to 3.0		407.00	2878.11
	3.0m to 4.5m		453.30	3205.52
	4.5m to 6.0m		499.60	3532.94
	6.0m to 7.5m		545.90	3860.35
	7.5m to 9.0m		592.20	7119.19
		Cum		
<b>2</b>	<b>Timbering</b>			
	3.0m to 4.5m		137.50	972.34
	4.5m to 6.0m		145.70	1030.32
	6m to 7.5m		153.90	1088.31
	7.5m to 9.0m		162.10	1948.70
		Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>			
	For benching portion			
	For Foundation			
	<b>Deductions</b>			
	For channel portion(Circular portion)			
	Rectangular portion			
		Cum	3953.40	4689.21
<b>4</b>	<b>PCC - M20 Grade</b>			
	For collar portion			
	For collar portion			
		Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>			
	For foundation			
	walls for conical portion			
	For walls			
		Cum.	4630.90	41751.79
<b>6</b>	<b>Reinforcement Steel</b>	Kg	68.50	67952.00
<b>7</b>	<b>Shuttering</b>			
	For foundation			
	For RCC - wall			
	walls for conical portion			
	Total	Sqm.	203.00	19963.28
<b>8</b>	<b>CI Steps-5 Kg</b>	No's	290.5	8134.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	Cum	262.5	6387.95
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>			<b>978.40</b>
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		343.22	<b>6046.34</b>
<b>12</b>	<b>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</b>	Cum	116.5	<b>2684.65</b>
	<b>Total Cost</b>			<b>187250.93</b>



## Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
DEPTH - D=2 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	<b>2984.14</b>
	1.5m to 3.0	1	5.52		1.10	6.07		407.00	<b>2469.27</b>
						<b>14.34</b>	Cum		
<b>2</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	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			
						<b>1.51</b>	Cum	3953.40	<b>5974.88</b>
<b>3</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	<b>476.83</b>
<b>4</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>3.11</b>	Cum.	4630.90	<b>14380.94</b>
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>342.00</b>	Kg	68.50	<b>23427.00</b>
<b>6</b>	<b>Shuttering</b>								
	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					<b>26.37</b>	Sqm.	203.00	<b>5352.66</b>
<b>7</b>	<b>CI Steps-5 Kg</b>	2	-	-	-	<b>2.00</b>	No's	290.5	<b>581.00</b>
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	9.40			9.40	Cum	262.5	<b>2467.78</b>
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>11</b>	<b>Internal Lining by High Alumina</b>	2.60					Sqm	343.22	<b>893.20</b>
<b>12</b>	<b>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</b>		4.94				Cum	116.5	<b>575.41</b>
	<b>Total Cost</b>								<b>61776.06</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
DEPTH - D=2.5 m									
Sr no	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	<b>2984.14</b>
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	<b>3367.19</b>
	3.0m to 4.5m	1	5.52		0.05	0.28		453.30	<b>125.01</b>
						<b>16.82</b>	Cum		
<b>2</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	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			
						<b>1.51</b>	Cum	3953.40	<b>5974.88</b>
<b>3</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	<b>476.83</b>
<b>4</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>3.59</b>	Cum.	4630.90	<b>16627.74</b>
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>395.00</b>	Kg	68.50	<b>27057.50</b>
<b>6</b>	<b>Shuttering</b>								
	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					<b>31.98</b>	Sqm.	203.00	<b>6492.63</b>
<b>7</b>	<b>CI Steps-5 Kg</b>	4	-	-	-	<b>4.00</b>	No's	290.5	<b>1162.00</b>
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	10.23			10.23	Cum	262.5	<b>2686.09</b>
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>11</b>	<b>Internal Lining by High Alumina</b>	4.41					Sqm	343.22	<b>1513.47</b>
<b>12</b>	<b>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</b>		6.59				Cum	116.5	<b>767.67</b>
	<b>Total Cost</b>								<b>71428.10</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		0.55	3.03		453.30	1375.09
						<b>19.58</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		0.55	3.03		137.50	417.11
						<b>3.03</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>4.62</b>	Cum.	4630.90	21393.53
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>508.00</b>	Kg	68.50	34798.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>37.95</b>	Sqm.	203.00	7704.34
<b>8</b>	<b>CI Steps-5 Kg</b>	5	-	-	-	<b>5.00</b>	No's	290.5	1452.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	11.34			11.34	Cum	262.5	2976.78
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								978.40
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	6.22					Sqm	343.22	2133.75
<b>13</b>	<b>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</b>		8.24				Cum	116.5	959.93
	<b>Total Cost</b>								<b>88207.02</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.05	5.79		453.30	2625.17
						<b>22.34</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.05	5.79		137.50	796.29
						<b>5.79</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>4.56</b>	Cum.	4630.90	21121.36
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>502.00</b>	Kg	68.50	34387.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>43.92</b>	Sqm.	203.00	8916.05
<b>8</b>	<b>CI Steps-5 Kg</b>	7	-	-	-	<b>7.00</b>	No's	290.5	2033.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	12.45			12.45	Cum	262.5	3267.48
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								978.40
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	8.02					Sqm	343.22	2754.02
<b>13</b>	<b>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</b>		9.89				Cum	116.5	1152.19
	<b>Total Cost</b>								92049.05

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24
	4.5m to 6.0m	1	5.52		0.05	0.28		499.60	137.78
						<b>25.10</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.5	1137.56
	4.5m to 6.0m	1	5.52		0.05	0.28		145.7	40.18
						<b>8.55</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>4.72</b>	Cum.	4630.90	21844.48
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>519.00</b>	Kg	68.50	35551.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>43.74</b>	Sqm.	203.00	8879.30
<b>8</b>	<b>CI Steps-5 Kg</b>	9	-	-	-	<b>9.00</b>	No's	290.5	2614.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	15.17			15.17	Cum	262.5	3981.77
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	9.83					Sqm	343.22	3374.30
<b>13</b>	<b>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</b>		9.93				Cum	116.5	1156.46
	<b>Total Cost</b>								<b>97464.06</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24
	4.5m to 6.0m	1	5.52		0.55	3.03		499.60	1515.54
						<b>27.85</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.5	1137.56
	4.5m to 6.0m	1	5.52		0.55	3.03		145.7	441.98
						<b>11.31</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.20</b>	Cum.	4630.90	24091.29
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>572.00</b>	Kg	68.50	39182.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>49.71</b>	Sqm.	203.00	10091.01
<b>8</b>	<b>CI Steps-5 Kg</b>	10	-	-	-	<b>10.00</b>	No's	290.5	2905.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	16.28			16.28	Cum	262.5	4272.47
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	11.64					Sqm	343.22	3994.58
<b>13</b>	<b>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</b>		11.58				Cum	116.5	1348.72
	<b>Total Cost</b>								<b>107726.38</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
Sno	DEPTH - D=5.0 m							5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24
	4.5m to 6.0m	1	5.52		1.05	5.79		499.60	2893.30
						<b>30.61</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.5	1137.56
	4.5m to 6.0m	1	5.52		1.05	5.79		145.7	843.78
						<b>14.06</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.69</b>	Cum.	4630.90	26338.09
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>626.00</b>	Kg	68.50	42881.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>55.68</b>	Sqm.	203.00	11302.72
<b>8</b>	<b>CI Steps-5 Kg</b>	12	-	-	-	<b>12.00</b>	No's	290.5	3486.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	17.38			17.38	Cum	262.5	4563.16
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	13.45					Sqm	343.22	4614.85
<b>13</b>	<b>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</b>		13.23				Cum	116.5	1540.98
	<b>Total Cost</b>								<b>118347.67</b>

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14	
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19	
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24	
	4.5m to 6.0m	1	5.52		1.50	8.27		499.60	4133.28	
	6.0m to 7.5m	1	5.52		0.05	0.28		545.90	150.54	
						<b>33.37</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	5.52		1.50	8.27		137.5	1137.56	
	4.5m to 6.0m	1	5.52		1.50	8.27		145.7	1205.40	
	6m to 7.5m	1	5.52		0.05	0.28		153.90	42.44	
						<b>16.82</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	2.41		1.58	3.80				
	For Foundation	1	2.71		0.10	0.27				
						<b>4.07</b>				
	<b>Deductions</b>									
	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				
						<b>1.51</b>	Cum	3953.40	5974.88	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>6.17</b>	Cum.	4630.90	28584.90	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>679.00</b>	Kg	68.50	46511.50	
<b>7</b>	<b>Shuttering</b>									
	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					<b>61.65</b>	Sqm.	203.00	12514.44	
<b>8</b>	<b>CI Steps-5 Kg</b>	14	-	-	-	<b>14.00</b>	No's	290.5	4067.00	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	18.49			18.49	Cum	262.5	4853.86	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								978.40	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	15.25					Sqm	343.22	5235.13	
<b>13</b>	<b>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</b>		14.88				Cum	116.5	1733.25	
	<b>Total Cost</b>								<b>128915.53</b>	



Detailed Estimate : RCC M 20 Manholes for Sewers = 1000 and 1100 mm dia (TYPE -E)									
Sno	DEPTH - D=6.0 m	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
								6	
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24
	4.5m to 6.0m	1	5.52		1.50	8.27		499.60	4133.28
	6.0m to 7.5m	1	5.52		0.55	3.03		545.90	1655.99
						<b>36.13</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.5	1137.56
	4.5m to 6.0m	1	5.52		1.50	8.27		145.7	1205.40
	6m to 7.5m	1	5.52		0.55	3.03		153.90	466.86
						<b>19.58</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	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			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>6.66</b>	Cum.	4630.90	30831.71
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>732.00</b>	Kg	68.50	50142.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>67.62</b>	Sqm.	203.00	13726.15
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	290.5	4357.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	19.60			19.60	Cum	262.5	5144.55
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	17.06					Sqm	343.22	5855.40
<b>13</b>	<b>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</b>		16.53				Cum	116.5	1925.51
	<b>Total Cost</b>								139302.84

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24
	4.5m to 6.0m	1	5.52		1.50	8.27		499.60	4133.28
	6.0m to 7.5m	1	5.52		1.05	5.79		545.90	3161.43
						<b>38.88</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.5	1137.56
	4.5m to 6.0m	1	5.52		1.50	8.27		145.7	1205.40
	6m to 7.5m	1	5.52		1.05	5.79		153.90	891.27
						<b>22.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.14</b>	Cum.	4630.90	33078.51
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>786.00</b>	Kg	68.50	53841.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>73.59</b>	Sqm.	203.00	14937.86
<b>8</b>	<b>CI Steps-5 Kg</b>	17	-	-	-	<b>17.00</b>	No's	290.5	4938.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	20.71			20.71	Cum	262.5	5435.25
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								953.10
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina</b>	18.87					Sqm	343.22	6475.68
<b>13</b>	<b>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</b>		18.18				Cum	116.5	2117.77
	<b>Total Cost</b>								<b>150074.44</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	<b>2984.14</b>
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	<b>3367.19</b>
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	<b>3750.24</b>
	4.5m to 6.0m	1	5.52		1.50	8.27		499.60	<b>4133.28</b>
	6.0m to 7.5m	1	5.52		1.50	8.27		545.90	<b>4516.33</b>
	7.5m to 9.0m	1	5.52		0.05	0.28		592.20	<b>163.31</b>
						<b>41.64</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.50	<b>1137.56</b>
	4.5m to 6.0m	1	5.52		1.50	8.27		145.70	<b>1205.40</b>
	6m to 7.5m	1	5.52		1.50	8.27		153.90	<b>1273.24</b>
	7.5m to 9.0m	1	5.52		0.05	0.28		162.10	<b>44.70</b>
						<b>25.10</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	<b>5974.88</b>
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	<b>476.83</b>
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.63</b>	Cum.	4630.90	<b>35325.32</b>
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>839.00</b>	Kg	68.50	<b>57471.50</b>
<b>7</b>	<b>Shuttering</b>								
	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					<b>79.55</b>	Sqm.	203.00	<b>16149.57</b>
<b>8</b>	<b>CI Steps-5 Kg</b>	19	-	-	-	<b>19.00</b>	No's	290.5	<b>5519.50</b>
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	21.81			21.81	Cum	262.5	<b>5725.94</b>
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	<b>7095.95</b>
<b>13</b>	<b>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</b>		19.83				Cum	116.5	<b>2310.03</b>
	<b>Total Cost</b>								<b>160817.86</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24
	4.5m to 6.0m	1	5.52		1.50	8.27		499.60	4133.28
	6.0m to 7.5m	1	5.52		1.50	8.27		545.90	4516.33
	7.5m to 9.0m	1	5.52		0.55	3.03		592.20	1796.44
						<b>44.40</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.50	1137.56
	4.5m to 6.0m	1	5.52		1.50	8.27		145.70	1205.40
	6m to 7.5m	1	5.52		1.50	8.27		153.90	1273.24
	7.5m to 9.0m	1	5.52		0.55	3.03		162.10	491.73
						<b>27.85</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.11</b>	Cum.	4630.90	37572.12
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>892.00</b>	Kg	68.50	61102.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>85.52</b>	Sqm.	203.00	17361.29
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	290.5	5810.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	22.92			22.92	Cum	262.5	6016.64
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								978.40
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	7095.95
<b>13</b>	<b>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</b>		21.48				Cum	116.5	2502.29
	<b>Total Cost</b>								<b>170760.50</b>

DEPTH - D=8.0 m								8	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	<b>2984.14</b>
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	<b>3367.19</b>
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	<b>3750.24</b>
	4.5m to 6.0m	1	5.52		1.50	8.27		499.60	<b>4133.28</b>
	6.0m to 7.5m	1	5.52		1.50	8.27		545.90	<b>4516.33</b>
	7.5m to 9.0m	1	5.52		1.05	5.79		592.20	<b>3429.57</b>
						<b>47.16</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.50	<b>1137.56</b>
	4.5m to 6.0m	1	5.52		1.50	8.27		145.70	<b>1205.40</b>
	6m to 7.5m	1	5.52		1.50	8.27		153.90	<b>1273.24</b>
	7.5m to 9.0m	1	5.52		1.05	5.79		162.10	<b>938.76</b>
						<b>30.61</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						<b>4.07</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.64		1.75	1.13			
	Rectangular portion	1	1.28	1.75	0.64	1.43			
						<b>2.56</b>			
						<b>1.51</b>	Cum	3953.40	<b>5974.88</b>
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	<b>476.83</b>
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.60</b>	Cum.	4630.90	<b>39818.93</b>
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>946.00</b>	Kg	68.50	<b>64801.00</b>
<b>7</b>	<b>Shuttering</b>								
	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					<b>91.49</b>	Sqm.	203.00	<b>18573.00</b>
<b>8</b>	<b>CI Steps-5 Kg</b>	22	-	-	-	<b>22.00</b>	No's	290.5	<b>6391.00</b>
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	24.03			24.03	Cum	262.5	<b>6307.33</b>
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	<b>7095.95</b>
<b>13</b>	<b>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</b>		23.13				Cum	116.5	<b>2694.56</b>
	<b>Total Cost</b>								<b>181062.14</b>

DEPTH - D=8.5 m								8.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	5.52		1.50	8.27		360.70	2984.14
	1.5m to 3.0	1	5.52		1.50	8.27		407.00	3367.19
	3.0m to 4.5m	1	5.52		1.50	8.27		453.30	3750.24
	4.5m to 6.0m	1	5.52		1.50	8.27		499.60	4133.28
	6.0m to 7.5m	1	5.52		1.50	8.27		545.90	4516.33
	7.5m to 9.0m	1	5.52		1.55	8.55		592.20	5062.69
						49.91	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	5.52		1.50	8.27		137.50	1137.56
	4.5m to 6.0m	1	5.52		1.50	8.27		145.70	1205.40
	6m to 7.5m	1	5.52		1.50	8.27		153.90	1273.24
	7.5m to 9.0m	1	5.52		1.55	8.55		162.10	1385.79
						33.37	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	2.41		1.58	3.80			
	For Foundation	1	2.71		0.10	0.27			
						4.07			
	<b>Deductions</b>								
	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	3953.40	5974.88
<b>4</b>	<b>PCC - M20 Grade</b>								
	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	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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.	4630.90	42065.74
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	999.00	Kg	68.50	68431.50
<b>7</b>	<b>Shuttering</b>								
	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.	203.00	19784.71
<b>8</b>	<b>CI Steps-5 Kg</b>	24	-	-	-	24.00	No's	290.5	6972.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	25.14			25.14	Cum	262.5	6598.03
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								978.40
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.67					Sqm	343.22	7095.95
<b>13</b>	<b>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</b>		24.78				Cum	116.5	2886.82
	<b>Total Cost</b>								191295.27

## Rate Analysis for RCC Manhole

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=2 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.10	7.27		407.00	2957.15
						<b>17.17</b>	Cum		
<b>2</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>3</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>4</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>3.63</b>	Cum.	4630.90	16819.05
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>400.00</b>	Kg	68.50	27400.00
<b>6</b>	<b>Shuttering</b>								
	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					<b>30.21</b>	Sqm.	203.00	6131.90
<b>7</b>	<b>CI Steps-5 Kg</b>	1	-	-	-	<b>1.00</b>	No's	290.5	290.50
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	10.93			10.93	Cum	262.5	2868.13
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	meter	134.95	1214.55
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	2.46					Sqm	343.22	<b>845.73</b>
<b>12</b>	<b>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</b>		6.25				Cum	116.5	<b>727.81</b>
	<b>Total Cost</b>								<b>72618.86</b>

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	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		0.05	0.33		453.30	149.71
						<b>20.15</b>	Cum		
2	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
3	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
4	<b>RCC - M20 Grade</b>								
	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			
						<b>4.18</b>	Cum.	4630.90	19338.64
5	<b>Reinforcement Steel</b>	1	-	-	-	<b>459.00</b>	Kg	68.50	31441.50
6	<b>Shuttering</b>								
	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					<b>36.57</b>	Sqm.	203.00	7423.33
7	<b>CI Steps-5 Kg</b>	3	-	-	-	<b>3.00</b>	No's	290.5	871.50
8	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	11.82			11.82	Cum	262.5	3103.06
9	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
10	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
11	<b>Internal Lining by High Alumina Cement (1:3)</b>	4.66					Sqm	343.22	<b>1600.85</b>
12	<b>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</b>		8.32				Cum	116.5	<b>969.82</b>
	<b>Total Cost</b>								<b>83509.47</b>



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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	2033.08
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	2291.67
	3.0m to 4.5m	1	6.61		0.55	3.63		453.30	935.10
						<b>23.45</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		0.55	3.63		137.50	415.24
						<b>3.63</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	7006.19
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	407.26
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.43</b>	Cum.	4630.90	21093.77
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>598.00</b>	Kg	68.50	43175.60
<b>7</b>	<b>Shuttering</b>								
	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					<b>43.32</b>	Sqm.	203.00	7221.87
<b>8</b>	<b>CI Steps-5 Kg</b>	5	-	-	-	<b>5.00</b>	No's	290.5	1008.50
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	13.05			13.05	Cum	262.5	3587.76
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>953.10</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>3262.50</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	6.86					Sqm	343.22	<b>2265.22</b>
<b>13</b>	<b>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</b>		10.40				Cum	116.5	<b>690.70</b>
	<b>Total Cost</b>								<b>96951.66</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.05	6.94		453.30	3143.84
						<b>26.75</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.05	6.94		137.50	953.63
						<b>6.94</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.26</b>	Cum.	4630.90	24377.82
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>579.00</b>	Kg	68.50	39661.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>50.08</b>	Sqm.	203.00	10165.63
<b>8</b>	<b>CI Steps-5 Kg</b>	6	-	-	-	<b>6.00</b>	No's	290.5	1743.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	14.27			14.27	Cum	262.5	3746.30
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	9.06					Sqm	343.22	<b>3111.09</b>
<b>13</b>	<b>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</b>		12.48				Cum	116.5	<b>1453.85</b>
	<b>Total Cost</b>								<b>106967.72</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=4 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		0.05	0.33		499.60	165.00
						<b>30.05</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.5	1362.32
	4.5m to 6.0m	1	6.61		0.05	0.33		145.7	48.12
						<b>10.24</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.40</b>	Cum.	4630.90	25019.11
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>594.00</b>	Kg	68.50	40689.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>48.92</b>	Sqm.	203.00	9931.58
<b>8</b>	<b>CI Steps-5 Kg</b>	8	-	-	-	<b>8.00</b>	No's	290.5	2324.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	17.82			17.82	Cum	262.5	4678.49
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	11.26					Sqm	343.22	<b>3866.21</b>
<b>13</b>	<b>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</b>		12.23				Cum	116.5	<b>1424.89</b>
	<b>Total Cost</b>								<b>112610.98</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		0.55	3.63		499.60	1814.98
						<b>33.36</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.5	1362.32
	4.5m to 6.0m	1	6.61		0.55	3.63		145.7	529.31
						<b>13.54</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>5.95</b>	Cum.	4630.90	27538.70
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>654.00</b>	Kg	68.50	44799.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>55.68</b>	Sqm.	203.00	11302.72
<b>8</b>	<b>CI Steps-5 Kg</b>	10	-	-	-	<b>10.00</b>	No's	290.5	2905.00
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m initial lead</b>	1	19.05			19.05	Cum	262.5	5000.11
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	13.46					Sqm	343.22	<b>4621.32</b>
<b>13</b>	<b>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</b>		14.31				Cum	116.5	<b>1666.91</b>
	<b>Total Cost</b>								<b>124642.63</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=5.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		1.05	6.94		499.60	3464.96
						<b>36.66</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.5	1362.32
	4.5m to 6.0m	1	6.61		1.05	6.94		145.7	1010.50
						<b>16.84</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>6.49</b>	Cum.	4630.90	30058.29
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>714.00</b>	Kg	68.50	48909.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>62.43</b>	Sqm.	203.00	12673.87
<b>8</b>	<b>CI Steps-5 Kg</b>	11	-	-	-	<b>11.00</b>	No's	290.5	3195.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	20.27			20.27	Cum	262.5	5321.73
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	15.66					Sqm	343.22	<b>5376.44</b>
<b>13</b>	<b>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</b>		16.39				Cum	116.5	<b>1908.92</b>
	<b>Total Cost</b>								<b>136383.79</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		1.50	9.91		499.60	4949.94
	6.0m to 7.5m	1	6.61		0.05	0.33		545.90	180.29
						<b>39.96</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.5	1362.32
	4.5m to 6.0m	1	6.61		1.50	9.91		145.7	1443.57
	6m to 7.5m	1	6.61		0.05	0.33		153.90	50.83
						<b>20.15</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.03</b>	Cum.	4630.90	32577.88
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>774.00</b>	Kg	68.50	53019.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>69.19</b>	Sqm.	203.00	14045.02
<b>8</b>	<b>CI Steps-5 Kg</b>	13	-	-	-	<b>13.00</b>	No's	290.5	3776.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	21.50			21.50	Cum	262.5	5643.35
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	17.86					Sqm	343.22	<b>6131.56</b>
<b>13</b>	<b>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</b>		18.46				Cum	116.5	<b>2150.94</b>
	<b>Total Cost</b>								<b>148433.46</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		1.50	9.91		499.60	4949.94
	6.0m to 7.5m	1	6.61		0.55	3.63		545.90	1983.18
						<b>43.26</b>	Cum	592.2	25620.97
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.5	1362.32
	4.5m to 6.0m	1	6.61		1.50	9.91		145.7	1443.57
	6m to 7.5m	1	6.61		0.55	3.63		153.90	559.10
						<b>23.45</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>7.58</b>	Cum.	4630.90	35097.47
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>834.00</b>	Kg	68.50	57129.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>75.94</b>	Sqm.	203.00	15416.17
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	290.5	4357.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	22.72			22.72	Cum	262.5	5964.97
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.06					Sqm	343.22	<b>6886.68</b>
<b>13</b>	<b>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</b>		20.54				Cum	116.5	<b>2392.95</b>
	<b>Total Cost</b>								<b>186266.08</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		1.50	9.91		499.60	4949.94
	6.0m to 7.5m	1	6.61		1.05	6.94		545.90	3786.07
								592.20	
						<b>46.57</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.5	1362.32
	4.5m to 6.0m	1	6.61		1.50	9.91		145.7	1443.57
	6m to 7.5m	1	6.61		1.05	6.94		153.90	1067.37
						<b>26.75</b>	Sqm.	162.1	
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	0.81		2.00	1.63			
	Rectangular portion	1	1.44	2.00	0.72	2.07			
						<b>3.70</b>			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.12</b>	Cum.	4630.90	37617.05
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>894.00</b>	Kg	68.50	61239.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>82.70</b>	Sqm.	203.00	16787.32
<b>8</b>	<b>CI Steps-5 Kg</b>	16	-	-	-	<b>16.00</b>	No's	290.5	4648.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	23.95			23.95	Cum	262.5	6286.59
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						<b>9.00</b>	Meter	134.95	1214.55
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	22.27					Sqm	343.22	<b>7641.80</b>
<b>13</b>	<b>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</b>		22.62				Cum	116.5	<b>2634.97</b>
	<b>Total Cost</b>								<b>172566.26</b>



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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		1.50	9.91		499.60	4949.94
	6.0m to 7.5m	1	6.61		1.50	9.91		545.90	5408.67
	7.5m to 9.0m	1	6.61		0.05	0.33		592.20	195.58
						<b>49.87</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.50	1362.32
	4.5m to 6.0m	1	6.61		1.50	9.91		145.70	1443.57
	6m to 7.5m	1	6.61		1.50	9.91		153.90	1524.81
	7.5m to 9.0m	1	6.61		0.05	0.33		162.10	53.54
						<b>30.05</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.67</b>	Cum.	4630.90	40136.64
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>953.00</b>	Kg	68.50	65280.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>89.45</b>	Sqm.	203.00	18158.47
<b>8</b>	<b>CI Steps-5 Kg</b>	18	-	-	-	<b>18.00</b>	No's	290.5	5229.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	25.17			25.17	Cum	262.5	6608.21
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	29.36					Sqm	343.22	<b>10077.42</b>
<b>13</b>	<b>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</b>		24.70				Cum	116.5	<b>2876.98</b>
	<b>Total Cost</b>								<b>186407.91</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=7.5 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		1.50	9.91		499.60	4949.94
	6.0m to 7.5m	1	6.61		1.50	9.91		545.90	5408.67
	7.5m to 9.0m	1	6.61		0.55	3.63		592.20	2151.38
						<b>53.17</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.50	1362.32
	4.5m to 6.0m	1	6.61		1.50	9.91		145.70	1443.57
	6m to 7.5m	1	6.61		1.50	9.91		153.90	1524.81
	7.5m to 9.0m	1	6.61		0.55	3.63		162.10	588.89
						<b>33.36</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>9.21</b>	Cum.	4630.40	42651.63
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1013.00</b>	Kg	68.50	69390.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>96.20</b>	Sqm.	203.00	19529.61
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	290.5	5810.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	26.40			26.40	Cum	262.5	6929.83
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	29.36					Sqm	343.22	<b>10077.42</b>
<b>13</b>	<b>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</b>		26.77				Cum	116.5	<b>3119.00</b>
	<b>Total Cost</b>								<b>198039.83</b>

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
Sno	DEPTH - D=8.0 m	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	6.61		1.50	9.91		360.70	3573.74
	1.5m to 3.0	1	6.61		1.50	9.91		407.00	4032.47
	3.0m to 4.5m	1	6.61		1.50	9.91		453.30	4491.20
	4.5m to 6.0m	1	6.61		1.50	9.91		499.60	4949.94
	6.0m to 7.5m	1	6.61		1.50	9.91		545.90	5408.67
	7.5m to 9.0m	1	6.61		1.05	6.94		592.20	4107.18
						<b>56.47</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	6.61		1.50	9.91		137.50	1362.32
	4.5m to 6.0m	1	6.61		1.50	9.91		145.70	1443.57
	6m to 7.5m	1	6.61		1.50	9.91		153.90	1524.81
	7.5m to 9.0m	1	6.61		1.05	6.94		162.10	1124.24
						<b>36.66</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.14		1.74	5.47			
	For Foundation	1	3.44		0.10	0.34			
						<b>5.81</b>			
	<b>Deductions</b>								
	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			
						<b>2.11</b>	Cum	3953.40	8335.07
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>9.76</b>	Cum.	4630.90	45175.82
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1073.00</b>	Kg	68.50	73500.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>102.96</b>	Sqm.	203.00	20900.76
<b>8</b>	<b>CI Steps-5 Kg</b>	21	-	-	-	<b>21.00</b>	No's	290.5	6100.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	27.62			27.62	Cum	262.5	7251.45
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	29.36					Sqm	343.22	<b>10077.42</b>
<b>13</b>	<b>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</b>		28.85				Cum	116.5	<b>3361.01</b>
	<b>Total Cost</b>								<b>209390.45</b>

## 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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.10	8.30		407.00	3379.09	
						<b>19.62</b>	Cum			
<b>2</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>3</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>4</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>4.07</b>	Cum.	4630.90	18848.69	
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>448.00</b>	Kg	68.50	30688.00	
<b>6</b>	<b>Shuttering</b>									
	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					<b>33.35</b>	Sqm.	203.00	6769.65	
<b>7</b>	<b>CI Steps-5 Kg</b>	1	-	-	-	<b>1.00</b>	No's	290.5	290.50	
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	12.22			12.22	Cum	262.5	3207.90	
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	8.39					Sqm	343.22	<b>2878.79</b>	
<b>12</b>	<b>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</b>		7.40				Cum	116.5	<b>862.50</b>	
	<b>Total Cost</b>								<b>83251.81</b>	

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		0.05	0.38		453.30	171.07	
						<b>23.02</b>	Cum			
<b>2</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>3</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>4</b>	<b>RCC - M20 Grade</b>									
	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				
	For walls	1	7.38	0.15	2.30	2.55				
		1	0.15	0.50	0.58	0.04				
						<b>4.66</b>	Cum.	4630.90	21586.50	
<b>5</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>513.00</b>	Kg	68.50	35140.50	
<b>6</b>	<b>Shuttering</b>									
	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					<b>40.31</b>	Sqm.	203.00	8182.25	
<b>7</b>	<b>CI Steps-5 Kg</b>	2	-	-	-	<b>2.00</b>	No's	290.5	581.00	
<b>8</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	13.16			13.16	Cum	262.5	3455.19	
<b>9</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>10</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>11</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	10.90					Sqm	343.22	<b>3741.78</b>	
<b>12</b>	<b>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</b>		9.86				Cum	116.5	<b>1148.43</b>	
	<b>Total Cost</b>								<b>94941.27</b>	

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	2323.17	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	2618.67	
	3.0m to 4.5m	1	7.55		0.55	4.15		453.30	1068.52	
						<b>26.79</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		0.55	4.15		137.50	474.48	
						<b>4.15</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	For channel portion(Circular portion)	1	1.10		2.20	2.41				
	Rectangular portion	1	1.67	2.20	0.84	3.07				
						<b>5.48</b>				
						<b>2.42</b>	Cum	3953.40	8046.95	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	407.26	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>6.12</b>	Cum.	4630.90	23745.89	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>673.00</b>	Kg	68.50	48590.60	
<b>7</b>	<b>Shuttering</b>									
	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					<b>47.69</b>	Sqm.	203.00	7949.82	
<b>8</b>	<b>CI Steps-5 Kg</b>	4	-	-	-	<b>4.00</b>	No's	290.5	806.80	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	14.48			14.48	Cum	262.5	3982.58	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						<b>9.00</b>	Meter	134.95	<b>3262.50</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	13.42					Sqm	343.22	<b>4427.41</b>	
<b>13</b>	<b>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</b>		12.31				Cum	116.5	<b>817.53</b>	
	<b>Total Cost</b>								<b>110079.40</b>	

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		1.05	7.93		453.30	3592.43	
						<b>30.57</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.05	7.93		137.50	1089.70	
						<b>7.93</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	For channel portion(Circular portion)	1	1.10		2.20	2.41				
	Rectangular portion	1	1.67	2.20	0.84	3.07				
						<b>5.48</b>				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>5.84</b>	Cum.	4630.90	27062.13	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>643.00</b>	Kg	68.50	44045.50	
<b>7</b>	<b>Shuttering</b>									
	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					<b>55.07</b>	Sqm.	203.00	11179.64	
<b>8</b>	<b>CI Steps-5 Kg</b>	6	-	-	-	<b>6.00</b>	No's	290.5	1743.00	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	15.80			15.80	Cum	262.5	4147.91	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						<b>9.00</b>	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	15.93					Sqm	343.22	<b>5467.77</b>	
<b>13</b>	<b>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</b>		14.77				Cum	116.5	<b>1720.30</b>	
	<b>Total Cost</b>								<b>120982.93</b>	

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04	
	4.5m to 6.0m	1	7.55		0.05	0.38		499.60	188.54	
						<b>34.34</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		137.5	1556.71	
	4.5m to 6.0m	1	7.55		0.05	0.38		145.7	54.98	
						<b>11.70</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>5.97</b>	Cum.	4630.90	27637.96	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>656.00</b>	Kg	68.50	44936.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>53.07</b>	Sqm.	203.00	10773.40	
<b>8</b>	<b>CI Steps-5 Kg</b>	7	-	-	-	<b>7.00</b>	No's	290.5	2033.50	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	20.09			20.09	Cum	262.5	5273.90	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	1214.55	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	18.45					Sqm	343.22	<b>6330.76</b>	
<b>13</b>	<b>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</b>		14.25				Cum	116.5	<b>1660.23</b>	
	<b>Total Cost</b>								<b>126512.57</b>	



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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04	
	4.5m to 6.0m	1	7.55		0.55	4.15		499.60	2073.95	
						<b>38.12</b>	Cum	545.9	20807.40	
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		137.5	1556.71	
	4.5m to 6.0m	1	7.55		0.55	4.15		145.7	604.83	
						<b>15.47</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>6.56</b>	Cum.	4630.90	30375.77	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>722.00</b>	Kg	68.50	49457.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>60.45</b>	Sqm.	203.00	12272.09	
<b>8</b>	<b>CI Steps-5 Kg</b>	9	-	-	-	<b>9.00</b>	No's	290.5	2614.50	
<b>9</b>	<b>Disposal of Surplus earth upto 8km lead beyond 50m intitial lead</b>	1	21.41			21.41	Cum	262.5	5620.26	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						<b>9.00</b>	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	20.96					Sqm	343.22	<b>7193.75</b>	
<b>13</b>	<b>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</b>		16.71				Cum	116.5	<b>1946.16</b>	
	<b>Total Cost</b>								<b>160589.01</b>	

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04	
	4.5m to 6.0m	1	7.55		1.05	7.93		499.60	3959.36	
						<b>41.89</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		137.5	1556.71	
	4.5m to 6.0m	1	7.55		1.05	7.93		145.7	1154.68	
						<b>19.25</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>7.15</b>	Cum.	4630.90	33113.59	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>787.00</b>	Kg	68.50	53909.50	
<b>7</b>	<b>Shuttering</b>									
	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					<b>67.84</b>	Sqm.	203.00	13770.79	
<b>8</b>	<b>CI Steps-5 Kg</b>	11	-	-	-	<b>11.00</b>	No's	290.5	3195.50	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	22.73			22.73	Cum	262.5	5966.62	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	23.47					Sqm	343.22	<b>8056.75</b>	
<b>13</b>	<b>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</b>		19.16				Cum	116.5	<b>2232.10</b>	
	<b>Total Cost</b>								<b>152982.19</b>	

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04	
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23	
	6.0m to 7.5m	1	7.55		0.05	0.38		545.90	206.01	
						<b>45.66</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		137.5	1556.71	
	4.5m to 6.0m	1	7.55		1.50	11.32		145.7	1649.54	
	6m to 7.5m	1	7.55		0.05	0.38		153.90	58.08	
						<b>23.02</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>7.74</b>	Cum.	4630.90	35851.40	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>852.00</b>	Kg	68.50	58362.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>75.22</b>	Sqm.	203.00	15269.49	
<b>8</b>	<b>CI Steps-5 Kg</b>	12	-	-	-	<b>12.00</b>	No's	290.5	3486.00	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	24.05			24.05	Cum	262.5	6312.98	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	25.99					Sqm	343.22	<b>8919.74</b>	
<b>13</b>	<b>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</b>		21.61				Cum	116.5	<b>2518.03</b>	
	<b>Total Cost</b>								<b>165912.80</b>	

Detailed Estimate : RCC M 20 Manholes for Sewers = 1200 mm dia (TYPE -E)									
DEPTH - D=6.0 m									
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
								6	
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23
	6.0m to 7.5m	1	7.55		0.55	4.15		545.90	2266.15
						<b>49.44</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		137.5	1556.71
	4.5m to 6.0m	1	7.55		1.50	11.32		145.7	1649.54
	6m to 7.5m	1	7.55		0.55	4.15		153.90	638.87
						<b>26.79</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	3953.40	9573.24
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>8.33</b>	Cum.	4630.90	38589.21
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>917.00</b>	Kg	68.50	62814.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>82.60</b>	Sqm.	203.00	16768.18
<b>8</b>	<b>CI Steps-5 Kg</b>	14	-	-	-	<b>14.00</b>	No's	290.5	4067.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	25.37			25.37	Cum	262.5	6659.34
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	28.50					Sqm	343.22	<b>9782.73</b>
<b>13</b>	<b>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</b>		24.07				Cum	116.5	<b>2803.97</b>
	<b>Total Cost</b>								<b>179319.02</b>

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04	
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23	
	6.0m to 7.5m	1	7.55		1.05	7.93		545.90	4326.29	
						<b>53.21</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		137.5	1556.71	
	4.5m to 6.0m	1	7.55		1.50	11.32		145.7	1649.54	
	6m to 7.5m	1	7.55		1.05	7.93		153.90	1219.67	
						<b>30.57</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	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				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>8.92</b>	Cum.	4630.90	41327.03	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>982.00</b>	Kg	68.50	67267.00	
<b>7</b>	<b>Shuttering</b>									
	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					<b>89.98</b>	Sqm.	203.00	18266.88	
<b>8</b>	<b>CI Steps-5 Kg</b>	16	-	-	-	<b>16.00</b>	No's	290.5	4648.00	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	26.69			26.69	Cum	262.5	7005.70	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						9.00	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	31.02					Sqm	343.22	<b>10645.72</b>	
<b>13</b>	<b>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</b>		26.52				Cum	116.5	<b>3089.90</b>	
	<b>Total Cost</b>								<b>192725.26</b>	

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	
<b>1</b>	<b>Earthwork Excavation</b>									
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67	
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86	
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04	
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23	
	6.0m to 7.5m	1	7.55		1.50	11.32		545.90	6180.41	
	7.5m to 9.0m	1	7.55		0.05	0.38		592.20	223.49	
						<b>56.98</b>	Cum			
<b>2</b>	<b>Timbering</b>									
	3.0m to 4.5m	1	7.55		1.50	11.32		137.50	1556.71	
	4.5m to 6.0m	1	7.55		1.50	11.32		145.70	1649.54	
	6m to 7.5m	1	7.55		1.50	11.32		153.90	1742.38	
	7.5m to 9.0m	1	7.55		0.05	0.38		162.10	61.17	
						<b>34.34</b>	Sqm.			
<b>3</b>	<b>PCC - M15 Grade</b>									
	For benching portion	1	3.80		1.97	7.49				
	For Foundation	1	4.10		0.10	0.41				
						<b>7.90</b>				
	<b>Deductions</b>									
	For channel portion(Circular portion)	1	1.10		2.20	2.41				
	Rectangular portion	1	1.67	2.20	0.84	3.07				
						<b>5.48</b>				
						<b>2.42</b>	Cum	3953.40	9573.24	
<b>4</b>	<b>PCC - M20 Grade</b>									
	For collar portion	1	2.54	0.25	0.25	0.16				
	For collar portion	-1	2.23	0.15	0.15	-0.05				
						<b>0.11</b>	Cum	4380.40	476.83	
<b>5</b>	<b>RCC - M20 Grade</b>									
	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				
						<b>9.52</b>	Cum.	4630.90	44064.84	
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1047.00</b>	Kg	68.50	71719.50	
<b>7</b>	<b>Shuttering</b>									
	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					<b>97.37</b>	Sqm.	203.00	19765.58	
<b>8</b>	<b>CI Steps-5 Kg</b>	17	-	-	-	<b>17.00</b>	No's	290.5	4938.50	
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	28.01			28.01	Cum	262.5	7352.06	
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>	
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00				
		2.00	1.00			2.00				
						<b>9.00</b>	Meter	134.95	<b>1214.55</b>	
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>	
<b>13</b>	<b>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</b>		28.98				Cum	116.5	<b>3375.83</b>	
	<b>Total Cost</b>								<b>205861.55</b>	

DEPTH - D=7.5 m								7.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23
	6.0m to 7.5m	1	7.55		1.50	11.32		545.90	6180.41
	7.5m to 9.0m	1	7.55		0.55	4.15		592.20	2458.35
						<b>60.76</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		137.50	1556.71
	4.5m to 6.0m	1	7.55		1.50	11.32		145.70	1649.54
	6m to 7.5m	1	7.55		1.50	11.32		153.90	1742.38
	7.5m to 9.0m	1	7.55		0.55	4.15		162.10	672.91
						<b>38.12</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	3953.40	9573.24
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>10.11</b>	Cum.	4630.90	46802.66
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1112.00</b>	Kg	68.50	76172.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>104.75</b>	Sqm.	203.00	21264.28
<b>8</b>	<b>CI Steps-5 Kg</b>	19	-	-	-	<b>19.00</b>	No's	290.5	5519.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	29.33			29.33	Cum	262.5	7698.42
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		31.43				Cum	116.5	<b>3661.77</b>
	<b>Total Cost</b>								<b>218610.47</b>

DEPTH - D=8.0 m								8	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23
	6.0m to 7.5m	1	7.55		1.50	11.32		545.90	6180.41
	7.5m to 9.0m	1	7.55		1.05	7.93		592.20	4693.22
						<b>64.53</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		137.50	1556.71
	4.5m to 6.0m	1	7.55		1.50	11.32		145.70	1649.54
	6m to 7.5m	1	7.55		1.50	11.32		153.90	1742.38
	7.5m to 9.0m	1	7.55		1.05	7.93		162.10	1284.65
						<b>41.89</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	3953.40	9573.24
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>10.70</b>	Cum.	4630.90	49540.47
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1177.00</b>	Kg	68.50	80624.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>112.13</b>	Sqm.	203.00	22762.97
<b>8</b>	<b>CI Steps-5 Kg</b>	21	-	-	-	<b>21.00</b>	No's	290.5	6100.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	30.65			30.65	Cum	262.5	8044.78
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		33.89				Cum	116.5	<b>3947.70</b>
	<b>Total Cost</b>								<b>231359.37</b>



DEPTH - D=8.5 m								8.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23
	6.0m to 7.5m	1	7.55		1.50	11.32		545.90	6180.41
	7.5m to 9.0m	1	7.55		1.55	11.70		592.20	6928.09
						<b>68.31</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		137.50	1556.71
	4.5m to 6.0m	1	7.55		1.50	11.32		145.70	1649.54
	6m to 7.5m	1	7.55		1.50	11.32		153.90	1742.38
	7.5m to 9.0m	1	7.55		1.55	11.70		162.10	1896.39
						<b>45.66</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	3953.40	9573.24
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>11.29</b>	Cum.	4630.90	52278.29
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1242.00</b>	Kg	68.50	85077.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>119.52</b>	Sqm.	203.00	24261.67
<b>8</b>	<b>CI Steps-5 Kg</b>	22	-	-	-	<b>22.00</b>	No's	290.5	6391.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	31.97			31.97	Cum	262.5	8391.14
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		36.34				Cum	116.5	<b>4233.64</b>
	<b>Total Cost</b>								<b>243817.80</b>

DEPTH - D=9.0 m									9
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23
	6.0m to 7.5m	1	7.55		1.50	11.32		545.90	6180.41
	7.5m to 9.0m	1	7.55		2.05	15.47		592.20	9162.95
						<b>72.08</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		137.50	1556.71
	4.5m to 6.0m	1	7.55		1.50	11.32		145.70	1649.54
	6m to 7.5m	1	7.55		1.50	11.32		153.90	1742.38
	7.5m to 9.0m	1	7.55		2.05	15.47		162.10	2508.13
						<b>49.44</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	3953.40	9573.24
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>11.88</b>	Cum.	4630.90	55016.10
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1307.00</b>	Kg	68.50	89529.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>126.90</b>	Sqm.	203.00	25760.37
<b>8</b>	<b>CI Steps-5 Kg</b>	24	-	-	-	<b>24.00</b>	No's	290.5	6972.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	33.29			33.29	Cum	262.5	8737.50
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		38.79				Cum	116.5	<b>4519.57</b>
	<b>Total Cost</b>								<b>256566.70</b>

DEPTH - D=9.5m								9.5	
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate	Amount Rs
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	7.55		1.50	11.32		360.70	4083.67
	1.5m to 3.0	1	7.55		1.50	11.32		407.00	4607.86
	3.0m to 4.5m	1	7.55		1.50	11.32		453.30	5132.04
	4.5m to 6.0m	1	7.55		1.50	11.32		499.60	5656.23
	6.0m to 7.5m	1	7.55		1.50	11.32		545.90	6180.41
	7.5m to 9.0m	1	7.55		2.55	19.25		592.20	11397.82
						<b>75.85</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	7.55		1.50	11.32		137.50	1556.71
	4.5m to 6.0m	1	7.55		1.50	11.32		145.70	1649.54
	6m to 7.5m	1	7.55		1.50	11.32		153.90	1742.38
	7.5m to 9.0m	1	7.55		2.55	19.25		162.10	3119.87
						<b>53.21</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	3.80		1.97	7.49			
	For Foundation	1	4.10		0.10	0.41			
						<b>7.90</b>			
	<b>Deductions</b>								
	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			
						<b>2.42</b>	Cum	3953.40	9573.24
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.54	0.25	0.25	0.16			
	For collar portion	-1	2.23	0.15	0.15	-0.05			
						<b>0.11</b>	Cum	4380.40	476.83
<b>5</b>	<b>RCC - M20 Grade</b>								
	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			
						<b>12.47</b>	Cum.	4630.90	57753.92
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1372.00</b>	Kg	68.50	93982.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>134.28</b>	Sqm.	203.00	27259.06
<b>8</b>	<b>CI Steps-5 Kg</b>	26	-	-	-	<b>26.00</b>	No's	290.5	7553.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m initial lead</b>	1	34.61			34.61	Cum	262.5	9083.86
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	1.75			7.00			
		2.00	1.00			2.00			
						9.00	Meter	134.95	<b>1214.55</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>	33.53					Sqm	343.22	<b>11508.72</b>
<b>13</b>	<b>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</b>		41.25				Cum	116.5	<b>4805.50</b>
	<b>Total Cost</b>								<b>269315.61</b>

## 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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		0.60	8.31		545.90	4537.88
						<b>91.44</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.5	2857.47
	4.5m to 6.0m	1	13.85		1.50	20.78		145.7	3027.88
	6m to 7.5m	1	13.85		0.60	8.31		153.90	1279.32
						<b>49.88</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>12.83</b>	Cum.	5910.70	75828.52
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1411.00</b>	Kg	68.50	96653.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>99.53</b>	Sqm.	203.00	20203.71
<b>8</b>	<b>Cl Steps-5 Kg</b>	13	-	-	-	<b>13.00</b>	No's	290.5	3776.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	53.90			53.90	Cum	262.5	14147.74
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		37.54				Cum	116.5	4373.77
	<b>Total Cost</b>							INR	<b>293769.56</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		1.10	15.24		545.90	8319.44
						<b>98.37</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.5	2857.47
	4.5m to 6.0m	1	13.85		1.50	20.78		145.7	3027.88
	6m to 7.5m	1	13.85		1.10	15.24		153.90	2345.42
						<b>56.80</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>13.28</b>	Cum.	5910.70	78488.33
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1461.00</b>	Kg	68.50	100078.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>108.95</b>	Sqm.	203.00	22116.94
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	290.5	4357.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	56.55			56.55	Cum	262.5	14843.55
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		41.82				Cum	116.5	4871.98
	<b>Total Cost</b>							INR	<b>308390.28</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90	11344.69
	7.5 m to 9.0m	1	13.85		0.10	1.39		592.20	820.46
						<b>105.29</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50	2857.47
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70	3027.88
	6m to 7.5m	1	13.85		1.50	20.78		153.90	3198.29
	7.5 m to 9.0m	1	13.85		0.10	1.39		162.10	224.58
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>13.73</b>	Cum.	5910.70	81148.15
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1510.00</b>	Kg	68.50	103435.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>118.38</b>	Sqm.	203.00	24030.17
<b>8</b>	<b>CI Steps-5 Kg</b>	17	-	-	-	<b>17.00</b>	No's	290.5	4938.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	59.20			59.20	Cum	262.5	15539.36
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		46.10				Cum	116.5	5370.19
	<b>Total Cost</b>							INR	<b>323018.01</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90	11344.69
	7.5 m to 9.0 m	1	13.85		0.50	6.93		592.20	4102.29
						<b>110.84</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50	2857.47
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70	3027.88
	6m to 7.5m	1	13.85		1.50	20.78		153.90	3198.29
	7.5 m to 9.0 m	1	13.85		0.50	6.93		162.10	1122.90
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>14.18</b>	Cum.	5910.70	83807.96
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1560.00</b>	Kg	68.50	106860.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>127.80</b>	Sqm.	203.00	25943.40
<b>8</b>	<b>CI Steps-5 Kg</b>	18	-	-	-	<b>18.00</b>	No's	290.5	5229.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	60.46			60.46	Cum	262.5	15871.50
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		50.37				Cum	116.5	5868.40
	<b>Total Cost</b>							INR	<b>336317.05</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90	11344.69
	7.5 m to 9.0 m	1	13.85		1.05	14.55		592.20	8614.82
						<b>118.46</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50	2857.47
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70	3027.88
	6m to 7.5m	1	13.85		1.50	20.78		153.90	3198.29
	7.5 m to 9.0 m	1	13.85		1.05	14.55		162.10	2358.09
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>14.63</b>	Cum.	5910.70	86467.78
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1609.00</b>	Kg	68.50	110216.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>137.22</b>	Sqm.	203.00	27856.63
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	290.5	5810.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	63.81			63.81	Cum	262.5	16749.15
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
<b>13</b>	<b>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</b>		54.65				Cum	116.5	6366.61
	<b>Total Cost</b>							INR	<b>351951.18</b>



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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90	11344.69
	7.5 m to 9.0 m	1	13.85		1.50	20.78		592.20	12306.88
	9.0 m to 10.5 m	1	13.85		0.050	0.69		638.50	442.30
						<b>125.38</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50	2857.47
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70	3027.88
	6m to 7.5m	1	13.85		1.50	20.78		153.90	3198.29
	7.5 m to 9.0 m	1	13.85		1.50	20.78		162.10	3368.70
	9.0 m to 10.5 m	1	13.85		0.050	0.69		170.30	117.97
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>15.60</b>	Cum.	5910.70	92198.83
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1716.00</b>	Kg	68.50	117546.00
<b>7</b>	<b>Shuttering</b>								
	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					<b>146.65</b>	Sqm.	203.00	29769.86
<b>8</b>	<b>CI Steps-5 Kg</b>	22	-	-	-	<b>22.00</b>	No's	290.5	6391.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	67.75			67.75	Cum	262.5	17783.89
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						<b>12.80</b>	Meter	<b>134.95</b>	<b>1727.36</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	<b>343.22</b>	<b>6569.53</b>
	<b>Total Cost</b>							INR	<b>367437.03</b>

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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90	11344.69
	7.5 m to 9 m	1	13.85		1.50	20.78		592.20	12306.88
	9 m to 10.5m	1	13.85		0.55	7.62		638.50	4865.33
						<b>132.31</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50	2857.47
	4.5m to6.0m	1	13.85		1.50	20.78		145.70	3027.88
	6m to 7.5m	1	13.85		1.50	20.78		153.90	3198.29
	7.5 m to 9 m	1	13.85		1.50	20.78		162.10	3368.70
	9 m to 10.5m	1	13.85		0.55	7.62		170.30	1297.67
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>16.05</b>	Cum.	4630.90	74319.61
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1765.00</b>	Kg	68.50	120902.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>156.07</b>	Sqm.	203.00	31683.09
<b>8</b>	<b>Cl Steps-5 Kg</b>	23	-	-	-	<b>23.00</b>	No's	290.5	6681.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	67.30			67.30	Cum	262.5	17665.76
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
	<b>Total Cost</b>							INR	<b>360602.64</b>

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
<b>1</b>	<b>Earthwork Exacavation</b>								
	0 - 1.5 m	1	13.85		1.50	20.78		360.70	7495.94
	1.5m to 3.0	1	13.85		1.50	20.78		407.00	8458.13
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30	9420.32
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60	10382.51
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90	11344.69
	7.5 m to 9.0 m	1	13.85		1.50	20.78		592.20	12306.88
	9.0 m to 10.5 m	1	13.85		1.050	14.55		638.50	9288.35
						<b>139.24</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50	2857.47
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70	3027.88
	6m to 7.5m	1	13.85		1.50	20.78		153.90	3198.29
	7.5 m to 9.0 m	1	13.85		1.50	20.78		162.10	3368.70
	9.0 m to 10.5 m	1	13.85		1.050	14.55		170.30	2477.38
						<b>62.34</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	5.73		2.03	11.62			
	For Foundation	1	13.85		0.10	1.39			
						<b>13.01</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	2.78		2.70	7.49			
						7.49			
						<b>5.51</b>	Cum	3953.40	21796.49
<b>4</b>	<b>PCC - M20 Grade</b>								
	For collar portion	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>16.50</b>	Cum.	4630.90	76403.51
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1815.00</b>	Kg	68.50	124327.50
<b>7</b>	<b>Shuttering</b>								
	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					<b>165.50</b>	Sqm.	203.00	33596.32
<b>8</b>	<b>Cl Steps-5 Kg</b>	25	-	-	-	<b>25.00</b>	No's	290.5	7262.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	66.85			66.85	Cum	262.5	17547.64
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80			
		2.00	1.00			2.00			
						12.80	Meter	134.95	1727.36
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22	6569.53
	<b>Total Cost</b>							INR	<b>374090.38</b>

## 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)
	1950	230	2700	6.1	2.9	0.35	0.6	0.3
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate
<b>1</b>	<b>Earthwork Excavation</b>							
	0 - 1.5 m	1	13.85		1.50	20.78		360.70
	1.5m to 3.0	1	13.85		1.50	20.78		407.00
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60
	6.0m to 7.5m	1	13.85		0.65	9.01		545.90
						<b>92.13</b>	Cum	
<b>2</b>	<b>Timbering</b>							
	3.0m to 4.5m	1	13.85		1.50	20.78		137.5
	4.5m to 6.0m	1	13.85		1.50	20.78		145.7
	6m to 7.5m	1	13.85		0.65	9.01		153.90
						<b>50.57</b>	Sqm.	
<b>3</b>	<b>PCC - M15 Grade</b>							
	For benching portion	1	5.73		2.10	12.02		
	For Foundation	1	13.85		0.10	1.39		
						<b>13.41</b>		
	<b>Deductions</b>							
	For channel portion(Circular portion)	1	2.99		2.70	8.06		
						8.06		
						<b>5.35</b>	Cum	3953.40
<b>4</b>	<b>PCC - M20 Grade</b>							
	For collar portion	1	2.51	0.20	0.20	0.10		
	For collar portion	-1	1.88	0.15	0.15	-0.04		
						<b>0.06</b>	Cum	4380.40
<b>5</b>	<b>RCC - M25 Grade</b>							
	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		
						<b>12.78</b>	Cum.	5910.70
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1406.00</b>	Kg	68.50
<b>7</b>	<b>Shuttering</b>							
	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					<b>101.41</b>	Sqm.	203.00
<b>8</b>	<b>CI Steps-5 Kg</b>	13	-	-	-	<b>13.00</b>	No's	290.5
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	53.73			53.73	Cum	262.5
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>							
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80		
		2.00	1.00			2.00		
						12.80	Meter	134.95
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22
<b>13</b>	<b>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</b>		38.40				Cum	116.5
	<b>Total Cost</b>							INR

**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)
	1950	230	2700	6.5	2.9	0.35	0.6	0.3
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate
<b>1</b>	<b>Earthwork Excavation</b>							
	0 - 1.5 m	1	13.85		1.50	20.78		360.70
	1.5m to 3.0	1	13.85		1.50	20.78		407.00
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60
	6.0m to 7.5m	1	13.85		1.05	14.55		545.90
						<b>97.67</b>	Cum	
<b>2</b>	<b>Timbering</b>							
	3.0m to 4.5m	1	13.85		1.50	20.78		137.5
	4.5m to 6.0m	1	13.85		1.50	20.78		145.7
	6m to 7.5m	1	13.85		1.05	14.55		153.90
						<b>56.11</b>	Sqm.	
<b>3</b>	<b>PCC - M15 Grade</b>							
	For benching portion	1	5.73		2.10	12.02		
	For Foundation	1	13.85		0.10	1.39		
						<b>13.41</b>		
	<b>Deductions</b>							
	For channel portion(Circular portion)	1	2.99		2.70	8.06		
						8.06		
						<b>5.35</b>	Cum	3953.40
<b>4</b>	<b>PCC - M20 Grade</b>							
	For collar portion	1	2.51	0.20	0.20	0.10		
	For collar portion	-1	1.88	0.15	0.15	-0.04		
						<b>0.06</b>	Cum	4380.40
<b>5</b>	<b>RCC - M25 Grade</b>							
	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		
						<b>13.14</b>	Cum.	5910.70
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1445.00</b>	Kg	68.50
<b>7</b>	<b>Shuttering</b>							
	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					<b>108.95</b>	Sqm.	203.00
<b>8</b>	<b>CI Steps-5 Kg</b>	15	-	-	-	<b>15.00</b>	No's	290.5
<b>9</b>	<b>Disposal of Surplus earth upto 8 km</b>	1	55.85			55.85	Cum	262.5
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>							
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80		
		2.00	1.00			2.00		
						12.80	Meter	134.95
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22
<b>13</b>	<b>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</b>		41.82				Cum	116.5
	<b>Total Cost</b>							INR

**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)
	1950	230	2700	7	2.9	0.35	0.6	0.3

  

Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate
<b>1</b>	<b>Earthwork Excavation</b>							
	0 - 1.5 m	1	13.85		1.50	20.78		360.70
	1.5m to 3.0	1	13.85		1.50	20.78		407.00
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90
	7.5 m to 9.0m	1	13.85		0.05	0.69		592.20
						<b>104.60</b>	Cum	
<b>2</b>	<b>Timbering</b>							
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70
	6m to 7.5m	1	13.85		1.50	20.78		153.90
	7.5 m to 9.0m	1	13.85		0.05	0.69		162.10
						<b>63.04</b>	Sqm.	
<b>3</b>	<b>PCC - M15 Grade</b>							
	For benching portion	1	5.73		2.10	12.02		
	For Foundation	1	13.85		0.10	1.39		
						<b>13.41</b>		
	<b>Deductions</b>							
	For channel portion(Circular portion)	1	2.99		2.70	8.06		
						8.06		
						<b>5.35</b>	Cum	3953.40
<b>4</b>	<b>PCC - M20 Grade</b>							
	For collar portion	1	2.51	0.20	0.20	0.10		
	For collar portion	-1	1.88	0.15	0.15	-0.04		
						<b>0.06</b>	Cum	4380.40
<b>5</b>	<b>RCC - M25 Grade</b>							
	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		
						<b>13.59</b>	Cum.	5910.70
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1495.00</b>	Kg	68.50
<b>7</b>	<b>Shuttering</b>							
	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					<b>118.38</b>	Sqm.	203.00
<b>8</b>	<b>CI Steps-5 Kg</b>	16	-	-	-	<b>16.00</b>	No's	290.5
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	58.50			58.50	Cum	262.5
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>							
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80		
		2.00	1.00			2.00		
						12.80	Meter	134.95
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22
<b>13</b>	<b>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</b>		46.10				Cum	116.5
	<b>Total Cost</b>							INR

**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)
	1950	230	2700	7.5	2.9	0.35	0.6	0.3
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate
<b>1</b>	<b>Earthwork Excavation</b>							
	0 - 1.5 m	1	13.85		1.50	20.78		360.70
	1.5m to 3.0	1	13.85		1.50	20.78		407.00
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90
	7.5 m to 9.0 m	1	13.85		0.55	7.62		592.20
						<b>111.53</b>	Cum	
<b>2</b>	<b>Timbering</b>							
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70
	6m to 7.5m	1	13.85		1.50	20.78		153.90
	7.5 m to 9.0 m	1	13.85		0.55	7.62		162.10
						<b>69.96</b>	Sqm.	
<b>3</b>	<b>PCC - M15 Grade</b>							
	For benching portion	1	5.73		2.10	12.02		
	For Foundation	1	13.85		0.10	1.39		
						<b>13.41</b>		
	<b>Deductions</b>							
	For channel portion(Circular portion)	1	2.99		2.70	8.06		
						8.06		
						<b>5.35</b>	Cum	3953.40
<b>4</b>	<b>PCC - M20 Grade</b>							
	For collar portion	1	2.51	0.20	0.20	0.10		
	For collar portion	-1	1.88	0.15	0.15	-0.04		
						<b>0.06</b>	Cum	4380.40
<b>5</b>	<b>RCC - M25 Grade</b>							
	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		
						<b>14.04</b>	Cum.	5910.70
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1544.00</b>	Kg	68.50
<b>7</b>	<b>Shuttering</b>							
	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					<b>127.80</b>	Sqm.	203.00
<b>8</b>	<b>CI Steps-5 Kg</b>	18	-	-	-	<b>18.00</b>	No's	290.5
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	61.16			61.16	Cum	262.5
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>							
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80		
		2.00	1.00			2.00		
						12.80	Meter	134.95
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22
<b>13</b>	<b>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</b>		50.37				Cum	116.5
	<b>Total Cost</b>							INR

**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)
	1950	230	2700	8	2.9	0.35	0.6	0.3
Sno	Description	No's	Length	Breadth	Depth	Quantity	Unit	Rate
<b>1</b>	<b>Earthwork Excavation</b>							
	0 - 1.5 m	1	13.85		1.50	20.78		360.70
	1.5m to 3.0	1	13.85		1.50	20.78		407.00
	3.0m to 4.5m	1	13.85		1.50	20.78		453.30
	4.5m to 6.0m	1	13.85		1.50	20.78		499.60
	6.0m to 7.5m	1	13.85		1.50	20.78		545.90
	7.5 m to 9.0 m	1	13.85		1.05	14.55		592.20
						<b>118.46</b>	Cum	
<b>2</b>	<b>Timbering</b>							
	3.0m to 4.5m	1	13.85		1.50	20.78		137.50
	4.5m to 6.0m	1	13.85		1.50	20.78		145.70
	6m to 7.5m	1	13.85		1.50	20.78		153.90
	7.5 m to 9.0 m	1	13.85		1.05	14.55		162.10
						<b>76.89</b>	Sqm.	
<b>3</b>	<b>PCC - M15 Grade</b>							
	For benching portion	1	5.73		2.10	12.02		
	For Foundation	1	13.85		0.10	1.39		
						<b>13.41</b>		
	<b>Deductions</b>							
	For channel portion(Circular portion)	1	2.99		2.70	8.06		
						8.06		
						<b>5.35</b>	Cum	3953.40
<b>4</b>	<b>PCC - M20 Grade</b>							
	For collar portion	1	2.51	0.20	0.20	0.10		
	For collar portion	-1	1.88	0.15	0.15	-0.04		
						<b>0.06</b>	Cum	4380.40
<b>5</b>	<b>RCC - M25 Grade</b>							
	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		
						<b>14.49</b>	Cum.	5910.70
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>1594.00</b>	Kg	68.50
<b>7</b>	<b>Shuttering</b>							
	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					<b>137.22</b>	Sqm.	203.00
<b>8</b>	<b>CI Steps-5 Kg</b>	20	-	-	-	<b>20.00</b>	No's	290.5
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	63.81			63.81	Cum	262.5
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>							
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.70			10.80		
		2.00	1.00			2.00		
						12.80	Meter	134.95
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>		19.14				Sqm	343.22
<b>13</b>	<b>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</b>		54.65				Cum	116.5
	<b>Total Cost</b>							INR



<b>Open Excavation</b>
<b>Amount Rs</b>
7495.94
8458.13
9420.32
10382.51
4916.03
2857.47
3027.88
1385.93
21133.36
254.59
75524.46
96311.00
20586.35
3776.50
14105.06
<b>978.40</b>
<b>1727.36</b>
<b>6569.53</b>
<b>4473.41</b>
<b>293384.23</b>

<b>Open Excavation</b>
<b>Amount Rs</b>
7495.94
8458.13
9420.32
10382.51
7941.29
2857.47
3027.88
2238.81
21133.36
254.59
77652.31
98982.50
22116.94
4357.50
14661.71
<b>978.40</b>
<b>1727.36</b>
<b>6569.53</b>
<b>4871.98</b>
<b>305128.53</b>

<b>Open Excavation</b>
<b>Amount Rs</b>
7495.94
8458.13
9420.32
10382.51
11344.69
410.23
2857.47
3027.88
3198.29
112.29
21133.36
254.59
80312.13
102407.50
24030.17
4648.00
15357.53
<b>978.40</b>
<b>1727.36</b>
<b>6569.53</b>
<b>5370.19</b>
<b>319496.51</b>

<b>Open Excavation</b>
<b>Amount Rs</b>
7495.94
8458.13
9420.32
10382.51
11344.69
4512.52
2857.47
3027.88
3198.29
1235.19
21133.36
254.59
82971.94
105764.00
25943.40
5229.00
16053.34
<b>978.40</b>
<b>1727.36</b>
<b>6569.53</b>
<b>5868.40</b>
<b>334426.26</b>

<b>Open Excavation</b>
<b>Amount Rs</b>
7495.94
8458.13
9420.32
10382.51
11344.69
8614.82
2857.47
3027.88
3198.29
2358.09
21133.36
254.59
85631.76
109189.00
27856.63
5810.00
16749.15
<b>978.40</b>
<b>1727.36</b>
<b>6569.53</b>
<b>6366.61</b>
<b>349424.53</b>

## 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	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	11.95		1.50	17.92		360.70	6463.33
	1.5m to 3.0	1	11.95		1.50	17.92		407.00	7292.98
	3.0m to 4.5m	1	11.95		0.60	7.17		453.30	3249.05
						<b>43.01</b>	Cum		
2	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		0.60	7.17		137.5	985.54
						<b>7.17</b>	Sqm.		
3	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	3953.40	12100.16
4	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
5	<b>RCC - M25 Grade</b>								
	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			
						<b>6.44</b>	Cum.	4630.90	29830.60
6	<b>Reinforcement Steel</b>	1	-	-	-	<b>709.00</b>	Kg	68.50	48566.50
7	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		2.80	47.50			
	Total					<b>51.79</b>	Sqm.	203.00	10513.20
8	<b>Cl Steps-5 Kg</b>	3	-	-	-	<b>3.00</b>	No's	290.5	871.50
9	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	26.56			26.56	Cum	262.5	6971.13
10	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
11	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						<b>11.60</b>	Meter	134.95	<b>1565.42</b>
12	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>31.37</b>	Sqm	343.22	<b>10766.33</b>
13	<b>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</b>		16.45				Cum	116.5	<b>1916.26</b>
	<b>Total Cost</b>							INR	<b>142324.99</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	11.95		1.50	17.92		360.70	6463.33
	1.5m to 3.0	1	11.95		1.50	17.92		407.00	7292.98
	3.0m to 4.5m	1	11.95		1.10	13.14		453.30	5956.59
						<b>48.98</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.10	13.14		137.5	1806.82
						<b>13.14</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	3953.40	12100.16
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>6.85</b>	Cum.	4630.90	31706.12
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>753.00</b>	Kg	68.50	51580.50
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		3.30	55.98			
	Total					<b>60.27</b>	Sqm.	203.00	12235.11
<b>8</b>	<b>Cl Steps-5 Kg</b>	4	-	-	-	<b>4.00</b>	No's	290.5	1162.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	29.00			29.00	Cum	262.5	7611.27
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						<b>11.60</b>	Meter	134.95	<b>1565.42</b>
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>35.14</b>	Sqm	343.22	<b>12059.58</b>
<b>13</b>	<b>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</b>		19.98				Cum	116.5	<b>2328.01</b>
	<b>Total Cost</b>							INR	<b>155100.88</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	11.95		1.50	17.92		360.70	6463.33
	1.5m to 3.0	1	11.95		1.50	17.92		407.00	7292.98
	3.0m to 4.5m	1	11.95		1.50	17.92		453.30	8122.62
	4.5m to 6.0 m	1	11.95		0.10	1.19		499.60	596.82
						<b>54.95</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.50	17.92		137.5	2463.84
						<b>17.92</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	3953.40	12100.16
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>7.25</b>	Cum.	4630.90	33581.63
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>798.00</b>	Kg	68.50	54663.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		3.80	64.47			
	Total					<b>68.75</b>	Sqm.	203.00	13957.01
<b>8</b>	<b>CI Steps-5 Kg</b>	6	-	-	-	<b>6.00</b>	No's	290.5	1743.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	31.43			31.43	Cum	262.5	8251.42
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>38.90</b>	Sqm	343.22	13352.84
<b>13</b>	<b>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</b>		23.52				Cum	116.5	2739.75
	<b>Total Cost</b>							INR	<b>168126.81</b>



**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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	11.95		1.50	17.92		360.70	6463.33
	1.5m to 3.0	1	11.95		1.50	17.92		407.00	7292.98
	3.0m to 4.5m	1	11.95		1.50	17.92		453.30	8122.62
	4.5m to 6.0 m	1	11.95		0.60	7.17		499.20	3578.04
						<b>60.92</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.50	17.92		137.5	2463.84
						<b>17.92</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	3953.40	12100.16
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>7.66</b>	Cum.	4630.90	35457.14
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>842.00</b>	Kg	68.50	57677.00
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		4.30	72.95			
	Total					<b>77.24</b>	Sqm.	203.00	15678.92
<b>8</b>	<b>CI Steps-5 Kg</b>	8	-	-	-	<b>8.00</b>	No's	290.5	2324.00
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	33.87			33.87	Cum	262.5	8891.57
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>42.67</b>	Sqm	343.22	14646.09
<b>13</b>	<b>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</b>		27.05				Cum	116.5	3151.50
	<b>Total Cost</b>							INR	<b>180645.60</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	11.95		1.50	17.92		360.70	6463.33
	1.5m to 3.0	1	11.95		1.50	17.92		407.00	7292.98
	3.0m to 4.5m	1	11.95		1.50	17.92		453.30	8122.62
	4.5m to 6.0 m	1	11.95		1.10	13.14		499.60	6564.99
						<b>66.90</b>	Cum	545.9	36519.11
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.50	17.92		137.5	2463.84
						<b>17.92</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	3953.40	12100.16
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>8.06</b>	Cum.	4630.90	37332.66
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>887.00</b>	Kg	68.50	60759.50
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		4.80	81.43			
	Total					<b>85.72</b>	Sqm.	203.00	17400.83
<b>8</b>	<b>Cl Steps-5 Kg</b>	9	-	-	-	<b>9.00</b>	No's	290.5	2614.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	36.31			36.31	Cum	262.5	9531.72
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>46.44</b>	Sqm	343.22	15939.34
<b>13</b>	<b>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</b>		30.59				Cum	116.5	3563.24
	<b>Total Cost</b>							INR	<b>229467.23</b>

**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
<b>1</b>	<b>Earthwork Excavation</b>								
	0 - 1.5 m	1	11.95		1.50	17.92		360.70	6463.33
	1.5m to 3.0	1	11.95		1.50	17.92		407.00	7292.98
	3.0m to 4.5m	1	11.95		1.50	17.92		453.30	8122.62
	4.5m to 6.0 m	1	11.95		1.50	17.92		499.60	8952.26
	6.0m to 7.5 m	1	11.95		0.10	1.19		545.90	652.13
						<b>72.87</b>	Cum		
<b>2</b>	<b>Timbering</b>								
	3.0m to 4.5m	1	11.95		1.50	17.92		137.50	2463.84
	4.5m to 6.0m	1	11.95		1.50	17.92		145.70	2610.78
	6.0 m to 7.5 m	1	11.95		0.10	1.19		153.90	183.85
						<b>37.03</b>	Sqm.		
<b>3</b>	<b>PCC - M15 Grade</b>								
	For benching portion	1	4.52		2.25	10.18			
	For Foundation	1	11.95		0.10	1.19			
						<b>11.37</b>			
	<b>Deductions</b>								
	For channel portion(Circular portion)	1	3.46		2.40	8.31			
						8.31			
						<b>3.06</b>	Cum	3953.40	12100.16
<b>4</b>	<b>PCC - M20 Grade</b>								
	For cover slab	1	2.51	0.20	0.20	0.10			
	For collar portion	-1	1.88	0.15	0.15	-0.04			
						<b>0.06</b>	Cum	4380.40	254.59
<b>5</b>	<b>RCC - M25 Grade</b>								
	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			
						<b>8.47</b>	Cum.	4630.90	39208.17
<b>6</b>	<b>Reinforcement Steel</b>	1	-	-	-	<b>931.00</b>	Kg	68.50	63773.50
<b>7</b>	<b>Shuttering</b>								
	For foundation	1	12.25		0.35	4.29			
	For RCC - wall	2	8.48		5.30	89.91			
	Total					<b>94.20</b>	Sqm.	203.00	19122.73
<b>8</b>	<b>Cl Steps-5 Kg</b>	11	-	-	-	<b>11.00</b>	No's	290.5	3195.50
<b>9</b>	<b>Disposal of Surplus earth upto 8 km lead beyond 50m intitial lead</b>	1	22.68			22.68	Cum	262.5	5952.45
<b>10</b>	<b>Cost of SFRC Manholeframe and Cover</b>								<b>978.40</b>
<b>11</b>	<b>Hand Rail of G.I. Pipe - 32 mm dia</b>	4.00	2.40			9.60			
		2.00	1.00			2.00			
						11.60	Meter	134.95	1565.42
<b>12</b>	<b>Internal Lining by High Alumina Cement (1:3)</b>								
	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			
						<b>50.21</b>	Sqm	343.22	17232.60
<b>13</b>	<b>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</b>		50.19				Cum	116.5	5847.60
	<b>Total Cost</b>							INR	<b>205972.91</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 2					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
<b>a</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 Cl 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 <b>discharge 104.4 cum/hr. (29 LPS) at the total head of 13 m (Head Range: 10 m-16 m), 1440 RPM</b> 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.	No	6	1,35,100	8,10,600
	RUIDP -2017-18.1.11 page 95				
<b>b</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 Cl 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 <b>discharge 54 cum/hr (15 LPS) at the total head of 15 m (Head Range: 12 m-18 m), 1440 RPM</b> 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.	no	2	1,31,500	2,63,000
	RUIDP -2017-18.1.5 page 95				
<b>2</b>	<b>Dismantling Joint</b>				
	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.				
<b>a</b>	Size:150 mm	No	6	4,125	24,750
<b>b</b>	Size:100 mm	No	2	2,585	5,170
<b>c</b>	Size:250 mm	No	1	8,690	8,690
<b>d</b>	Size: 350 mm	No	1	13,420	13,420
	RUIDP 2017 19. 40.2,4,6,8 + 10 % added for class PN 1.6 page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				
<b>a</b>	Size:150 mm	No	6	15,290	91,740
<b>b</b>	Size:100 mm	No	2	12,210	24,420
<b>c</b>	Size: 350 mm	No	1	57,310	57,310
	RUIDP 2017 19. 40.2,4,6,8 + 10 % added for class PN 1.6 page 135 & 136				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>4</b>	<b>Sluice Valve</b>				
	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			
<b>a</b>	Size:150 mm	No	6	18,480	1,10,880
<b>b</b>	Size:100 mm	No	2	12,320	24,640
	RUIDP 2017 19.20.1.2,5 + 10 % for added for class PN 1.6 page 120				
<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welded) 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				
<b>a</b>	Size:150 mm	m	66	3,030	1,99,980
<b>b</b>	Size:100 mm	m	22	2,310	50,820
<b>c</b>	size: 350 mm	m	1	8,560	8,560
	RUIDP 2017 19.10.1,2,6 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
<b>a</b>	up to 300 mm dia	kg	910	118	1,07,380
<b>b</b>	above 300 mm dia upto 600 mm dia	kg	1490	124	1,84,760
	RUIDP 2017 19.11.1.1,2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
<b>a</b>	Size:150 mm	No	6	6,190	37,140
<b>b</b>	Size:100 mm	No	2	4,190	8,380
	RUIDP 2017 19.47.2,4 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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.)				
<b>a</b>	Size:150 mm	No	6	19,690	1,18,140
<b>b</b>	Size:100 mm	No	2	11,990	23,980
	RUIDP 2017 19.34.1.2,4 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5	4,580	22,900
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	5,15,760	5,15,760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>11</b>	<b>Sluice Gate</b>				
	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 11.23 MLD	set	2	1,63,600	3,27,200
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 100 & 101				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 11.23 MLD	set	2	1,29,100	2,58,200
	RUIDP 2017 18.3.4 + 18.3.20 added for additional 5m depth page 98				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
<b>a</b>	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	24,700	24,700
	RUIDP -2017-18.10.1 page 102				
	<b>Debries collection bucket</b>				
<b>b</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	16,740
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>33,39,260</b>
<b>Say</b>					<b>33,40,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 2A					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 <b>discharge 198 cum/hr (55 LPS ) at the total head of 16 m (Head Range: 13 m-17 m), 1440 RPM</b> and coupled to submersible motor, 1500 RPM, ( syn) 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, pressure gauge complete as per specifications. (40.46 MLD)	No	6	3,12,800	18,76,800
	RUIDP -2017-18.1.24 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 <b>discharge 100.80 cum/hr (28 LPS ) at the total head of 16 m (Head Range: 13 m-17m), 1440 RPM</b> and coupled to submersible motor, 1500 RPM, ( syn) 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, pressure gauge complete as per specifications.	no	2	2,24,000	4,48,000
	RUIDP -2017-18.1.12 page 95				
<b>2</b>	<b>Dismantling Joint</b>				
	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:200 mm	No	6	6,215	37,290
b	Size:150 mm	No	2	4,125	8,250
c	Size:350 mm	No	1	13,420	13,420
d	Size: 500 mm	No	1	23,430	23,430
	RUIDP 2017 19. 40.4,5,8,11 + 10 % added for class PN 1.6 page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.)				
a	Size:200 mm	No	6	16,830	1,00,980
a	Size:150 mm	No	2	15,290	30,580
c	Size: 500 mm	No	1	94,160	94,160
	RUIDP 2017 19. 24.1.4,5,11 + 10 % added for class PN 1.6 page 124 & 125				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>4</b>	<b>Sluice Valve</b>				
	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	No	6	30,250	1,81,500
b	Size:150 mm	No	2	18,480	36,960
	RUIDP 2017 19.20.1.4,5 + 10 % for added for class PN 1.6 page 120				
<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (weilded) 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	m	66	3,960	2,61,360
b	Size:150 mm	m	24	3,030	72,720
c	Size:350 mm	m	10	8,560	85,600
	RUIDP 2017 19.10.2,3,6 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
a	above 300 mm dia upto 600 mm dia	kg	790	118	93,220
b	RUIDP 2017 19.11.1.1,2 page 117	kg	700	124	86,800
<b>7</b>	<b>Puddle pipe</b>				
	Providing fixing in position CI puddle collar (approx 1 m length) inside the wall including all material labour as per technical specification & as per direction of Engineer				
	Size:200 mm	No	6	8,860	53,160
	Size:150 mm	No	2	6,190	12,380
	RUIDP 2017 19.47.4,5 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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:200 mm	No	6	44,110	2,64,660
b	Size:150 mm	No	2	19,690	39,380
	RUIDP 2017 19.34.1.2,2,4 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5	4,580	22,900
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	5,15,760	5,15,760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				



S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>11</b>	<b>Sluice Gate</b>				
	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 9 m (21.50 MLD )	set	2	1,74,600	3,49,200
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 100 & 101				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 21.50 MLD	set	2	1,49,600	2,99,200
	RUIDP 2017 18.4.4+ 18.3.20 added for additional 5m depth page 98				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	24,700	24,700
	RUIDP -2013-18.10.1 page 102				
	<b>Debries collection bucket</b>				
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	16,740
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>50,49,150</b>
<b>Say</b>					<b>50,50,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 3					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 <b>discharge 61.2 cum/hr (17 LPS ) at the total head of 21 m (Head Range: 18 m-24 m), 1000 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6	1,31,500	7,89,000
	RUIDP -2017-18.1.6 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 <b>discharge 32.4 cum/hr (9 LPS ) at the total head of 21 m (Head Range: 18 m-24 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	No	2	1,21,900	2,43,800
	RUIDP -2017-18.1.3 page 95				0
<b>2</b>	<b>Dismantling Joint</b>				0
	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	No	6	4,125	24,750
b	Size:100 mm	No	2	2,585	5,170
c	Size 300 mm	no	2	11,110	22,220
	RUIDP 2017 19. 40.2,4,7 + 10 % added for class PN 1.6 page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				0
a	Size:150 mm	No	6	15,290	91,740
b	Size:100 mm	No	2	12,210	24,420
c	Size 300 mm	No	1	43,890	43,890
	RUIDP 2013 19.24.1.2,4,7 + 10 % for added for class PN 1.6 page125				
<b>4</b>	<b>Sluice Valve</b>				
	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.)				
a	Size:150 mm	No	6	18,480	1,10,880
b	Size:100 mm	No	2	12,320	24,640
	RUIDP 2013 19.19.1.2,4 + 10 % for added for class PN 1.6 page 120				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welded) 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	m	66	3,030	1,99,980
b	Size:100 mm	m	22	2,310	50,820
c	Size:300 mm	m	10	6,430	64,300
	RUIDP 2017 19.10.1.2,5 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
a	up to 300 mm dia	kg	630	118	74,340
b	above 300 mm dia upto 600 mm dia	kg	1990	124	2,46,760
	RUIDP 2017 19.11.1.1,2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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	No	6	6,190	37,140
b	Size:100 mm	No	2	5,110	10,220
	RUIDP 2017 19.47.2.4 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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	No	6	19,690	1,18,140
b	Size:100 mm	No	2	11,990	23,980
	RUIDP 2017 19.34.1.2,4 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5		0
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	5,15,760	5,15,760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
<b>11</b>	<b>Sluice Gate</b>				
a	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 9 m (12.25 MLD)	set	2	1,67,800	3,35,600
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 101				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	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 technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 12.25 MLD	set	2	1,29,100	2,58,200
	RUIDP 2017 18.3.4 + 18.3.20 added for additional 5m depth page 98				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	24,700	24,700
	RUIDP -2017-18.10.1 page 102				
	<b>Debries collection bucket</b>				
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	16,740
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>33,57,190</b>
<b>Say</b>					<b>33,58,000</b>

<b>SEWERAGE SYSTEM FOR GAYA CITY</b>					
<b>Cost Estimate - Mechanical Works for IPS 4</b>					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
<b>a</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 Cl 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 <b>discharge 151.2 cum/hr. (42 LPS)102 LPS at the total head of 15 m (Head Range: 12 m-18m), 1440 RPM</b> 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.	No	6.00	2,45,700	14,74,200
	RUIDP -2017-18.1.17 page 95				
<b>b</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 Cl 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 <b>discharge 21 LPS at the total head of 15 m (Head Range: 12 m-18 m), 1440 RPM</b> 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.	no	2.00	1,31,500	2,63,000
	RUIDP 2013 18.1.5 page 95				
<b>2</b>	<b>Dismantling Joint</b>				
	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.				
<b>a</b>	Size:200 mm	No	6	6,215	37,290
<b>b</b>	Size:100 mm	No	2	2,585	5,170
<b>c</b>	Size:300 mm	No	1	11,110	11,110
<b>d</b>	Size: 500 mm	No	1.00	23,430	23,430
	RUIDP 2017 19. 40.2,5,7,11 + 10 % added for class PN 1.6 page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				
<b>a</b>	Size:200 mm	No	6	16,830	1,00,980
	Size:100 mm	No	2	12,210	24,420
<b>b</b>	Size: 500 mm	No	1	94,160	94,160
	RUIDP 2017 19. 24.1.2,5,11 + 10 % added for class PN 1.6 page 125				

<b>4</b>	<b>Sluice Valve</b>				
	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			
<b>a</b>	Size:200 mm	No	6	30,250	1,81,500
	Size:100 mm	No	2	12,320	24,640
<b>b</b>	Size: 500 mm	No	1		0
	RUIDP 2013 19.20.1.2,5,11 + 10 % for added for class PN 1.6 page 121				
<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (weilded) 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, commissioning as per technical specifications and as per direction of Engineer				
<b>a</b>	Size:200 mm	m	66.00	3,960	2,61,360
<b>b</b>	Size:100 mm	m	22.00	2,310	50,820
<b>c</b>	size: 300 mm	m	0.50	6,430	3,215
<b>d</b>	Size: 500 mm	m	11.00	14,800	1,62,800
	RUIDP 2017 19.10.1,3,5,9 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
<b>a</b>	up to 300 mm dia	kg	370.00	118	43,660
<b>b</b>	above 300 mm dia upto 600 mm dia	kg	4100.00	124	5,08,400
	RUIDP 2017 19.11.1,2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:200 mm	No	6	8,860	53,160
	Size:100 mm	No	2	4,190	8,380
	RUIDP 2017 19.47.2,5 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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.)				
<b>a</b>	Size:200 mm	No	6	44,110	2,64,660
	Size:100 mm	No	2	11,990	23,980
	RUIDP 2017 19.34.1.2,5 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5	4,580	22,900
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	5,15,760	5,15,760
	RUIDP -2017-19.9.1.2 + added 20% for span 14 m page 102				

<b>11</b>	<b>Sluice Gate</b>				
	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 ( 20.22 MLD)	set	2	1,70,400	3,40,800
	RUIDP -2017-18.7.6 + 18.7.22 added for additional 5m depth page 101				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	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 container of 1 cim capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 20.22 MLD	set	2	1,49,600	2,99,200
	RUIDP 2017 18.3.6 + 18.3.20 added for additional 5m depth page 98				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
<b>a</b>	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	24,700	24,700
	RUIDP -2017 - 18.10.1 page 102				
	<b>Debries collection bucket</b>				
<b>b</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	16,740
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>48,40,435</b>
<b>Say</b>					<b>48,41,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 4A					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 Cl 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 <b>discharge 421cum/hr (117 LPS ) at the total head of 17 m (Head Range: 14 m-20m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications. (40.46 MLD)	No	6.00	3,41,100	20,46,600
	RUIDP -2017-18.1.36 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 Cl 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 <b>discharge 212.4 cum/hr (59 LPS ) at the total head of 17 m (Head Range: 14 m-20m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2.00	3,12,800	6,25,600
	RUIDP -2017-18.1.24 page 95				
<b>2</b>	<b>Dismantling Joint</b>				
	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 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:300 mm	No	6.00	11110	66,660
b	Size:200 mm	No	2.00	6215	12,430
	Size:500 mm	No	1.00	23430	23,430
c	Size: 800 mm	No	1.00	70,950	70,950
	RUIDP 2017 19. 40.5,7,11,13.1 + 10 % added for class PN 1.6 page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				
a	Size:300 mm	No	6.00	43890	2,63,340
b	Size:200 mm	No	2.00	16830	33,660
c	Size: 800 mm	No	1.00	3,17,460	3,17,460
	RUIDP 2017 19.24.1.5,7,15 + 10 % for added for class PN 1.6 page125				



<b>4</b>	<b>Sluice Valve</b>				
	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:300 mm	No	6.00	56,100	3,36,600
b	Size:200 mm	No	2.00	30250	60,500
	RUIDP 2017 19.20.1.5,7 + 10 % for added for class PN 1.6 page 120				
<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, eixing in position and double flanged (welelde) 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:300 mm	No	72.00	6,430	4,62,960
b	Size:200 mm	m	24.00	3960	95,040
c	Size:500 mm	m	1.00	14,800	14,800
d	Size: 800 mm	m	10.00	30,700	3,07,000
	RUIDP 2017 19.10.3.5,9,12 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
a	up to 300 mm dia	kg	770.00	118	90,860
b	above 300 mm dia upto 600 mm dia	kg	9800.00	124	12,15,200
	RUDP 2017 19.11.1.1 & 2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	Providing fixing in position CI puddle collar ( approx 1 m length ) inside the wall including all material labour as per technical specification & as per direction of engineer				
	Size:300 mm	No	6.00	14,700	88,200
	Size:200 mm	No	2.00	8,860	17,720
	RUIDP 2017 19.47.5,7 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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:300 mm	No	6.00	39,900	2,39,400
b	Size:200 mm	No	2.00	15,300	30,600
	8065				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	Providing and laying in position compacting plain / RCC 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	5.0	4,580	22,900
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	1.00	5,15,760	5,15,760
	RUIDP -2017-19.9.1.2 + added 20% for span 14 m page 102				

<b>11</b>	<b>Sluice Gate</b>				
	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 . Duty 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 9 m ( 53.4 MLD )	set	2.00	3,33,000	6,66,000
	RUIDP -2017-18.7.13 + 18.7.22 added for additional 5m depth page 100 & 101				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 53.4 MLD	set	2.00	1,99,600	3,99,200
	RUIDP 2017 18.3.13 + 18.3.20 added for additional 5m depth page 98				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	1.00	24,700	24,700
	RUIDP -2017 - 18.10.1 page 102				
	<b>Debries collection bucket</b>				
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	150.00	112	16,740
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>80,64,310</b>
<b>Say</b>					<b>80,65,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 5					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 <b>discharge 104.4 cum/hr. (29 LPS) at the total head of 18 m (Head Range: 15 m-21 m)</b> , and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6	2,24,000	13,44,000
	RUIDP -2017-18.1.12 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 <b>discharge 50.4 cum/hr (14 LPS ) at the total head of 18 m (Head Range: 15 m-21 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2	1,31,500	2,63,000
	RUIDP -2017-18.1.6 page 95				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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	No	6	4,125	24,750
b	Size:100 mm	No	2	2,585	5,170
c	Size 300 mm	no	1	11,110	11,110
d	Size 400 mm	no	1	17,160	17,160
	RUIDP 2017 19.40.2,4,7,9 + 10 % added for class PN 1.6 page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				
a	Size:150 mm	No	6	15,290	91,740
b	Size:100 mm	No	2	12,210	24,420
c	Size: 400 mm	No	1	1,15,830	1,15,830
	RUIDP 2017 19.24.1.5,7,15 + 10 % for added for class PN 1.6 page125				
<b>4</b>	<b>Sluice Valve</b>				
	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	No	6	18,480	1,10,880
b	Size:100 mm	No	2	12,320	24,640
	RUIDP 2017 19.20.1.2,4 + 10 % for added for class PN 1.6 page 120				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welded) 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, commissioning as per technical specifications and as per direction of Engineer				
a	Size:150 mm	m	66	3,030	1,99,980
b	Size:100 mm	m	22	2,310	50,820
c	Size: 300 mm	m	3	6,430	19,290
d	Size: 400 mm	m	10	10,200	1,02,000
	RUIDP 2017 19.10.1,2,5,7 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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 specification & as per direction of engineer				
a	up to 300 mm dia	kg	2680	118	3,16,240
b	above 300 mm dia upto 600 mm dia	kg	2200	124	2,72,800
	RUIDP 2017 19.11.1.1 & 2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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	No	6	6,190	37,140
b	Size:100 mm	No	2	4,190	8,380
	RUIDP 2017 19.47.2,4 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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	No	6	19,690	1,18,140
b	Size:100 mm	No	2	11,990	23,980
	RUIDP 2017 19.34.1.2,4 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve, pipe</b>				
	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	5	4,580	22,900
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	5,15,760	5,15,760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
<b>11</b>	<b>Sluice Gate</b>				
	Supply, Installation, Testing & commissioning of CI thimble mounted Sluice gate, manually operated, rising spindle type Sluice gate, as per IS 13349 including all taxes, freight, 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 waxes. 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 9 m (12.71 MLD)	set	2	1,67,800	3,35,600
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 100 & 101				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 190.18 MLD	set	2	4,81,200	9,62,400
	RUIDP 2017 18.3.4 + 18.3.20 added for additional 5m depth & 100% for 190.18 MLD page 98				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	24,700	24,700
	RUIDP -2017-18.10.1 page 102				
	<b>Debries collection bucket</b>				
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	16,740
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					50,59,570
<b>Say</b>					<b>50,51,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 5A					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 <b>discharge 97.2 cum/hr (27 LPS ) at the total head of 17 m (Head Range: 14 m-20 m), 1400 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6	2,24,000	13,44,000
	RUIDP -2017-18.1.12 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 <b>discharge 50.2 cum/hr (14 LPS ) at the total head of 17 m (Head Range: 14 m-20 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2	1,31,500	2,63,000
	RUIDP -2017-18.1.6 page 95				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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	No	6	4,125	24,750
b	Size:100 mm	No	2	2,585	5,170
c	Size:250 mm	No	1	8,690	8,690
d	Size: 400 mm	No	1	17,160	17,160
	RUIDP 2017 19.40.2,4,6,9 + 10 % added for class PN 1.6 page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				
a	Size:150 mm	No	6	15,290	91,740
b	Size:100 mm	No	2	12,210	24,420
c	Size: 400 mm	No	1	71,500	71,500
	RUIDP 2017 19.24.1.2,4,9 + 10 % added for class PN 1.6 page 125				
<b>4</b>	<b>Sluice Valve</b>				
	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	No	6	18,480	1,10,880
b	Size:100 mm	No	2	12,320	24,640
	450				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welded) 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, commissioning as per technical specifications and as per direction of Engineer				
a	Size:150 mm	m	66	3,030	1,99,980
b	Size:100 mm	m	22	2,310	50,820
	Size:250 mm	m	1	5,110	5,110
c	Size: 400 mm	m	10	10,200	1,02,000
	RUIDP 2017 19.10.1,2,4,7 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
a	up to 300 mm dia	kg	4020	118	4,74,360
b	above 300 mm dia upto 600 mm dia	kg	2600	124	3,22,400
	RUIDP 2017 19.11.1.1,2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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	No	6	6,190	37,140
b	Size:100 mm	No	2	4,190	8,380
	RUIDP 2017 19.47.2,4 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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	No	6	19,690	1,18,140
b	Size:100 mm	No	2	11,990	23,980
	RUIDP 2017 19.34.1.2,4 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5	4,580	22,900
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	5,15,760	5,15,760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
<b>11</b>	<b>Sluice Gate</b>				
a	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , freight , 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 9 m (11.38 MLD)	set	2	1,67,800	3,35,600
	RUIDP -2017-18.7.4 + 18.7.22 added for additional 5m depth page 100 & 101				

S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required depth for 11.38 MLD	set	2	1,29,100	2,58,200
	RUIDP 2017 18.3.4 + 18.3.20 added for additional 5m depth page 98				
<b>13</b>	<b>Lifting arrangement at screen chamber</b>				
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	24,700	24,700
	RUIDP -2017-18.10.1 page 102				
	<b>Debris collection bucket</b>				
b	Fabricating, Supply, Installation, Testing and commissioning of Debris 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	16,740
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					45,02,160
<b>Say</b>					<b>45,03,000</b>



SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for IPS 6					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 Cl 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 <b>discharge 561.6 cum/hr (158 LPS ) at the total head of 12 m (Head Range: 9 m-15 m), 1000 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6.00	5,96,700.00	35,80,200.00
	RUIDP -2017-18.1.47 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 Cl 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 <b>discharge 284 cum/hr (79 LPS ) at the total head of 12 m (Head Range: 9 m-15 m),, 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2.00	3,12,800.00	6,25,600.00
	RUIDP -2017-18.1.29 page 95				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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:300 mm	No	6.00	11,110.00	66,660.00
b	Size:250 mm	No	2.00	8,690.00	17,380.00
c	Size 600 mm	no	1.00	35,200.00	35,200.00
d	Size: 900 mm	No	1.00	78,045	78,045.00
	RUIDP 2017 19.40.6,7,12 + 10 % added for class PN 1.6 & 50% for 900 mm size page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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: (Kirlokar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.				
a	Size:300 mm	No	6.00	43,890.00	2,63,340.00
b	Size:250 mm	No	2.00	36,080.00	72,160.00
c	Size: 900 mm	No	1.00	3,75,980.00	3,75,980.00
	RUIDP 2017 19.24.1.6,8,16 + 10 % added for class PN 1.6 page 125				
<b>4</b>	<b>Sluice Valve</b>				
	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated C I 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: (Kirlokar Bros. Ltd., Indian Valve Co. (IVC), Fouress Engineers Pvt. Ltd.)	No			
a	Size:300 mm	No	6.00	56,100.00	3,36,600.00
b	Size:250 mm	No	2.00	42,570.00	85,140.00
	RUIDP 2017 19.20.1.6,7 + 10 % for added for class PN 1.6 page 120				

<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welded) 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, commissioning as per technical specifications and as per direction of Engineer				
a	Size:300 mm	m	72.00	6,430.00	4,62,960.00
b	Size:250 mm	m	24.00	5,110.00	1,22,640.00
	Size:600 mm	m	1.00	19,600.00	19,600.00
c	Size: 900 mm	m	10.00	37,900.00	3,79,000.00
	RUIDP 2017 19.10.4,5,10,13 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
a	up to 300 mm dia	Kg	240.00	118.00	28,320.00
b	above 300 mm dia upto 600 mm dia	Kg	13200.00	124.00	16,36,800.00
	RUIDP 2017 19.11.1.1,2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:300 mm	No	6.00	14,700.00	88,200.00
	Size:250 mm	No	2.00	11,500.00	23,000.00
	RUIDP 2017 19.47.6,7 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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.)				
	Size:300 mm	No	6.00	75,460.00	4,52,760.00
	Size:200 mm	No	2.00	44,110.00	88,220.00
	Size: 900 mm	No	1.00	7,82,100.00	7,82,100.00
	RUIDP 2017 19.34.1.5,7,16 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5.0	4,580.00	22,900.00
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	1.00	5,15,760.00	5,15,760.00
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
<b>11</b>	<b>Sluice Gate</b>				
a	Supply , Installation , Testing & commissioning of CI thimble mounted Sluice gate , manually operated , rising spindle type Sluice gate , as per IS 13349 including all taxes , freight , 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 9 m (66.18 MLD)	Set	2.00	3,53,000.00	7,06,000.00
	RUIDP -2017-18.7.15 + 18.7.22 added for additional 5m depth page 100 & 101				

12	<b>Manual Coarse Bar Screen</b>				
	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 container of 1 cum capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 66.18 MLD	Set	2.00	2,13,900.00	4,27,800.00
	RUIDP 2017 18.3.15 + 18.3.20 added for additional 5m depth page 99				
13	<b>Lifting arrangement at screen chamber</b>				
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	1.00	24,700.00	24,700.00
	RUIDP -2017-18.10.1 page 102				
	<b>Debries collection bucket</b>				
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	13,875.00
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>113,30,940.00</b>
<b>IPS 6</b>					<b>Say 113,31,000.00</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for MPS- Immediate Requirement (30MLD)					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 <b>discharge 670 cum/hr (186 LPS ) at the total head of 15 m (Head Range: 12 m-18 m)</b> , and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6.00	9,00,500	54,03,000
	RUIDP -2017-18.1.54 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 <b>discharge 335 cum/hr (93 LPS ) at the total head of 15 m (Head Range: 12 m-18 m), 1440 RPM</b> and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	no	2.00	3,41,100	6,82,200
	RUIDP -2017-18.1.36 page 96				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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:300 mm	No	6.00	11,110	66,660
b	Size:250 mm	No	2.00	8,690	17,380
c	Size 600 mm	no	1.00	35,200	35,200
d	Size: 900 mm	No	1.00	78,045	78,045
	RUIDP 2017 19.40.6,7,12 + 10 % added for class PN 1.6 & 50% for 900 mm size page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				
a	Size:300 mm	No	6.00	43,890	2,63,340
b	Size:250 mm	No	2.00	36,080	72,160
c	Size 900 mm	No	1.00	3,75,980	3,75,980
	RUIDP 2017 19.24.1.6,7,16 + 10 % added for class PN 1.6 page 125				
<b>4</b>	<b>Sluice Valve</b>				
	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:300 mm	No	6.00	56,100	3,36,600
b	Size:250 mm	No	2.00	42,570	85,140
	RUIDP 2017 19.20.1.6,7 + 10 % for added for class PN 1.6 page 120				

<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (welded) 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, commissioning as per technical specifications and as per direction of Engineer				
a	Size:300 mm	m	72.00	6,430	4,62,960
b	Size:250 mm	m	24.00	5,110	1,22,640
c	Size: 600 mm	m	5.00	19,600	98,000
	RUIDP 2017 19.10.4,5,10 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
a	up to 300 mm dia	kg	170.00	118	20,060
b	above 300 mm dia upto 600 mm dia	kg	7500.00	124	9,30,000
	RUIDP 2017 19.11.1.1,2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:300 mm	No	6.00	14,700	88,200
	Size:250 mm	No	2.00	11,500	23,000
	RUIDP 2017 19.47.6,7 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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.)				
	Size:300 mm	No	6.00	75,460	4,52,760
	Size:250 mm	No	2.00	54,890	1,09,780
	RUIDP 2017 19.34.1.6,7 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5.0	4,580.00	22,900
	RUIDP 2017 13.4.5 page 39				
<b>10</b>	<b>EOT Crane</b>				
	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	1.00	5,15,760.00	5,15,760
	RUIDP -2017-18.9.1.2 + 18.9.4 added 20% for span 14 m page 102				
<b>11</b>	<b>Sluice Gate</b>				
	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 woges . 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 9 m (190.18 MLD )	Set	2.00	10,38,600	20,77,200
	RUIDP -2017-18.7.15 + 18.7.22 added for additional 6m depth & 100% for 190.18 MLD page 100 & 101				
<b>12</b>	<b>Manual Coarse Bar Screen</b>				
	Supply , fabrication, fixing & testing of stainless steel ( SS- 316 ) Manual 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 container of 1 cim capacity complete in all respect as per technical specification and the direction of engineer , manually raked coarse bar screen with 50 mm clear opening for following Peak flow & at required deapth for 190.18 MLD	set	2.00	4,81,200	9,62,400
	RUIDP 2017 18.3.15 + 18.3.20 added for additional 6m depth & 100% for 190.18 MLD page 98				

13	<b>Lifting arrangement at screen chamber</b>				
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	1.00	24,700	24,700
	RUIDP -2017-18.10.1 page 102				
	<b>Debries collection bucket</b>				
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	150.00	112	13,875
	RUIDP 29.16.1 added 20% for 2017 DSR				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>133,39,940</b>
	<b>MPS</b>			<b>Say</b>	<b>133,40,000</b>

SEWERAGE SYSTEM FOR GAYA CITY					
Cost Estimate - Mechanical Works for MPS- Future Requirement (60MLD)					
S. No.	Item Description	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
<b>1</b>	<b>Submersible Sewage pump</b>				
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 Cl 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 <b>discharge 1336 cum/hr (371 LPS ) at the total head of 15 m (Head Range: 12 m-18 m)</b> , and coupled to submersible motor , 1500 RPM, ( syn) 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.	No	6.00	14,50,700	87,04,200
	RUIDP -2017-18.1.70 page 97				
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 Cl 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 <b>discharge 670 cum/hr (186 LPS ) at the total head of 15 m (Head Range: 12 m-18 m)</b> , 1440 RPM and coupled to submersible motor , 1500 RPM, ( syn) 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 , pressure gauge complete as per specifications.	No	2.00	9,00,500	18,01,000
	RUIDP -2017-18.1.54 page 96				
<b>2</b>	<b>Dismantling Joint</b>				
	Providing, lowering , laying , aligning , fixing in position and jointing dismantling joint ( suitable for sluice valve ) as per IS specification complete of following sizes including all jointing material , cost of all labour , testing & commissioning as per technical specifications and as per direction of Engineer 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:450 mm	No	6.00	19,030	1,14,180
b	Size:300 mm	No	2.00	11,110	22,220
c	Size 900 mm	No	1.00	78,045	78,045
d	Size: 1000 mm	No	1.00	1,17,068	1,17,068
	RUIDP 2017 19.40.7,10 + 10 % added for class PN 1.6 & 50% for 900 & 1000mm size page 135 & 136				
<b>3</b>	<b>Butterfly Valve</b>				
	Providing, lowering, laying, aligning, fixing in position C.I. D/F manually operated long body butterfly valves (IS: 13095) PN-1.6 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.				
a	Size:450 mm	No	6.00	83,490	5,00,940
b	Size:300 mm	No	2.00	43,890	87,780
c	Size 1000 mm	No	1.00	4,90,050	4,90,050
	RUIDP 2017 19.24.1.7,10,17 + 10 % added for class PN 1.6 page 125				
<b>4</b>	<b>Sluice Valve</b>				
	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:450 mm	No	6.00	18,480	1,10,880
b	Size:300 mm	No	2.00	56,100	1,12,200
	RUIDP 2017 19.20.1.7,10 + 10 % for added for class PN 1.6 page 120				

<b>5</b>	<b>DI Flanged Pipe</b>				
	Providing, lowering, laying in trenches, aligning, fixing in position and double flanged (weilded) 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:450 mm	m	72.00	12,400	8,92,800
b	Size:300 mm	m	24.00	6,430	1,54,320
c	Size: 900 mm	m	3.00	37,900	1,13,700
	RUIDP 2017 19.10.5,8,13 page 116				
<b>6</b>	<b>DI Flanged specials</b>				
	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				
a	up to 300 mm dia	kg	220.00	118	25,960
b	above 300 mm dia upto 600 mm dia	kg	11700.00	124	14,50,800
	RUIDP 2017 19.11.1.1,2 page 117				
<b>7</b>	<b>Puddle pipe</b>				
	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				
	Size:450 mm	No	6.00	27,400	1,64,400
	Size:300 mm	No	2.00	14,700	29,400
	RUIDP 2017 19.47.7,10 page 138				
<b>8</b>	<b>Check Valve (Non Return Valve)</b>				
	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.)				
	Size:450 mm	No	6.00	1,77,760	10,66,560
	Size:300 mm	No	2.00	75,460	1,50,920
	RUIDP 2017 19.34.1.7,10 + 10 % added for class PN 1.6 page 132				
<b>9</b>	<b>CC support saddle below valve , pipe</b>				
	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	5.0	4,580	22,900
	RUIDP 2017 13.4.5 page 39				
<b>Grand Total of Mechanical Estimate in Rs.</b>					<b>162,10,323</b>
<b>MPS</b>				<b>Say</b>	<b>162,11,000</b>