

# FINAL REPORT

ADB



Asian Development Bank  
National Capital Region Planning Board

Capacity Development of the  
National Capital Region Planning Board  
Package 2 Component B  
TA No. 7055-IND

**Volume I-D : Detailed Estimates**

**Detailed Project Report for  
Water Supply System in Panipat**



**WilburSmith**  
ASSOCIATES

July 2010

NCR Planning Board  
Asian Development Bank

# Capacity Development of the National Capital Region Planning Board (NCRPB) – Component B (TA No. 7055-IND)

FINAL REPORT

Volume I-D: Detailed Project Report for Panipat Water Supply  
Detailed Estimate

July 2010

---



## **Contents**

Appendix E-1	:	Abstract Cost Estimate
Appendix E-2	:	Basis for Cost Estimate
Appendix E-3	:	Rate Analysis of Various Pipes
Appendix E-4	:	Detailed Estimate of Rising Main
Appendix E-5	:	Detailed Estimate of Distribution System in 18 Zones

**Appendix E-1 : Details of Cost Estimate**

### Appendix E-1: Abstract Cost Estimate

S. No	Item	Cost in Rs. Million
1	Providing out lets in WJC Canal and Delhi Parallel Canal of 100 cusecs each and construction of inlet channel up to RWPS site (As per estimate from Irrigation Department)	47.88
2	Construction of Raw Water Pumping Station comprising of Sump, Pump House building and 5nos. VT Pumping sets with required electrical switch gear (Total KW 225)@Rs25000 per KW	5.625
3	Construction of Water Treatment Plant complete of 100 MLD including SCADA system @ Rs.25 lac/MLD	250.00
4	Construction of Clear Water Pumping Station comprising of Sump, Pump House building and 3 nos. Pumping sets with required electrical switch gear(Total 1140 KW)@Rs25000 per KW	28.50
5	Construction of Clear Water Reservoir near WTP of 10 ML capacity @Rs.2000 per KL	20.00
6	Providing 33 KV Electrical feeder line from 132 KV GSS to WTP site along with construction of 33/11 KV & 33/0.4KV substation 1500KVA & 315KVA (As per estimate of Electricity department)	21.60
7	Cost of land 4 hectares land required for construction of WTP, RWPH, CWPS, supporting infrastructure etc.@ Rs.100 lac/Hectare	40.00
8	Cost of pumping main pipe line BWSC/MS/DI complete with valves, chambers, rail line and NHW crossings etc. complete	256.72
9	Construction of 17 nos. OHSR with a staging of 20m and a total storage capacity of 26.75 ML complete in all respect @Rs.8000 per KL and one GLSR of 2 ML @3000	217.00
10	Improvement of distribution system in zones where water supply network already exist or un-served areas by laying of new, additional or higher sized pipelines with required appurtenances, chambers, thrust blocks etc.	251.61
11	Providing Bulk water meters (1 no EMFB type) and 33000 Domestic water meters complete including installation and commissioning	155.00
12	Replacement of consumer service pipe lines with MDPE pipes for 33000 connections @Rs.1500 per connection	54.45
13	NRW Identification and Reduction Works lump sum	214.76
14	Centralized Training Center of PHED lump sum	50.00
	<i>Sub Total</i>	<b>1613.15</b>
	Physical contingencies @3% of sub total	48.39
	Design Supervision and third party inspection @ 3%	48.39
	Provision for Information Education and Communication @ 1%	16.13
	Provision for Environmental Mitigation @ 1%	16.13
	Provision for Institutional Development @ 1%	16.13
	Provision for Incremental Administration @ 2%	32.263
	<b>Total</b>	<b>1790.60</b>

**Appendix E-2 : Rate Analysis of Various Pipes**

## Appendix E-2: Basis for Cost Estimates

The costing of Water Supply Project of Panipat City has been performed based on the following sources:

- Design of the Proposed Improvements.
- PWD Standard Schedule of Rates (SOR) of Haryana state.
- RUIDP Rajasthan Standard Schedule of Rates (SOR)
- Consultant's data bank and experience on similar projects.
- Nominally applicable labor and material costs for items not present in the aforementioned SOR.

Block rates have been determined for improvement of construction of WTP, Pumping Stations etc. as these items are proposed to be put for bidding on turn key basis on Lump sum rates. In respect of distribution system block cost estimate has been made for the time being and detailed estimate will be incorporated at the time of final report. For projecting the cost of each activity reference has been made to prevailing rates for current projects like Rohatak, Jhalawar and Meerut Water supply Projects involving construction of Water Treatment Plant with Raw and Clear Water pumping stations and also improvement of distribution system.

1. Canal outlet, Inlet Channel and road bridge:

This work will be executed by the Irrigation department who owns and operate the canals. An estimate has been obtained from the Executive Engineer, Irrigation Department, Panipat and the provision of Rs.47.88 m has been made based on the same.

2. Raw Water Pumping Station including Sump:

It is proposed to provide a raw water sump with pump house located above it. There will be 5 VT pump sets installed in the pump house. Three of these will work at a time and remaining 2 will act as stand by. The cost of a pumping station including building, electro-mechanical equipment, piping and instrumentation is normally taken as Rs.25000/- per KW of installed capacity (Rs.12000 for electro-mechanical equipment and Rs.13000 for civil and misc. works). The total installed capacity in RWPH is estimated at 225 KW (Five pumps of 45 KW each). This gives the estimated cost as 5.625 m.

3. Construction of Water Treatment Plant:

It is proposed to construct WTP complete with SCADA system, fully automatic operation along with sludge disposal etc. for a total capacity of 100 MLD. Recently tenders were invited for a WTP of 100MLD for Meerut city where rate received was around Rs.250m. The same in case of a 200MLD WTP for Ghaziabad city was around Rs.550m. In Rohatak, a WTP of 18.5 MLD has been constructed for which work was awarded about 2 years back at Rs.35 m. Looking to these experiences, cost of Rs.2.5m per MLD has been adopted. Thus cost of providing a WTP 100MLD is estimated at Rs.250 m.

4. Clear Water Pumping Station:

It is proposed to provide a Clear Water Pumping Station with sump. There will be 3 pump sets installed in the pump house. Two of these will work at a time and one will act as stand by. The cost of a pumping station including building, electro-mechanical equipment, piping and instrumentation is normally taken as Rs.25000/- per KW of installed capacity (Rs.12000 for electro-mechanical equipment and Rs.13000 for civil and misc.works). The total installed capacity in CWPS is estimated at 1140 KW (Three pumps of 380 KW each). This gives the estimated cost as Rs.28.50 m.

5. Clear Water Reservoir:

It is proposed to construct a CWR near WTP for storing treated water before pumping with a capacity of 10ML. This capacity is based on 2 hours treatment capacity. The general market rate for construction of CWR of such large capacities is estimated at Rs.2000 per KL. Accordingly, estimated cost of construction of 10ML CWR will be Rs.20.00m.

6. Feeder Power Line and Electric Sub Station:

It is proposed to draw power from the 132 KV Grid Sub Station located nearly 6 km away at 33KV. An electric sub station 33/11KV of 2000KVA shall be constructed near the CWPS and one 33/0.4 KV sub station near RWPS for the power requirement on HT in CWPS and on LT in RWPS, WTP, Campus and in CWPS. Haryana State Electricity board has indicated cost of providing power line and sub stations at Rs.21.60m. Accordingly, provision is made at Rs.21.60m.

7. Land Acquisition:

PWD(WSSD) Panipat has already initiated action for acquisition of 16.5 acres of land required for construction of WTP, RWPH, CWPS and other infrastructure near the canals. The case has been recommended by the Senior Town Planner to the Director Town and Country Planning Department GOH vide letter dated 13.6.2008(Annexure-8) for amendment in the development plan. The reserve price for land prescribed by the respective revenue agency is reported to be Rs.2.5m per acre along with an annual royalty payment of Rs.15000 per year with an increase of Rs.500 per year for 33 years. Thus a value of Rs.3 m per acre may be adopted for acquiring this land. The estimated cost of this land thus comes to Rs.49.5 m. The total land will have to be acquired in Phase I only.

The land required for construction of Zonal OHSRs has been identified. However, attempt has been made to get land for this purpose in existing parks or other government land as far as possible. Land required in sectors will be allotted by HUDA in its area free of charge as provision is kept by them in newly developed areas for providing infrastructure facilities.

8. Pumping Main Pipe Lines:

It is proposed to provide two pumping main pipe lines after a short distance from the CWPS. These two pipe lines will be interconnected at the tail to make a loop. Every OHSR will be connected to one of these pipe lines. These pipe lines are proposed to be of DI. The present cost estimate is based on the prices of DI pipes offered by M/S Electrosteels Ltd. Vide letter dated 4.2.2009 as follows:

DI pipe K7	300mm	Rs. 2543.00 per meter
DI pipe K7	350mm	Rs. 3197.00 per meter
DI pipe K7	400mm	Rs. 3833.00 per meter
DI pipe K7	450mm	Rs. 4547.00 per meter
DI pipe K7	500mm	Rs. 5325.00 per meter
DI pipe K7	600mm	Rs. 7015.00 per meter
DI pipe K7	700mm	Rs. 9622.00 per meter
DI pipe K7	800mm	Rs.12550.00 per meter
DI pipe K7	900mm	Rs.15314.00 per meter

The pipes are to be laid on roads requiring road cutting. Air valves, Scour valves, sluice valves together with chambers will have to be provided. Laying of pipe lines will require crossing of railway line at 4 locations and National highway at two locations and canal at two locations and oil pipe line at one place. This will require using trench less technology for pipe laying. Detailed cost estimate is given in a separate annexure

9. Construction of 17 OHSRs and One GLSR:

It is proposed to construct 17 OHSRs for Zones with a total storage capacity of 25.75ML with a staging of 20m in each case. The per liter rate for OHSR of such large capacities with 20m staging is coming to Rs.8 these days in different states and accordingly adopted. The total cost of this activity is estimated to be Rs.206 m. This cost includes all pipes, valves, plinth protection, and bulk water meters with data transmission, level data transmission and electric connection. One GLSR will be constructed for Zone 9 on hill top of 2 ML capacity. Estimated cost of constructing CWR at ground level is normally taken as rs.2000/KI but in the present case the GLSR will be constructed on hill top and the approach is through congested area of city. Accordingly, per KL cost is estimated to be Rs.3000. The total estimated cost of this GLSR thus comes to Rs.6.00m. Total estimated cost of this activity thus comes to Rs.212 m. These tanks will be got constructed on Lump sum basis on design build concept.



10. Improvement of distribution system in areas already covered:

As detailed analysis of distribution network has been done for the 18 distribution zones. The design sheets and abstract of pipes zone wise of different pipe dia is given in design annexure. In some streets pipe will be replaced and in some new pipes will be provided. Detailed estimate of each zone is given in estimate annexure. Rate analysis has been done for some items which is also given in estimate annexure.

11. Bulk and Domestic Water Meters:

It is proposed to provide 1 Electromagnetic full bore flow meter on pumping main immediately after CWPS. These will be complete with control panel and data transmission system etc. The cost of one such meter for 900mm size has been reported to be Rs.650000/- as per market enquiry.

There are in all 33000 connections in both HUDA and PHED areas. Most of these connections are 15mm size. It is proposed to use EC certified good quality water meters to last long and give trouble free service. The meters are proposed to be with interface for remote reading and required modem for actual data transmission. The cost one such meter has been reported to be Rs.4500 including installation. The estimated cost of these meters comes to 148.5m.

Total estimated cost of both EMF flow meters and domestic meters comes to Rs.155 m.

12. Consumer service line replacement:

There are in all 33000 service connections in Panipat town. Consumer service pipe lines are proposed to be replaced with MDPE pipes. The cost of replacement of existing 15mm GI pipe with MDPE pipe for an average length of 10m per connection including ferrule, compression coupling and road cutting etc. has been estimated at Rs.1650/- per connection. This is based on estimation done in other similar projects like Jhalawar where it was taken as Rs.1500 per connection during 2007 and hence increase by 10%. The total estimated cost comes to 54.45 m.

13. NRW Identification and reduction program:

The water meters both on production system and on consumer end are proposed to be provided now under this project. As such there is no assessment of UFW or NRW. It would be desirable that leak detection and rectification through DMA strategy suggested is undertaken for one area and results analyzed before taking up full scale leak detection and rectification work. Accordingly for the present a lump sum provision of Rs.198.755 million is proposed in the estimate.

14. Centralised Training Center:

A lump sum cost of Rs.50.00m is proposed for establishing a Central Training Institute for the Department. Detailed estimate for the center may developed after identification of training needs and its quantum for the whole state.

15. Physical & Price Contingency:

A lump sum provision of 3% of total cost has been made to take care of any unforeseen items at the time of implementation. The period of construction has been taken as 36 months including bidding. Additional provision of 3% has been made for Design and Supervision consultants and third party inspection, 1% for Information education and communication, 1% for Environmental Mitigation, 1% for Institutional Development and 2% for Incremental Administration (Expenditure of Implementing agency for the project Implementation)

**Appendix E-3 : Detailed Estimate of Pumping/Rising Main**

**Appendix E-3: Rate Analysis**

<b>HDPE Pipes</b>								
<b>Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading &amp; stacking etc. complete.</b>	<b>Rate of Pipe as per quotation of M/S Kriti letter dated 4-3-09</b>	<b>Local Handling &amp; storage at 1%</b>	<b>Laying and Jointing at 3%</b>	<b>Testing and commissio ning at 4%</b>	<b>Contractor s Profit at 10%</b>	<b>Total Rate</b>	<b>Specials 10% of total Cot</b>	<b>Total Rate including specials at 10%</b>
110mm PN8	261.19	2.61	7.84	10.45	28.21	310.29	31.03	341.32
125mm PN8	335.93	3.36	10.08	13.44	36.28	399.08	39.91	438.99
140mm PN8	420.00	4.20	12.60	16.80	45.36	498.96	49.90	548.86
160mm PN8	547.48	5.47	16.42	21.90	59.13	650.41	65.04	715.45
180mm PN8	694.14	6.94	20.82	27.77	74.97	824.64	82.46	907.10
200mm PN8	855.38	8.55	25.66	34.22	92.38	1,016.19	101.62	1,117.81
225mm PN8	1,078.91	10.79	32.37	43.16	116.52	1,281.75	128.17	1,409.92
250mm PN8	1,334.26	13.34	40.03	53.37	144.10	1,585.10	158.51	1,743.61
280mm PN8	1,669.80	16.70	50.09	66.79	180.34	1,983.72	198.37	2,182.09
315mm PN8	2,113.74	21.14	63.41	84.55	228.28	2,511.12	251.11	2,762.24
355mm PN8	2,676.70	26.77	80.30	107.07	289.08	3,179.92	317.99	3,497.91
400mm PN8	3,475.93	34.76	104.28	139.04	375.40	4,129.40	412.94	4,542.35
450mm PN8	4,398.75	43.99	131.96	175.95	475.07	5,225.72	522.57	5,748.29
500mm PN8	5,423.37	54.23	162.70	216.93	585.72	6,442.96	644.30	7,087.26
560mm PN8	6,795.87	67.96	203.88	271.83	733.95	8,073.49	807.35	8,880.84
630mm PN8	8,547.90	85.48	256.44	341.92	923.17	10,154.91	1,015.49	11,170.40

FOR:NCR, Excise 8.24% included, CST at 2% against form C included, Inspection extra

**Rate Analysis: MDPE Pipes**

<b>Service Connections: Supply, Laying, Jointing, Field Testing, Commissioning complete at site of MDPE (PE 80 Grade Coumpound) Pipes PN-16 (16 kg/sqcm) as per ISO4427 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading &amp; stacking etc. complete.</b>	<b>Jain irrigation letter</b>	<b>Transportation and local taxes at 10%</b>	<b>Local handling and storage at 1%</b>	<b>Breakage at 1%</b>	<b>Laying and jointing at 3%</b>	<b>Contractors profit at 10%</b>	<b>Total</b>
16 mm Dia							
20 mm Dia SDR 9	22.85	2.29	0.23	0.02	0.69	0.26	26.33
25 mm Dia SDR 11	29.10	2.91	0.29	0.03	0.87	0.33	33.54
32 mm Dia SDR 11	47.95	4.80	0.48	0.05	1.44	0.55	55.26
40 mm Dia							
50 mm Dia							

Inclusive of excise; CST/LST extra; rates are ex-jalgaon

**Rate Analysis: uPVC Pipe Class III (6kg/sqcm)**

Supply, Laying, Jointing, Field Testing & Commissioning complete at site of <b>uPVC Pipe Class III (6kg/sqcm)</b> as per IS 4985 : 2000, ISI marked, suitable for elastomeric sealing rings, with Rubber Rings ISI marked EPDM as per IS 5382 : 1985, transporting to site, lowering in trenches, aligning, laying & jointing as per L-Section and field testing the laid pipelines etc. complete work as per specifications. The bulk density of uPVC pipe shall be 1.39 to 1.44 gm/cc. The total quantity of additives like plasticizers, stabilizers, lubricants & fillers shall not exceed more than 7%. The rates includes all cost of material, labour required, transportation, loading, unloading & stacking etc. complete and also includes the cost of EPDM 'ISI marked' rubber gasket	
110 mm	297.00
125 mm	
140 mm	490.00
160 mm	632.00
180 mm	812.00
200 mm	1015.00
225 mm	1277.00
250 mm	1584.00
280 mm	1986.00
315 mm	2546.00

Rate of Kriti 10-7-09

**Rate Analysis: Ductile Iron (DI) K-7 Pipes**

<b>Supply, Laying, Jointing Field Testing &amp; Commissioning complete at site as per specifications of centrifugally cast (spun) Ductile Iron K7 Pressure Pipes (S &amp;S) ISI marked for water conforming to IS 8329/2000 with push on type EPDM 'ISI marked' rubber gasket jointing as per IS 5382 specifications. Pipe shall be outside Zinc coated with finishing layer of Bitumen and have factory cement mortar lining as per IS 8329/2000. The rates includes all cost of material, labour required, transportation, loading, unloading &amp; stacking etc. complete and also includes the cost of EPDM 'ISI marked' rubber gasket</b>	<b>Rate of electrosteel 449/4-2-09 Rs per Meter</b>	<b>Deduct excise from 100 mm and 150 mm</b>	<b>Local handling and storage @1%</b>	<b>Breakage @ 1%</b>	<b>Total</b>	<b>Laying and Jointing of pipes &amp; hydraulic testing @2.5%</b>	<b>Contractors Profit at 10%</b>	<b>Total</b>	<b>Specials at 3%</b>	<b>Total Rate inclusive of specials</b>
100 mm	918	832	8.32	8.32	848.92	21.22	87.01	957	28.71	986
150 mm	1,395	1,265	12.65	12.65	1,290.03	32.25	132.23	1,455	43.64	1,498
200 mm	1,540	1,540	15.40	15.40	1,570.80	39.27	161.01	1,771	53.13	1,824
250 mm	2,005	2,005	20.05	20.05	2,045.10	51.13	209.62	2,306	69.18	2,375
300 mm	2,543	2,543	25.43	25.43	2,593.86	64.85	265.87	2,925	87.74	3,012
350 mm	3,197	3,197	31.97	31.97	3,260.94	81.52	334.25	3,677	110.30	3,787
400 mm	3,833	3,833	38.33	38.33	3,909.66	97.74	400.74	4,408	132.24	4,540
450 mm	4,547	4,547	45.47	45.47	4,637.94	115.95	475.39	5,229	156.88	5,386
500 mm	5,325	5,325	53.25	53.25	5,431.50	135.79	556.73	6,124	183.72	6,308
600 mm	7,015	7,015	70.15	70.15	7,155.30	178.88	733.42	8,068	242.03	8,310
700 mm	9,622	9,622	96.22	96.22	9,814.44	245.36	1,005.98	11,066	331.97	11,398
750 mm	11,135	11,135	111.35	111.35	11,357.70	283.94	1,164.16	12,806	384.17	13,190
800 mm	12,550	12,550	125.50	125.50	12,801.00	320.03	1,312.10	14,433	432.99	14,866
900 mm	15,314	15,314	153.14	153.14	15,620.28	390.51	1,601.08	17,612	528.36	18,140
1000 mm	18,354	18,354	183.54	183.54	18,721.08	468.03	1,918.91	21,108	633.24	21,741

With 10.3% excise duty in 100 mm and 150 mm, with Nil Excise duty against valid Excise Duty Exemption certificate to be provided by the buyer along with the order / before production Central Excise Notification No. 6/2006 as amended by Central Excise Notification No. 6/2007 dated 1st March 2007.

Inspection charges included, FOR NCR, rubber gasket included, No CST against form C.

**Appendix D-4 : Detailed Estimate of Distribution System  
Summary & Details of Zone-1 to Zone-18**

**Detailed Estimate for Distribution System - Zone 1**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie 0.5166*L where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	8082	100 CUM	4732		382,434	
B	Excavation for thrust block	98.0	100 CUM	4732		4,637	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	8200	RM	310	RA	2,544,409	0.5166
	125 mm	418	RM	399	RA	166,817	0.5334
	140 mm	250	RM	499	RA	124,740	0.5676
	160 mm	131	RM	650	RA	84,878	0.6026
	180 mm	496	RM	825	RA	409,021	0.6384
	225 mm	92	RM	1282	RA	117,921	0.7314
	Sub Total	9587	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	125 mm	1838	RM	399	RA	733,318	0.5334
	140 mm	847	RM	499	RA	422,370	0.5676
	160 mm	1366	RM	650	RA	888,130	0.6026
	180 mm	402	RM	825	RA	331,092	0.6384
	200 mm	280	RM	1016	RA	284,534	0.675
	225 mm	283	RM	1282	RA	362,734	0.7314
	250 mm	35	RM	1585	RA	55,479	0.77
	280 mm	50	RM	1984	RA	99,186	0.8294
	355 mm	15	RM	3180	RA	46,109	0.975
	Sub Total	5114	RM				



4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	5114	RM	12	LS	61,368	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	10	Per Joint	3.50	Haryana PWD item 28.38	35	
	125 to 200 mm internal diameter of pipe, valve, special	6	Per Joint	6.83	plus 250% vide amendment dt 23-1-09	41	
	300 to 375 mm internal diameter of pipe, valve, special	4	Per Joint	17.50		70	
6	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS,						Quantity of valves taken roughly at one per KM
	100 mm i/d	11	each	3698	Haryana PWD	40,678	
	150 mm i/d	3	each	5709	A & C slip No	17,127	
	200 mm i/d	1	each	9945	CZC-6 dated 3-7-09	9,945	
	250 mm i/d	1	each	15589		15,589	
	350 mm i/d	1	each	30395		30,395	
7	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	15	each	1619		24,285	
8	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and	32	each	5000	LS	160,000	
9	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by	98	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	269,845	
10	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	392	Sqm	40	Haryana PWD item 9.15 plus 225% vide	15,861	
11	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	39	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	161,768	
12	Road Work:					1,179,722	
13	Mislenious Items					786,481	
	Total					9,831,018	

**Detailed Estimate for Distribution System - Zone 2**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	5261	100 CUM	4732		248,962	
B	Excavation for thrust block	63.1	100 CUM	4732		2,985	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	3755	RM	310	RA	1,165,153	0.5166
	140 mm	149	RM	499	RA	74,345	0.5676
	160 mm	314	RM	650	RA	203,902	0.6026
	Sub Total	4218	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	527	RM	310	RA	163,525	0.5166
	125 mm	1522.5	RM	399	RA	607,607	0.5334
	140 mm	1431.5	RM	499	RA	714,261	0.5676
	160 mm	1039	RM	650	RA	675,772	0.6026
	180 mm	255	RM	825	RA	210,283	0.6384
	200 mm	239	RM	1016	RA	242,870	0.675
	225 mm	26.5	RM	1282	RA	33,966	0.7314
	280 mm	110.5	RM	1984	RA	219,201	0.8294
	315 mm	33.5	RM	2511	RA	84,123	0.8906
	355 mm	62	RM	3180	RA	195,565	0.975
	Sub Total	5246	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	5246	RM	12	LS	62,952	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	10	Per Joint	3.50	Haryana PWD item 28.38 plus	35	
	125 to 200 mm internal diameter of pipe, valve, special	6	Per Joint	6.83	250% vide amendment dt 23-1-09	41	
	300 to 375 mm internal diameter of pipe, valve, special	4	Per Joint	17.50		70	
6	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS,						Quantity of valves taken roughly at one per KM
	100 mm i/d	4	each	3698	Haryana PWD	14,792	
	150 mm i/d	4	each	5709	A & C slip No	22,836	
	200 mm i/d	1	each	9945	CZC-6 dated 3-7-09	9,945	
	250 mm i/d	1	each	15589		15,589	
	300 mm i/d	1	each	18944		18,944	
7	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	10	each	1619		16,190	
8	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	21	each	5000	LS	105,000	
9	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	63.09	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	173,720	

10	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	252.36	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-	10,211	
11	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	25	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	104,142	
12	Road Work:					809,548	
13	Mislenious Items					539,699	
	Total					6,206,535	

## Detailed Estimate for Distribution System - Zone 3

Annexure E 2-3

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11)*(3+.11)$ ie $0.5166*L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	9112	100 CUM	4732		431,192	
B	Excavation for thrust block	112	100 CUM	4732		5,285	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	10287	RM	310	RA	3,191,836	0.5166
	125 mm	885	RM	399	RA	353,190	0.5334
	140 mm	688	RM	499	RA	343,284	0.5676
	160 mm	635	RM	650	RA	412,683	0.6026
	Sub Total	12494	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	403	RM	310	RA	124,893	0.5166
	125 mm	1712	RM	399	RA	683,233	0.5334
	140 mm	391	RM	499	RA	194,844	0.5676
	160 mm	314	RM	650	RA	204,228	0.6026
	180 mm	613	RM	825	RA	505,503	0.6384
	200 mm	158	RM	1016	RA	160,050	0.675
	225 mm	176	RM	1282	RA	224,946	0.7314
	250 mm	390	RM	1585	RA	618,189	0.77
	315 mm	81	RM	2511	RA	203,401	0.8906
	355 mm	24	RM	3180	RA	74,728	0.975
	Sub Total	4260					
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	4260	RM	12	LS	51,114	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	

5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	10	Per Joint	3.50	Haryana PWD item 28.38 plus	35	
	125 to 200 mm internal diameter of pipe, valve, special	6	Per Joint	6.83	250% vide amendment dt 23-1-09	41	
	300 to 375 mm internal diameter of pipe, valve, special	4	Per Joint	17.50		70	
6	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA,						Quantity of valves taken roughly at one per KM
	100 mm i/d	13	each	3698	Haryana PWD A	48,074	
	150 mm i/d	2	each	5709	& C slip No CZC-	11,418	
	200 mm i/d	1	each	9945	6 dated 3-7-09	9,945	
	250 mm i/d	1	each	15589		15,589	
	300 mm i/d	1	each	18944		18,944	
7	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	17	each	1619		27,523	
8	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	35	each	5000	LS	175,000	
9	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	111.69	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	307,541	
10	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	446.76	Sqm	40	Haryana PWD item 9.15 plus 225% vide	18,077	
11	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	45	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	184,366	
12	Road Work:					1,289,884	
13	Mislenious Items					859,922	
	Total					10,749,029	

**Detailed Estimate for Distribution System - Zone 4**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11)*(3+.11)$ ie 0.5166*L where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	5461	100 CUM	4732		258,435	
B	Excavation for thrust block	69.6	100 CUM	4732		3,291	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth		100 CUM	6492		-	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	4688	RM	310	RA	1,454,502	0.5166
	125 mm	62	RM	399	RA	24,544	0.5334
	140 mm	39	RM	499	RA	19,459	0.5676
	160 mm		RM	650	RA	-	0.6026
	180 mm		RM	825	RA	-	0.6384
	200 mm		RM	1016	RA	-	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm		RM	1585	RA	-	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	4788	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	4052	RM	310	RA	1,257,155	0.5166
	125 mm	1140	RM	399	RA	454,957	0.5334
	140 mm	185	RM	499	RA	92,308	0.5676
	160 mm	121	RM	650	RA	78,699	0.6026
	180 mm	37	RM	825	RA	30,512	0.6384
	200 mm	48	RM	1016	RA	48,269	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm	45	RM	1585	RA	71,330	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm	18	RM	2511	RA	43,945	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	5645	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	5645	RM	12	LS	67,734	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	10	Per Joint	3.50	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	35	
	125 to 200 mm internal diameter of pipe, valve, special	6	Per Joint	6.83		41	
	300 to 375 mm internal diameter of pipe, valve, special	4	Per Joint	17.50		70	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place						
	80 mm.		10 m	18.20	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	-	
	100 mm.		10 m	22.23		-	
	125 mm.		10 m	22.75		-	
	150 mm.		10 m	27.13		-	
	200 mm.		10 m	36.23		-	
	250 mm.		10 m	49.18		-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33		-	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY						Quantity of valves taken roughly at one per KM
	80 mm i/d	0	each	2573	Haryana PWD A & C slip No CZC-6 dated 3-7-09	-	
	100 mm i/d	10	each	3698		36,980	
	150 mm i/d	1	each	5709		5,709	
	200 mm i/d	1	each	9945		9,945	
	250 mm i/d	1	each	15589		15,589	
	300 mm i/d	1	each	18944		18,944	
	350 mm i/d		each	30395		-	
	400 mm i/d		each	41120		-	
	450 mm i/d		each	48981		-	
	500 mm i/d		each	66911		-	
	600 mm i/d		each	95126		-	



8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	10	each	1619		16,190	
	50 mm i/d	0	each	1771		-	
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge						
	65 mm i/d	0	each	1883	Haryana PWD A & C	-	
	80 mm i/d	0	each	2103	Slip CZC/3-7-09	-	
	100 mm i/d	0	each	2491		-	
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge						
	80 mm i/d	0	each	2824	Haryana PWD A & C	-	
	100 mm i/d	0	each	3098	Slip CZC/3-7-09	-	
	150 mm i/d	0	each	7514		-	
	200 mm i/d	0	each	13267		-	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	24	each	5000	LS	120,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	69.55	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	191,507	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	278.2	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	11,257	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	28	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	114,805	
15	Road Work:					666,932	
16	Mislenious Items					444,621	
	Total					5,557,763	

**Detailed Estimate for Distribution System - Zone 5**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m. Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11)*(3+.11)$ ie 0.5166*L where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	13221	100 CUM	4732		625,640	
B	Excavation for thrust block	163.1	100 CUM	4732		7,716	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth		100 CUM	6492		-	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	17494	RM	310	RA	5,428,278	0.5166
	125 mm	254	RM	399	RA	101,368	0.5334
	140 mm	594	RM	499	RA	296,382	0.5676
	160 mm	125.5	RM	650	RA	81,626	0.6026
	180 mm	378.5	RM	825	RA	312,126	0.6384
	200 mm	171.5	RM	1016	RA	174,277	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm		RM	1585	RA	-	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	19018	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	20	RM	310	RA	6,206	0.5166
	125 mm	1865	RM	399	RA	744,293	0.5334
	140 mm	1288	RM	499	RA	642,660	0.5676
	160 mm	839	RM	650	RA	545,691	0.6026
	180 mm	245.5	RM	825	RA	202,449	0.6384
	200 mm	411	RM	1016	RA	417,655	0.675
	225 mm	19.5	RM	1282	RA	24,994	0.7314
	250 mm	713.5	RM	1585	RA	1,130,969	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm	13.5	RM	2511	RA	33,900	0.8906
	355 mm	27.5	RM	3180	RA	87,448	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	5443	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	5443	RM	12	LS	65,316	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	10	Per Joint	3.50	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	35	
	125 to 200 mm internal diameter of pipe, valve, special	6	Per Joint	6.83		41	
	300 to 375 mm internal diameter of pipe, valve, special	4	Per Joint	17.50		70	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
	80 mm.	10 m		18.20	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	-	
	100 mm.	10 m		22.23		-	
	125 mm.	10 m		22.75		-	
	150 mm.	10 m		27.13		-	
	200 mm.	10 m		36.23		-	
	250 mm.	10 m		49.18		-	
	300 mm.	10 m		57.58		-	
	350 mm.	10 m		72.63		-	
	400 mm.	10 m		95.73		-	
	450 mm.	10 m		107.45		-	
	500 mm.	10 m		115.33		-	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY						Quantity of valves taken roughly at one per KM
	80 mm i/d	0 each		2573	Haryana PWD A & C Slip No CZC-6 dated 3-7-09	-	
	100 mm i/d	20 each		3698		73,960	
	150 mm i/d	3 each		5709		17,127	
	200 mm i/d	1 each		9945		9,945	
	250 mm i/d	1 each		15589		15,589	
	300 mm i/d	1 each		18944		18,944	
	350 mm i/d	1 each		30395		30,395	
	400 mm i/d			41120		-	
	450 mm i/d			48981		-	
	500 mm i/d			66911		-	
	600 mm i/d			95126		-	
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	24 each		1619		38,856	
	50 mm i/d	0 each		1771		-	

9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	65 mm i/d		0 each	1883	Haryana PWD A &	-
	80 mm i/d		0 each	2103	C Slip CZC/3-7-09	-
	100 mm i/d		0 each	2491		-
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	80 mm i/d		0 each	2824	Haryana PWD A &	-
	100 mm i/d		0 each	3098	C Slip CZC/3-7-09	-
	150 mm i/d		0 each	7514		-
	200 mm i/d		0 each	13267		-
11	<b>Stuice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )		51 each	5000	LS	255,000
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	163.0667	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	449,007
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	652.2667	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	26,392
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	65	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	269,173
15	Road Work:					1,820,029
16	Mislenious Items					1,213,353
	<b>Total</b>					<b>15,166,911</b>

**Detailed Estimate for Distribution System - Zone 6**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11)*(3+.11)$ ie $0.5166*L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	14716	100 CUM	4732		696,377	
B	Excavation for thrust block	184.4	100 CUM	4732		8,727	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	21766	RM	310	RA	6,753,853	0.5166
	125 mm	2639	RM	399	RA	1,053,185	0.5334
	140 mm	693.5	RM	499	RA	346,029	0.5676
	160 mm	493.5	RM	650	RA	320,975	0.6026
	180 mm	610	RM	825	RA	503,029	0.6384
	200 mm	209.5	RM	1016	RA	212,892	0.675
	225 mm	218.5	RM	1282	RA	280,061	0.7314
	250 mm	58	RM	1585	RA	91,936	0.77
	315 mm	121	RM	2511	RA	303,846	0.8906
	355 mm	95	RM	3180	RA	302,092	0.975
	Sub Total	26904	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	125 mm	264	RM	399	RA	105,358	0.5334
	140 mm	41	RM	499	RA	20,457	0.5676
	160 mm	454	RM	650	RA	295,284	0.6026
	Sub Total	759	RM				
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantaled pipe another pipe is to be laid as such excavation for dismentalling is included in excavation for laying new pipe line)	759	RM	12	LS	9,108	

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	4	Per Joint	3.50	Haryana PWD item 28.38	14	
	125 to 200 mm internal diameter of pipe, valve, special	2		6.83	plus 250% vide	14	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS,						Quantity of valves taken roughly at one per KM
	100 mm i/d	24	each	3698	Haryana PWD	88,752	
	150 mm i/d	1	each	5709	A & C slip No	5,709	
	200 mm i/d	1	each	9945	CZC-6 dated 3-	9,945	
	250 mm i/d	1	each	15589	7-09	15,589	
	300 mm i/d	1	each	18944		18,944	
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	28	each	1619		45,332	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and	56	each	5000	LS	280,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by	184.42	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	507,804	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	737.68	Sqm	40	Haryana PWD item 9.15 plus 225% vide	29,848	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	74	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	304,420	
15	Road Work:					1,891,437	
16	Mislenious Items					1,260,958	
	Total					15,761,978	

**Detailed Estimate for Distribution System - Zone 7**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	13458	100 CUM	4732		636,820	
B	Excavation for thrust block	170.3	100 CUM	4732		8,060	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	3	100 CUM	6492		195	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	10255	RM	310	RA	3,182,062	0.5166
	125 mm	237	RM	399	RA	94,583	0.5334
	140 mm	60.5	RM	499	RA	30,187	0.5676
	160 mm	124.5	RM	650	RA	80,976	0.6026
	180 mm	37	RM	825	RA	30,512	0.6384
	250 mm	27	RM	1585	RA	42,798	0.77
	Sub Total	10741	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	11909	RM	310	RA	3,695,288	0.5166
	125 mm	1272	RM	399	RA	507,636	0.5334
	140 mm	406.5	RM	499	RA	202,827	0.5676
	160 mm	452.5	RM	650	RA	294,309	0.6026
	180 mm	268	RM	825	RA	221,003	0.6384
	200 mm	163	RM	1016	RA	165,639	0.675
	225 mm	184.5	RM	1282	RA	236,482	0.7314
	250 mm	34.5	RM	1585	RA	54,686	0.77
	280 mm	105.5	RM	1984	RA	209,283	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm	13	RM	5226	RA	67,934	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	14809	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	14809	RM	12	LS	177,708	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	30	Per Joint	3.50	Haryana PWD item 28.38	105	
	125 to 200 mm internal diameter of pipe, valve, special	20	Per Joint	6.83	plus 250% vide amendment dt 23-1-09	137	
	300 to 375 mm internal diameter of pipe, valve, special	10	Per Joint	17.50		175	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS,						Quantity of valves taken roughly at one per KM
	100 mm i/d	24	each	3698	Haryana PWD	88,752	
	150 mm i/d	1	each	5709	A & C slip No	5,709	
	200 mm i/d	1	each	9945	CZC-6 dated 3-	9,945	
	250 mm i/d	1	each	15589	7-09	15,589	
	300 mm i/d	1	each	18944		18,944	
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	28	each	1619		45,332	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M.)	56	each	5000	LS	280,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by	170.33	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	469,007	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	681.32	Sqm	40	Haryana PWD item 9.15 plus 225% vide	27,568	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	68	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	281,162	
15	Road Work:					1,677,212	
16	Mislenious Items					1,118,141	
	Total					13,976,764	



**Detailed Estimate for Distribution System - Zone 8**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11)*(.3+.11)$ ie 0.5166*L where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	7952	100 CUM	4732		376,288	
B	Excavation for thrust block	95.1	100 CUM	4732		4,501	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	5	100 CUM	6492		325	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	6523	RM	310	RA	2,024,046	0.5166
	125 mm	377	RM	399	RA	150,455	0.5334
	140 mm	249.5	RM	499	RA	124,491	0.5676
	160 mm	843.5	RM	650	RA	548,618	0.6026
	180 mm		RM	825	RA	-	0.6384
	200 mm	120.5	RM	1016	RA	122,451	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm		RM	1585	RA	-	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	8114	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	1341.5	RM	310	RA	416,259	0.5166
	125 mm	1175	RM	399	RA	468,925	0.5334
	140 mm	460	RM	499	RA	229,522	0.5676
	160 mm	1550.5	RM	650	RA	1,008,455	0.6026
	180 mm	491.5	RM	825	RA	405,310	0.6384
	200 mm	685	RM	1016	RA	696,091	0.675
	225 mm	233.5	RM	1282	RA	299,287	0.7314
	250 mm	48	RM	1585	RA	76,085	0.77
	280 mm	142	RM	1984	RA	281,689	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm	27.5	RM	5226	RA	143,707	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	6155	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	6155	RM	12	LS	73,860	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	10	Per Joint	3.50	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	35	
	125 to 200 mm internal diameter of pipe, valve, special	6	Per Joint	6.83		41	
	300 to 375 mm internal diameter of pipe, valve, special	4	Per Joint	17.50		70	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place						
	80 mm.		10 m	18.20	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	-	
	100 mm.		10 m	22.23		-	
	125 mm.		10 m	22.75		-	
	150 mm.		10 m	27.13		-	
	200 mm.		10 m	36.23		-	
	250 mm.		10 m	49.18		-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33	-		
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY						Quantity of valves taken roughly at one per KM
	80 mm i/d	0	each	2573	Haryana PWD A & C slip No CZC-6 dated 3-7-09	-	
	100 mm i/d	9	each	3698		33,282	
	150 mm i/d	3	each	5709		17,127	
	200 mm i/d	2	each	9945		19,890	
	250 mm i/d	1	each	15589		15,589	
	300 mm i/d	1	each	18944		18,944	
	350 mm i/d		each	30395		-	
	400 mm i/d		each	41120		-	
	450 mm i/d	1	each	48981		48,981	
	500 mm i/d		each	66911		-	
	600 mm i/d		each	95126		-	

8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09	size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	14	each	1619		22,666
	50 mm i/d	0	each	1771		-
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	65 mm i/d	0	each	1883	Haryana PWD A	-
	80 mm i/d	0	each	2103	& C Slip CZC/3-7-	-
	100 mm i/d	0	each	2491	09	-
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	80 mm i/d	0	each	2824	Haryana PWD A	-
	100 mm i/d	0	each	3098	& C Slip CZC/3-7-	-
	150 mm i/d	0	each	7514	09	-
	200 mm i/d	0	each	13267		-
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	31	each	5000	LS	155,000
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	95.12	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	261,915
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	380.48	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	15,395
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	38	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	157,014
15	Road Work:					1,232,447
16	Mislenious Items					821,631
	Total					10,270,389

**Detailed Estimate for Distribution System - Zone 9**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11)*(3+.11)$ ie $0.5166*L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	13458	100 CUM	4732		636,820	
B	Excavation for thrust block	170.3	100 CUM	4732		8,060	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	3	100 CUM	6492		195	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	10255	RM	310	RA	3,182,062	0.5166
	125 mm	237	RM	399	RA	94,583	0.5334
	140 mm	60.5	RM	499	RA	30,187	0.5676
	160 mm	124.5	RM	650	RA	80,976	0.6026
	180 mm	37	RM	825	RA	30,512	0.6384
	200 mm		RM	1016	RA	-	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm	27	RM	1585	RA	42,798	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	10741	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	11909	RM	310	RA	3,695,288	0.5166

	125 mm	1272	RM	399	RA	507,636	0.5334
	140 mm	406.5	RM	499	RA	202,827	0.5676
	160 mm	452.5	RM	650	RA	294,309	0.6026
	180 mm	268	RM	825	RA	221,003	0.6384
	200 mm	163	RM	1016	RA	165,639	0.675
	225 mm	184.5	RM	1282	RA	236,482	0.7314
	250 mm	34.5	RM	1585	RA	54,686	0.77
	280 mm	105.5	RM	1984	RA	209,283	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm	13	RM	5226	RA	67,934	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	14809	RM				
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantalling is included in excavation for laying new pipe line)	14809	RM	12	LS	177,708	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	30	Per Joint	3.50	Haryana PWD item 28.38	105	
	125 to 200 mm internal diameter of pipe, valve, special	20	Per Joint	6.83	plus 250% vide	137	
	300 to 375 mm internal diameter of pipe, valve, special	10	Per Joint	17.50	amendment dt 23-1-09	175	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
	80 mm.		10 m	18.20	Haryana PWD	-	
	100 mm.		10 m	22.23	item 28.38	-	
	125 mm.		10 m	22.75	plus 250%	-	
	150 mm.		10 m	27.13	vide	-	
	200 mm.		10 m	36.23	amendment dt	-	
	250 mm.		10 m	49.18	23-1-09	-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33		-	

7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY					Quantity of valves taken roughly at one per KM
	80 mm i/d	0	each	2573	Haryana PWD	-
	100 mm i/d	24	each	3698	A & C slip No	88,752
	150 mm i/d	2	each	5709	CZC-6 dated 3-	11,418
	200 mm i/d	1	each	9945	7-09	9,945
	250 mm i/d	1	each	15589		15,589
	300 mm i/d	1	each	18944		18,944
	350 mm i/d		each	30395		-
	400 mm i/d	1	each	41120		41,120
	450 mm i/d		each	48981		-
	500 mm i/d		each	66911		-
	600 mm i/d		each	95126		-
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09	size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	26	each	1619		42,094
	50 mm i/d	0	each	1771		-
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	65 mm i/d	0	each	1883	Haryana PWD	-
	80 mm i/d	0	each	2103	A & C Slip	-
	100 mm i/d	0	each	2491	CZC/3-7-09	-
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	80 mm i/d	0	each	2824	Haryana PWD	-
	100 mm i/d	0	each	3098	A & C Slip	-
	150 mm i/d	0	each	7514	CZC/3-7-09	-
	200 mm i/d	0	each	13267		-
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	56	each	5000	LS	280,000

12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	170.33	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	469,007	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	681.32	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	27,568	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	68	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	281,162	
15	Road Work:					1,683,750	
16	Mislenious items					1,122,500	
	Total					14,031,253	

**Detailed Estimate for Distribution System - Zone 10**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	13617	100 CUM	4732		644,344	
B	Excavation for thrust block	169.7	100 CUM	4732		8,032	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	5	100 CUM	6492		325	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	17043	RM	310	RA	5,288,336	0.5166
	125 mm	322.5	RM	399	RA	128,705	0.5334
	140 mm	272.5	RM	499	RA	135,967	0.5676
	160 mm	466	RM	650	RA	303,089	0.6026
	180 mm	73	RM	825	RA	60,199	0.6384
	200 mm	55	RM	1016	RA	55,891	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm		RM	1585	RA	-	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm	93.5	RM	3180	RA	297,322	0.975
	400 mm	33.5	RM	4129	RA	138,335	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	18359	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	4938.5	RM	310	RA	1,532,386	0.5166
	125 mm	630.5	RM	399	RA	251,623	0.5334
	140 mm	277.5	RM	499	RA	138,461	0.5676



	160 mm	149.5	RM	650	RA	97,236	0.6026
	180 mm	306	RM	825	RA	252,339	0.6384
	200 mm	51	RM	1016	RA	51,826	0.675
	225 mm	98	RM	1282	RA	125,611	0.7314
	250 mm	121.5	RM	1585	RA	192,590	0.77
	280 mm	183.5	RM	1984	RA	364,013	0.8294
	315 mm	315	RM	2511	RA	791,004	0.8906
	355 mm	31.5	RM	3180	RA	100,167	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	7103	RM				
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	7103	RM	12	LS	85,236	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	16	Per Joint	3.50	Haryana PWD item 28.38	56	
	125 to 200 mm internal diameter of pipe, valve, special	8	Per Joint	6.83	plus 250% vide	55	
	300 to 375 mm internal diameter of pipe, valve, special	6	Per Joint	17.50	amendment dt 23-1-09	105	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
	80 mm.		10 m	18.20	Haryana PWD	-	
	100 mm.		10 m	22.23	item 28.38	-	
	125 mm.		10 m	22.75	plus 250%	-	
	150 mm.		10 m	27.13	vide	-	
	200 mm.		10 m	36.23	amendment dt	-	
	250 mm.		10 m	49.18	23-1-09	-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33		-	

7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY					Quantity of valves taken roughly at one per KM
	80 mm i/d	0 each	2573	Haryana PWD	-	
	100 mm i/d	23 each	3698	A & C slip No	85,054	
	150 mm i/d	5 each	5709	CZC-6 dated 3-	28,545	
	200 mm i/d	1 each	9945	7-09	9,945	
	250 mm i/d	2 each	15589		31,178	
	300 mm i/d	2 each	18944		37,888	
	350 mm i/d	2 each	30395		60,790	
	400 mm i/d	each	41120		-	
	450 mm i/d	each	48981		-	
	500 mm i/d	each	66911		-	
	600 mm i/d	each	95126		-	
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	26 each	1619	Haryana PWD	42,094	
	50 mm i/d	0 each	1771	A & C Slip	-	
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	65 mm i/d	0 each	1883	Haryana PWD	-	
	80 mm i/d	0 each	2103	A & C Slip	-	
	100 mm i/d	0 each	2491	CZC/3-7-09	-	
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	80 mm i/d	0 each	2824	Haryana PWD	-	
	100 mm i/d	0 each	3098	A & C Slip	-	
	150 mm i/d	0 each	7514	CZC/3-7-09	-	
	200 mm i/d	0 each	13267		-	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	61 each	5000	LS	305,000	

12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	169.7433333	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	467,392	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	678.9733333	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	27,473	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	68	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	280,194	
15	Road Work:					1,862,821	
16	Mislenious items					1,241,880	
	<b>Total</b>					<b>15,523,505</b>	

**Detailed Estimate for Distribution System - Zone 11**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11)*(.3+.11)$ ie $0.5166*L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	9032	100 CUM	4732		427381	
B	Excavation for thrust block	103.0	100 CUM	4732		4873	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		0	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	5	100 CUM	6492		325	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		0	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	4708.5	RM	310	RA	1461017.981	0.5166
	125 mm	905	RM	399	RA	361171.7802	0.5334
	140 mm	1290.5	RM	499	RA	643907.88	0.5676
	160 mm	1041.5	RM	650	RA	677398.099	0.6026
	180 mm	1140.5	RM	825	RA	940500.004	0.6384
	200 mm	435.5	RM	1016	RA	442551.3721	0.675
	225 mm		RM	1282	RA	0	0.7314
	250 mm	9	RM	1585	RA	14265.90792	0.77
	280 mm	28.5	RM	1984	RA	56536.0884	0.8294
	315 mm		RM	2511	RA	0	0.8906
	355 mm		RM	3180	RA	0	0.975
	400 mm		RM	4129	RA	0	1.085
	450 mm		RM	5226	RA	0	1.2
	500 mm		RM	6443	RA	0	1.32
	Sub Total	9559	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	1959	RM	310	RA	607865.3975	0.5166
	125 mm	221.5	RM	399	RA	88397.29206	0.5334
	140 mm	406.5	RM	499	RA	202827.24	0.5676
	160 mm	154	RM	650	RA	100162.561	0.6026
	180 mm	1035.5	RM	825	RA	853912.9804	0.6384

	200 mm	517.5	RM	1016	RA	525879.0702	0.675
	225 mm	540.5	RM	1282	RA	692783.2157	0.7314
	250 mm	814.5	RM	1585	RA	1291064.667	0.77
	280 mm	78.5	RM	1984	RA	155722.2084	0.8294
	315 mm	70	RM	2511	RA	175778.6184	0.8906
	355 mm	78	RM	3180	RA	248033.7288	0.975
	400 mm		RM	4129	RA	0	1.085
	450 mm	11.5	RM	5226	RA	60095.7225	1.2
	500 mm		RM	6443	RA	0	1.32
	Sub Total	5887	RM				
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantalling is included in excavation for laying new pipe line)	5887	RM	12	LS	70644	
	80 mm.		R.M.			0	
	100 mm.		R.M.			0	
	125 mm.		R.M.			0	
	150 mm.		R.M.			0	
	200 mm.		R.M.			0	
	250 mm.		R.M.			0	
	300 mm.		R.M.			0	
	350 mm.		R.M.			0	
	400 mm.		R.M.			0	
	450 mm.		R.M.			0	
	500 mm.		R.M.			0	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	12	Per Joint	3.50	Haryana PWD item 28.38	42	
	125 to 200 mm internal diameter of pipe, valve, special	8	Per Joint	6.83	plus 250% vide	54.6	
	300 to 375 mm internal diameter of pipe, valve, special	4	Per Joint	17.50	amendment dt 23-1-09	70	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		0	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		0	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					0	
	80 mm.		10 m	18.20	Haryana PWD	0	
	100 mm.		10 m	22.23	item 28.38	0	
	125 mm.		10 m	22.75	plus 250%	0	
	150 mm.		10 m	27.13	vide	0	
	200 mm.		10 m	36.23	amendment dt	0	
	250 mm.		10 m	49.18	23-1-09	0	
	300 mm.		10 m	57.58		0	
	350 mm.		10 m	72.63		0	
	400 mm.		10 m	95.73		0	
	450 mm.		10 m	107.45		0	
	500 mm.		10 m	115.33		0	

7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY					Quantity of valves taken roughly at one per KM
	80 mm i/d	0	each	2573	Haryana PWD	0
	100 mm i/d	8	each	3698	A & C slip No	29584
	150 mm i/d	3	each	5709	CZC-6 dated 3-7-09	17127
	200 mm i/d	3	each	9945		29835
	250 mm i/d	2	each	15589		31178
	300 mm i/d	2	each	18944		37888
	350 mm i/d	1	each	30395		30395
	400 mm i/d		each	41120		0
	450 mm i/d	1	each	48981		48981
	500 mm i/d		each	66911		0
	600 mm i/d		each	95126		0
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	40 mm i/d	15	each	1619	Haryana PWD	24285
	50 mm i/d	0	each	1771	A & C Slip	0
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	65 mm i/d	0	each	1883	Haryana PWD	0
	80 mm i/d	0	each	2103	A & C Slip	0
	100 mm i/d	0	each	2491	CZC/3-7-09	0
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	80 mm i/d	0	each	2824	Haryana PWD	0
	100 mm i/d	0	each	3098	A & C Slip	0
	150 mm i/d	0	each	7514	CZC/3-7-09	0
	200 mm i/d	0	each	13267		0
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	35	each	5000	LS	175000

12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	102.9733	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	283539.1328	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	411.8933	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	16666	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	41	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	169977	
15	Road Work:					1649657.411	
16	Mislenious items					1099771.607	
	Total					13747145	

**Detailed Estimate for Distribution System - Zone 12**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	13100	100 CUM	4732		619,913	
B	Excavation for thrust block	161.3	100 CUM	4732		7,632	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	8749.5	RM	310	RA	2,714,915	0.5166
	125 mm	357.5	RM	399	RA	142,673	0.5334
	140 mm	465.5	RM	499	RA	232,266	0.5676
	160 mm	235.5	RM	650	RA	153,171	0.6026
	180 mm	161.5	RM	825	RA	133,179	0.6384
	200 mm	402.5	RM	1016	RA	409,017	0.675
	225 mm	86.5	RM	1282	RA	110,871	0.7314
	280 mm	17	RM	1984	RA	33,723	0.8294
	355 mm	54.5	RM	3180	RA	173,306	0.975
	Sub Total	10530	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	9213	RM	310	RA	2,858,736	0.5166
	125 mm	1467.5	RM	399	RA	585,657	0.5334
	140 mm	400.5	RM	499	RA	199,833	0.5676
	160 mm	602.5	RM	650	RA	391,870	0.6026
	200 mm	1849.5	RM	1016	RA	1,879,446	0.675
	225 mm	81.5	RM	1282	RA	104,462	0.7314
	250 mm	49	RM	1585	RA	77,670	0.77
	Sub Total	13664	RM				



4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	13664	RM	12	LS	163,968	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	30	Per Joint	3.50	Haryana PWD item 28.38	105	
	125 to 200 mm internal diameter of pipe, valve, special	20	Per Joint	6.83	plus 250% vide	137	
	300 to 375 mm internal diameter of pipe, valve, special	10	Per Joint	17.50	amendment dt 22-1-09	175	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS,						Quantity of valves taken roughly at one per KM
	100 mm i/d	20	each	3698	Haryana PWD	73,960	
	150 mm i/d	2	each	5709	A & C slip No	11,418	
	200 mm i/d	3	each	9945	CZC-6 dated 3-	29,835	
	250 mm i/d	1	each	15589	7-09	15,589	
	350 mm i/d	1	each	30395		30,395	
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	24	each	1619		38,856	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M.)	51	each	5000	LS	255,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by	161.29	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	444,115	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	645.16	Sqm	40	Haryana PWD item 9.15 plus 225% vide	26,105	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	65	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	266,240	
15	Road Work:					1,827,636	
16	Mislenious items					1,218,424	
	Total					15,230,297	

**Detailed Estimate for Distribution System - Zone 13**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	10278	100 CUM	4732		486,361	
B	Excavation for thrust block	128.5	100 CUM	4732		6,081	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	5	100 CUM	6492		325	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	10510	RM	310	RA	3,261,187	0.5166
	125 mm	919.5	RM	399	RA	366,959	0.5334
	140 mm	377	RM	499	RA	188,108	0.5676
	160 mm	233.5	RM	650	RA	151,870	0.6026
	180 mm	459.5	RM	825	RA	378,921	0.6384
	200 mm		RM	1016	RA	-	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm	42	RM	1585	RA	66,574	0.77
	280 mm	27.5	RM	1984	RA	54,552	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	12569	RM				

3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	3290	RM	310	RA	1,020,866	0.5166
	125 mm	1822.5	RM	399	RA	727,332	0.5334
	140 mm	736.5	RM	499	RA	367,484	0.5676
	160 mm	433.5	RM	650	RA	281,951	0.6026
	180 mm	234	RM	825	RA	192,965	0.6384
	200 mm	70.5	RM	1016	RA	71,641	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm		RM	1585	RA	-	0.77
	280 mm	88.5	RM	1984	RA	175,559	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm	31	RM	4129	RA	128,012	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	6707	RM				
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantaled pipe another pipe is to be laid as such excavation for dismantalling is included in excavation for laying new pipe line)	6707	RM	12	LS	80,484	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	24	Per Joint	3.50	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	84	
	125 to 200 mm internal diameter of pipe, valve, special	16	Per Joint	6.83		109	
	300 to 375 mm internal diameter of pipe, valve, special	6	Per Joint	17.50		105	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	

6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
	80 mm.		10 m	18.20	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	-	
	100 mm.		10 m	22.23		-	
	125 mm.		10 m	22.75		-	
	150 mm.		10 m	27.13		-	
	200 mm.		10 m	36.23		-	
	250 mm.		10 m	49.18		-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33	-		
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY						Quantity of valves taken roughly at one per KM
	80 mm i/d		0 each	2573	Haryana PWD A & C slip No CZC-6 dated 3- 7-09	-	
	100 mm i/d		17 each	3698		62,866	
	150 mm i/d		2 each	5709		11,418	
	200 mm i/d		2 each	9945		19,890	
	250 mm i/d		1 each	15589		15,589	
	300 mm i/d		1 each	18944		18,944	
	350 mm i/d		each	30395		-	
	400 mm i/d		each	41120		-	
	450 mm i/d		1 each	48981		48,981	
	500 mm i/d		each	66911		-	
	600 mm i/d		each	95126	-		
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d		19 each	1619		30,761	
	50 mm i/d		0 each	1771		-	
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge						
	65 mm i/d		0 each	1883	Haryana PWD A & C Slip CZC/3-7-09	-	
	80 mm i/d		0 each	2103		-	
	100 mm i/d		0 each	2491		-	
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge						
	80 mm i/d		0 each	2824	Haryana PWD A & C Slip CZC/3-7-09	-	
	100 mm i/d		0 each	3098		-	
	150 mm i/d		0 each	7514		-	
	200 mm i/d		0 each	13267		-	

11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	43	each	5000	LS	215,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	128.5033	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	353,836	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	514.0133	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	20,798	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	51	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	212,119	
15	Road Work:					1,352,660	
16	Mislenious Items					901,773	
	Total					11,272,167	

**Detailed Estimate for Distribution System - Zone 14**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fancing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	15900	100 CUM	4732		752,370	
B	Excavation for thrust block	185.9	100 CUM	4732		8,794	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth		100 CUM	6492		-	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	13862.5	RM	310	RA	4,301,447	0.5166
	125 mm	4277.5	RM	399	RA	1,707,085	0.5334
	140 mm	2046	RM	499	RA	1,020,872	0.5676
	160 mm	2145.5	RM	650	RA	1,395,447	0.6026
	180 mm	1258.5	RM	825	RA	1,037,807	0.6384
	200 mm	1749	RM	1016	RA	1,777,319	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm	1507	RM	1585	RA	2,388,747	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm	803	RM	2511	RA	2,016,432	0.8906
	355 mm	14	RM	3180	RA	44,519	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	27663	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm		RM	310	RA	-	0.5166
	125 mm		RM	399	RA	-	0.5334
	140 mm		RM	499	RA	-	0.5676
	160 mm	215	RM	650	RA	139,512	0.6026
	180 mm		RM	825	RA	-	0.6384
	200 mm		RM	1016	RA	-	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm		RM	1585	RA	-	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	215	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	215	RM	12	LS	2,580	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special			3.50	Haryana PWD item 28.38 plus	-	
	125 to 200 mm internal diameter of pipe, valve, special	4	Per joint	6.83	250% vide amendment dt 23-1-09	27	
	300 to 375 mm internal diameter of pipe, valve, special			17.50		-	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
	80 mm.		10 m	18.20	Haryana PWD	-	
	100 mm.		10 m	22.23	item 28.38 plus	-	
	125 mm.		10 m	22.75	250% vide	-	
	150 mm.		10 m	27.13	amendment dt 23-1-09	-	
	200 mm.		10 m	36.23		-	
	250 mm.		10 m	49.18		-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33		-	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY						Quantity of valves taken roughly at one per KM
	80 mm i/d	0	each	2573	Haryana PWD A	-	
	100 mm i/d	18	each	3698	& C slip No CZC-	66,564	
	150 mm i/d	4	each	5709	6 dated 3-7-09	22,836	
	200 mm i/d	2	each	9945		19,890	
	250 mm i/d	2	each	15589		31,178	
	300 mm i/d	1	each	18944		18,944	
	350 mm i/d	1	each	30395		30,395	
	400 mm i/d		each	41120		-	
	450 mm i/d		each	48981		-	
	500 mm i/d		each	66911		-	
	600 mm i/d		each	95126		-	

8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09	size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	28	each	1619		45,332
	50 mm i/d	0	each	1771		-
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	65 mm i/d	0	each	1883	Haryana PWD A	-
	80 mm i/d	0	each	2103	& C Slip CZC/3-7-	-
	100 mm i/d	0	each	2491	09	-
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	80 mm i/d	0	each	2824	Haryana PWD A	-
	100 mm i/d	0	each	3098	& C Slip CZC/3-7-	-
	150 mm i/d	0	each	7514	09	-
	200 mm i/d	0	each	13267		-
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	56	each	5000	LS	280,000
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	185.85	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	511,742
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	743.4	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	30,080
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	74	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	306,781
15	Road Work:					2,693,505
16	Mislenious Items					1,795,670
	<b>Total</b>					<b>22,445,875</b>



**Detailed Estimate for Distribution System - Zone 15**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm. Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	13764	100 CUM	4732		651,305	
B	Excavation for thrust block	154.7	100 CUM	4732		7,319	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	5	100 CUM	6492		325	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	8468	RM	310	RA	2,627,567	0.5166
	125 mm	212	RM	399	RA	84,606	0.5334
	140 mm	212.5	RM	499	RA	106,029	0.5676
	160 mm	467.5	RM	650	RA	304,065	0.6026
	180 mm	316	RM	825	RA	260,586	0.6384
	200 mm	1332.5	RM	1016	RA	1,354,075	0.675
	225 mm	107.5	RM	1282	RA	137,788	0.7314
	250 mm	581.5	RM	1585	RA	921,736	0.77
	315 mm	618.5	RM	2511	RA	1,553,130	0.8906
	355 mm	206.5	RM	3180	RA	656,653	0.975
	400 mm	232.5	RM	4129	RA	960,087	1.085
	Sub Total	12755	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	125 mm	3837.5	RM	399	RA	1,531,488	0.5334
	140 mm	2284	RM	499	RA	1,139,625	0.5676
	160 mm	2465	RM	650	RA	1,603,251	0.6026
	180 mm	472	RM	825	RA	389,229	0.6384
	200 mm	464	RM	1016	RA	471,513	0.675
	225 mm	136	RM	1282	RA	174,317	0.7314
	250 mm	204.5	RM	1585	RA	324,153	0.77
	280 mm	52.5	RM	1984	RA	104,145	0.8294
	315 mm	283.5	RM	2511	RA	711,903	0.8906
	355 mm	213	RM	3180	RA	677,323	0.975
	400 mm	35	RM	4129	RA	144,529	1.085
	Sub Total	10447	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	10447	RM	12	LS	125,364	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	20	Per Joint	3.50	Haryana PWD item 28.38	70	
	125 to 200 mm internal diameter of pipe, valve, special	12	Per Joint	6.83	plus 250% vide amendment dt 23-1-09	82	
	300 to 375 mm internal diameter of pipe, valve, special	8	Per Joint	17.50		140	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA,						Quantity of valves taken roughly at one per KM
	100 mm i/d	13	each	3698	Haryana PWD A & C slip No	48,074	
	150 mm i/d	6	each	5709		34,254	
	200 mm i/d	2	each	9945	CZC-6 dated 3-7-09	19,890	
	250 mm i/d	2	each	15589		31,178	
	300 mm i/d	2	each	18944		37,888	
	350 mm i/d	1	each	30395		30,395	
	400 mm i/d	1	each	41120		41,120	
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge						size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	23	each	1619	Haryana PWD	37,237	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for depth of 1.2 M)	50	each	5000	LS	250,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	154.68	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	425,914	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	618.72	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	25,035	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	62	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	255,329	
15	Road Work:					2,738,808	
16	Mislenious Items					1,825,872	
	Total					22,823,397	

**Detailed Estimate for Distribution System - Zone 16**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie 0.5166*L where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	23505	100 CUM	4732		1,112,243	
B	Excavation for thrust block	290.5	100 CUM	4732		13,745	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth		100 CUM	6492		-	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	24965.5	RM	310	RA	7,746,638	0.5166
	125 mm	2232.5	RM	399	RA	890,957	0.5334
	140 mm	2004.5	RM	499	RA	1,000,165	0.5676
	160 mm	1347	RM	650	RA	876,097	0.6026
	180 mm	289	RM	825	RA	238,320	0.6384
	200 mm	525	RM	1016	RA	533,501	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm	278.5	RM	1585	RA	441,451	0.77
	280 mm		RM	1984	RA	-	0.8294
	315 mm	30.5	RM	2511	RA	76,589	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	31673	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	7497.5	RM	310	RA	2,326,427	0.5166
	125 mm	1086	RM	399	RA	433,406	0.5334
	140 mm	423.5	RM	499	RA	211,310	0.5676
	160 mm	381	RM	650	RA	247,805	0.6026
	180 mm	1045	RM	825	RA	861,747	0.6384
	200 mm	658.5	RM	1016	RA	669,162	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm	531	RM	1585	RA	841,689	0.77
	280 mm	160	RM	1984	RA	317,396	0.8294
	315 mm		RM	2511	RA	-	0.8906
	355 mm	114	RM	3180	RA	362,511	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	11897	RM				

4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	11897	RM	12	LS	142,764	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	20	Per Joint	3.50	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	70	
	125 to 200 mm internal diameter of pipe, valve, special	16	Per Joint	6.83		109	
	300 to 375 mm internal diameter of pipe, valve, special	6	Per Joint	17.50		105	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
	80 mm.		10 m	18.20	Haryana PWD item 28.38 plus 250% vide amendment dt 23-1-09	-	
	100 mm.		10 m	22.23		-	
	125 mm.		10 m	22.75		-	
	150 mm.		10 m	27.13		-	
	200 mm.		10 m	36.23		-	
	250 mm.		10 m	49.18		-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33	-		
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY					-	Quantity of valves taken roughly at one per KM
	80 mm i/d	0	each	2573	Haryana PWD A & C slip No CZC-6 dated 3-7-09	-	
	100 mm i/d	36	each	3698		133,128	
	150 mm i/d	5	each	5709		28,545	
	200 mm i/d	2	each	9945		19,890	
	250 mm i/d	1	each	15589		15,589	
	300 mm i/d	1	each	18944		18,944	
	350 mm i/d	1	each	30395		30,395	
	400 mm i/d		each	41120		-	
	450 mm i/d		each	48981		-	
	500 mm i/d		each	66911		-	
	600 mm i/d		each	95126	-		

8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	44	each	1619	Haryana PWD A &	71,236
	50 mm i/d	0	each	1771	C Slip CZC/3-7-09	-
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	65 mm i/d	0	each	1883	Haryana PWD A &	-
	80 mm i/d	0	each	2103	C Slip CZC/3-7-09	-
	100 mm i/d	0	each	2491		-
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge					
	80 mm i/d	0	each	2824	Haryana PWD A &	-
	100 mm i/d	0	each	3098	C Slip CZC/3-7-09	-
	150 mm i/d	0	each	7514		-
	200 mm i/d	0	each	13267		-
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	90	each	5000	LS	450,000
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	290.46	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	799,787
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	1161.84	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23-1-09	47,011
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	116	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	479,459
15	Road Work:					3,215,729
16	Mislenious Items					2,143,819
	<b>Total</b>					<b>26,797,738</b>

**Detailed Estimate for Distribution System - Zone 17**

S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1.08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	26292	100 CUM	4732		1,244,123	
B	Excavation for thrust block	328.8	100 CUM	4732		15,557	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth	10	100 CUM	6492		649	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						Factor for Excavation Quantity
	110 mm	24262	RM	310	RA	7,528,346	0.5166
	125 mm	3124	RM	399	RA	1,246,741	0.5334
	140 mm	1915	RM	499	RA	955,508	0.5676
	160 mm	735.5	RM	650	RA	478,374	0.6026
	180 mm	719.5	RM	825	RA	593,327	0.6384
	200 mm	1178	RM	1016	RA	1,197,074	0.675
	225 mm	231.5	RM	1282	RA	296,724	0.7314
	250 mm	168	RM	1585	RA	266,297	0.77
	280 mm	119.5	RM	1984	RA	237,055	0.8294
	315 mm	30.5	RM	2511	RA	76,589	0.8906
	355 mm	82	RM	3180	RA	260,753	0.975
	400 mm	102	RM	4129	RA	421,199	1.085
	Sub Total	32668	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (replacement of line with a new pipeline)						
	110 mm	14270.5	RM	310	RA	4,428,047	0.5166
	125 mm	1623	RM	399	RA	647,715	0.5334
	140 mm	373	RM	499	RA	186,112	0.5676
	160 mm	151.5	RM	650	RA	98,537	0.6026
	180 mm	188.5	RM	825	RA	155,444	0.6384
	200 mm	14.5	RM	1016	RA	14,735	0.675
	250 mm	26.5	RM	1585	RA	42,005	0.77
	Sub Total	16648	RM				

Detailed Estimate for Distribution System - Zone 17							
S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	16648	RM	12	LS	199,776	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	30	Per Joint	3.50	Haryana PWD item 28.38 plus	105	
	125 to 200 mm internal diameter of pipe, valve, special	20	Per Joint	6.83	250% vide amendment dt	137	
	300 to 375 mm internal diameter of pipe, valve, special	10	Per Joint	17.50	23-1-09	175	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY				Haryana PWD A & C slip No CZC-6 dated 3-7-09		Quantity of valves taken roughly at one per KM
	100 mm i/d	43	each	3698		159,014	
	150 mm i/d	4	each	5709		22,836	
	200 mm i/d	3	each	9945		29,835	
	250 mm i/d	2	each	15589		31,178	
	300 mm i/d	1	each	18944		18,944	
	350 mm i/d	1	each	30395		30,395	
	400 mm i/d	1	each	41120		41,120	
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	49	each	1619		79,331	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall thickness : 0.23 M for depth of 1.2 M and 0.35 M for balance depth exceeding 1.2 M )	103	each	5000	LS	515,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as directed by Engineer.	328.7667	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23-1-09	905,266	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	1315.067	Sqm	40	Haryana PWD item 9.15 plus 225% vide	53,211	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	132	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23-1-09	542,692	
15	Road Work:					3452988.84	
16	Mislenious items					2,301.993	
	Total					28,774,907	

Detailed Estimate for Distribution System - Zone 18							
S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
1	Excavation for pipelines running under pressure in trenches and pits, in streets and lanes including trimming and dressing sides, levelling of beds of trenches to correct grade, cutting joint holes, cutting trees and bushes, etc. refilling consolidation and watering of refill, in 15 cm layers and restoration of unmetalled or unpaved surface to its original condition, including the cost of dewatering of rain water, diversion of traffic, night signals, fixing caution boards, crossing over trenches for access to the houses, watching, fencing etc. and disposal of surplus soil outside and inside the town, involving lead upto one km in ordinary soil (for new pipe line and replacement pipes)				Item 6.9 Haryana PWD & 300% above vide amendment dated 1.1 08 and 23.1.09		Trench Width is pipe dia plus 300 mm, Minimum earth cover of 1 meter, average earth cover of 1.15 m, Average depth of excavation is 1.15 plus pipe dia. For 110 mm pipe excavation is $(1.15+.11) \times (.3+.11)$ ie $0.5166 \times L$ where L is length of Pipe
A	Without timbering and shoring upto 1.5 metres depth	3043	100 CUM	4732		144,012	
B	Excavation for thrust block	34.0	100 CUM	4732		1,611	
C	With timbering and shoring upto 1.5 metres depth		100 CUM	6300		-	
D	With timbering and shoring exceeding 1.5 metres depth, but upto 2.25 metres depth		100 CUM	6492		-	
E	With timbering and shoring exceeding 2.25 metres depth, but upto 3 metres depth		100 CUM	6992		-	
2	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE 80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (New Pipe Line)						<b>Factor for Excavation Quantity</b>
	110 mm	73	RM	310	RA	22,651	0.5166
	125 mm	128.5	RM	399	RA	51,282	0.5334
	140 mm	1041	RM	499	RA	519,417	0.5676
	160 mm		RM	650	RA	-	0.6026
	180 mm		RM	825	RA	-	0.6384
	200 mm		RM	1016	RA	-	0.675
	225 mm		RM	1282	RA	-	0.7314
	250 mm		RM	1585	RA	-	0.77
	280 mm	62.5	RM	1984	RA	123,983	0.8294
	315 mm	164	RM	2511	RA	411,824	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	1469	RM				
3	Supply, Laying, Jointing, Field Testing, Commissioning complete at site of HDPE (PE80 Grade Coumpound) Pipes PN-8.0 (8.0 kg/sqcm) as per IS:4984 and specifications for water application, including all cost of material, labour required, transportation, loading, unloading & stacking etc. complete. (Replacement of line)						
	110 mm	276.5	RM	310	RA	85,796	0.5166
	125 mm	1255.5	RM	399	RA	501,051	0.5334
	140 mm	679	RM	499	RA	338,794	0.5676
	160 mm	559	RM	650	RA	363,577	0.6026
	180 mm	284	RM	825	RA	234,197	0.6384
	200 mm	263.5	RM	1016	RA	267,766	0.675
	225 mm	14.5	RM	1282	RA	18,585	0.7314
	250 mm	176.5	RM	1585	RA	279,770	0.77
	280 mm	121.5	RM	1984	RA	241,022	0.8294
	315 mm	8	RM	2511	RA	20,089	0.8906
	355 mm		RM	3180	RA	-	0.975
	400 mm		RM	4129	RA	-	1.085
	450 mm		RM	5226	RA	-	1.2
	500 mm		RM	6443	RA	-	1.32
	Sub Total	3638	RM				



Detailed Estimate for Distribution System - Zone 18							
S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
4	Dismantling pipeline of G.I./A.C./P.V.C./S.W./H.D.P.E. pipe including breaking the joints, lifting the pipes and stacking to the place as directed by Engineer-in-charge with all leads and lifts including cleaning the surface, etc. complete. (In place of dismantled pipe another pipe is to be laid as such excavation for dismantling is included in excavation for laying new pipe line)	3638	RM	12	LS	43,656	
	80 mm.		R.M.			-	
	100 mm.		R.M.			-	
	125 mm.		R.M.			-	
	150 mm.		R.M.			-	
	200 mm.		R.M.			-	
	250 mm.		R.M.			-	
	300 mm.		R.M.			-	
	350 mm.		R.M.			-	
	400 mm.		R.M.			-	
	450 mm.		R.M.			-	
	500 mm.		R.M.			-	
5	Dismantling flanged joints for cast iron pipes, valves and specials including carriage of bolts, nuts and washers to store,						
	50 to 100 mm internal diameter of pipe, valve, special	8	Per Joint	3.50	Haryana PWD	28	
	125 to 200 mm internal diameter of pipe, valve, special	6	Per Joint	6.83	item 28.38 plus 250% vide amendment dt 23-1-09	41	
	300 to 375 mm internal diameter of pipe, valve, special	6	Per Joint	17.50		105	
	400 to 450 mm internal diameter of pipe, valve, special			19.95		-	
	500 to 525 mm internal diameter of pipe, valve, special			22.05		-	
6	Taking out dismantled cast iron socketed or flanged pipes, valves and specials etc outside from the trenches and stacking at a nearest convenient place					-	
	80 mm.		10 m	18.20	Haryana PWD	-	
	100 mm.		10 m	22.23	item 28.38 plus 250% vide amendment dt 23-1-09	-	
	125 mm.		10 m	22.75		-	
	150 mm.		10 m	27.13		-	
	200 mm.		10 m	36.23		-	
	250 mm.		10 m	49.18		-	
	300 mm.		10 m	57.58		-	
	350 mm.		10 m	72.63		-	
	400 mm.		10 m	95.73		-	
	450 mm.		10 m	107.45		-	
	500 mm.		10 m	115.33		-	
7	Providing and fixing cast iron double flanged sluice valves PN -1.6 marked with IS 14846 including nuts and bolts marked with IS 1363, rubber sheet marked with IS 638 etc carriage, loading, unloading, stacking, handling, rehandling etc complete in all respect to the satisfaction of engineer in charge ( Makes AARKO, VENUS, LEADER, SI, PANJA, UPADHAY						Quantity of valves taken roughly at one per KM
	80 mm i/d	0	each	2573	Haryana PWD	-	
	100 mm i/d	3	each	3698	A & C slip No	11,094	
	150 mm i/d	2	each	5709	CZC-6 dated 3-7-09	11,418	
	200 mm i/d	1	each	9945		9,945	
	250 mm i/d	1	each	15589		15,589	
	300 mm i/d	1	each	18944		18,944	
	350 mm i/d		each	30395		-	
	400 mm i/d		each	41120		-	
	450 mm i/d		each	48981		-	
	500 mm i/d		each	66911		-	
	600 mm i/d		each	95126		-	

Detailed Estimate for Distribution System - Zone 18							
S No	Item	Quantity	Unit	Rate	Reference for Rate	Amount	Quantity Reference/Calculations
8	Providing and fixing cast iron single air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge				Haryana PWD A & C Slip CZC/3-7-09		size of air valve taken one sixth of pipe dia and number of air valves taken at one per km
	40 mm i/d	5	each	1619		8,095	
	50 mm i/d	0	each	1771		-	
9	Providing and fixing cast iron double air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge						
	65 mm i/d	0	each	1883	Haryana PWD	-	
	80 mm i/d	0	each	2103	A & C Slip	-	
	100 mm i/d	0	each	2491	CZC/3-7-09	-	
10	Providing and fixing cast iron kinetic air valves marked with IS 14845 including carriage, loading, unloading, stacking, handling, rehandling etc drilling, tapping, screwing etc in valve connections complete in all respect to the satisfaction of engineer-in-charge						
	80 mm i/d	0	each	2824	Haryana PWD	-	
	100 mm i/d	0	each	3098	A & C Slip	-	
	150 mm i/d	0	each	7514	CZC/3-7-09	-	
	200 mm i/d	0	each	13267		-	
11	<b>Sluice valve and air valve chamber:</b> Providing and constructing Brick masonry valve chamber with 15 cm thick 1:3:6 proportion PCC bedding, excluding excavation, Brick masonry in C.M. 1:5 Proportion, 20 mm thick 1:4 plaster, precast RCC frame and cover, etc. complete as directed by Engineer-in-charge. (Wall	13	each	5000	LS	65,000	
12	<b>Thrust Block:</b> Providing and laying cement concrete in RCC (M-15 , 1:2:4 ) with stone aggregate 20 mm nominal size for thrust blocks including compaction, curing, finishing, excluding cost of reinforcement & shuttering etc., Complete as per drawings and specifications and as	34.05	cum	2754	Haryana PWD item 10.79 plus 340% vide amendment 23- 1-09	93,748	
13	<b>Thrust Block:</b> Shuttering for precast plain or RC concrete wall plates, bed plates shelves etc	136.19	Sqm	40	Haryana PWD item 9.15 plus 225% vide amendment 23- 1-09	5,510	
14	Providing TMT Steel Reinforcement as per IS: 1786 for RCC work including straightening, cutting, bending, placing in position and binding etc as per drawing all complete including cost of binding wire, labour, wastage etc.	14	Quintal	4127	Haryana PWD item 18.22 plus 350% vide amendment 23- 1-09	56,200	
15	Road Work:					594,721	
16	Mislenious Items					396,480	
	Total					4,956,006	

Appendix E-5

Cost Summary : Remodelling & Expansion of Distribution System in Zone 1 to Zone 18

<b>Zone No</b>	<b>Estimated Cost (INR)</b>	<b>Reference</b>
1	9,831,018	Refer Zone 1 Detailed Estimate
2	6,206,535	Refer Zone 2 Detailed Estimate
3	10,749,029	Refer Zone 3 Detailed Estimate
4	5,557,763	Refer Zone 4 Detailed Estimate
5	15,166,911	Refer Zone 5 Detailed Estimate
6	15,761,978	Refer Zone 6 Detailed Estimate
7	13,976,764	Refer Zone 7 Detailed Estimate
8	10,270,389	Refer Zone 8 Detailed Estimate
9	14,031,253	Refer Zone 9 Detailed Estimate
10	15,523,505	Refer Zone 10 Detailed Estimate
11	13,747,145	Refer Zone 11 Detailed Estimate
12	15,230,297	Refer Zone 12 Detailed Estimate
13	11,272,167	Refer Zone 13 Detailed Estimate
14	22,445,875	Refer Zone 14 Detailed Estimate
15	22,823,397	Refer Zone 15 Detailed Estimate
16	26,797,738	Refer Zone 16 Detailed Estimate
17	28,774,907	Refer Zone 17 Detailed Estimate
18	4,956,006	Refer Zone 18 Detailed Estimate
<b>Total</b>	<b>263,122,678</b>	

[www.WilburSmith.com](http://www.WilburSmith.com)

**WilburSmith**  
A S S O C I A T E S

#8, Second Floor, 80 Feet Road,  
RT Nagar Bangalore Karnataka - 560 032. India  
w +91.80. 3918.7500 f +91.80. 2363.4097