LC-2755

SERVICE ESTIMATES & PLANS

FOR

Residential Plotted Colony

"THE WESTERLIES"

LIC. NO. 57 OF 2013 DT. 11.7.2013

(100.48125 ACRES)

SECTOR-108, GURGAON, HARYANA

BEING DEVELOPED BY:

EXPERION

THE POSITIVE SIDE OF LIFE

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PROJECT REPORT / ESTIMATES FOR PROVIDING INTERNAL DEVELOPMENT WORKS FOR THE PROPOSED PLOTTED COLONY "THE WESTERLIES"OF 100.48125 ACRES BEING DEVELOPED BY EXPERION DEVELOPERS PVT. LTD. IN SECTOR -108, GURGAON, (HARYANA)

Gurgaon town of Haryana is situated on Delhi – Jaipur Highway (National Highway No.8) at a distance of about 30 Km from Delhi. In order to relieve the growing pressure of population in National Capital of Delhi, it has been decided by Govt. of Haryana to establish various residential, industrial and other infrastructure sectors in Gurgaon. As the town is a part of National Capital Region, a district headquarters & abutting Delhi, a lot of development is taking place in Gurgaon. A Plotted colony covering an area of about 100 acres is being developed by EXPERION DEVELOPERS Pvt. Ltd. for which licence has been issued by Director General Town & Country Planning Deptt. Govt. of Haryana vide Licence No. 57 OF 2013 issued on 11.07.2013. Experion Developers Pvt. Ltd. is 100% FDI Company.

The service design report and estimate is for this plotted colony.

1. DOMESTIC WATER SUPPLY SYSTEM

(i) SOURCE

The licenced area falls in Sector -108 of Development Plan of Gurgaon. The ultimate source of water supply will be from HUDA water supply system. Till the time HUDA water supply is available, the developer is required to make arrangement for water supply on temporary basis. Such temporary basis may include obtaining potable water from HUDA water treatment plants and/or drilling required number of tube wells. We propose to drill five tube wells after obtaining required permission from CGWA.The underground water is sweet & potable and is available at a very reasonable depth. The average yield of tube well with 60-80' strainer will be about 18000 litres per hour. The number of tube wells required for the above area has been worked out to 9 Nos and the tube wells will be drilled in tune with growth of population. Initially five tube wells are proposed to be drilled. The balance four will be installed at a much later stage depending upon the situation at that point of time. The ultimate requirement of tube wells includes provision of 10% standby.

(ii) DESIGN

The water supply system distribution system has been designed as per Hazen William Formula. Value of "C" has been taken as 100 as per HUDA guidelines. The necessary distribution system has been designed & design statement is attached with the estimate. The scheme has been designed considering 13.5 persons per general category plot and 9 persons per EWS category plot. The rate of water supply per head per day has been taken as 150 + 15% i.e.172.5 litres. Peak factor has been taken as four. DI pipes will be laid for distribution system.

Water from HUDA water main / Tube wells shall be collected in underground water tank as per location as shown on the drawing. This water will initially be collected in Fire Fighting tank and then will overflow in to domestic water tank. This water shall be pumped in to overhead tank through boosting pumps.

The salient features of water supply system are as given below:

a) Daily water demand = 2160 KL

b) UGT capacity = 1300 KL

c) OHSR capacity = 681 KL

d) Total water supply network length = 9270 M

(iii) **PUMPING EQUIPMENT**

It has been proposed to install pumping sets as per calculations in the design statement. The provision for standby generating set has also been provided in case of any electricity failure.

2. SEWERAGE SCHEME

The sewer lines have been designed for 3 times average DWF in relation to the water supply demand assuming that 80% water supplied for the domestic water supply shall find its way into the proposed sewer. SW pipe sewers have been proposed up to 400 mm i/d designed to run half full. Beyond 400 mm i/d, RCC NP-3 pipes have been proposed. The sewers have been designed on 0.8 m/sec. velocity i.e. self-cleansing velocity. Necessary provisions for laying of SW pipes, RCC NP-3 pipes, construction of manholes & erection of vent shafts etc. has been made in this estimate. Necessary design statement for entire sewerage system has been prepared as per Manning's Formula and is attached with the estimate.

It is proposed to install an STP of 2200 KLD capacity for in house treatment of sewage.

It is proposed to use the treated sewage for flushing, horticulture & road cleaning etc. A separate pipe line shall be laid for use of treated sewage for flushing & horticulture, design of which is also enclosed. Excess treated sewage from township as well as abutting GH which is also being developed by us will be pumped to HUDA main sewer.

3. STORM WATER DRAINAGE

The storm water drain has been designed to carry ½ inch rain fall for branch lines & ¼" inch per hour for main lines. RCC NP3 pipes with minimum 400 mm dia have been proposed to be laid. Necessary design statement for entire drainage system has been prepared as per Manning's Formula and is attached with the estimate. In the plotted colony, the plot holders where terrace area is more than 100 SqM & community buildings are required to provide rainwater harvesting system with in their plot. The storm water from the township as well as abutting GH which is also being developed by us will be discharged into HUDA main storm water drain.

ROADS

The CBR value of soil has been got tested which is 18.2. However roads have been proposed as per CBR value of 6 and revised specifications approved by HUDA haave been incorporated in the estimate.

4. STREET LIGHTING

Provision for street lighting has been made as per guidelines of HUDA.

5. HORTICULTURE

Estimates and details of plantation, landscaping, signage etc. have been included as per guidelines of HUDA.

6. **SPECIFICATIONS**

The work will be carried out in accordance with the standard specifications as laid down by the HUDA/Haryana Government.

7. **RATES**

The estimates have been prepared on the rates as per recently approved estimates.

8. **COST**

The total cost of internal development works in this Project including all the services works out Rs.3201.43 lac which includes 3% contingency also. 4% Deptt. Charges inclusive

~~7111.90~~ 52.60.00 /acs ~~Rs.~~ 52.35 ~~lacs~~ Lacs

The cost per gross acre for this phase works out to Rs.31.86 lacs/acre which covers the provision of services like water supply, sewerage, storm water drainage, roads, street lighting and horticulture.

For EXPERION DEVELOPERS PVT.LTD

(Authorised Signatory)

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

FINAL ABSTRACT OF COST

SUB WORK NO.	NAME OF WORK			COST (Rs. In Lacs)
SUB WORK NO. I	WATER SUPPLY	832.90	~~1330.00~~	~~429.92~~
SUB WORK NO. II	SEWERAGE	682.60	~~915.20~~	~~538.67~~
SUB WORK NO. III	STORM WATER DRAINAGE	461.40	~~910.10~~	~~234.07~~
SUB WORK NO. IV	ROAD WORK	1194.20	~~1226.50~~	~~708.35~~
SUB WORK NO. V	STREET LIGHTING	192.80	~~231.40~~	~~155.25~~
SUB WORK NO. VI	HORTICULTURE	105.90	~~168.10~~	~~20.29~~
SUB WORK NO. VII	MAINTENANCE	1750.20	~~1840.00~~	1114.88
			TOTAL	~~3201.43~~ ~~7111.30~~

Cost Per Acre = 5260.00 / ~~7111.90~~ / ~~3201.43~~ ÷ 100.48125 = ~~70.77~~ 52.35 lacs

= Rs. ~~71.02~~ ~~31.86 Lacs~~ 52.35 lacs

For Experion Developers Pvt. Ltd.

Authorised Signatory

Sub Divisional Engineer
HUDA Sub Division No. 14
Gurgaon

Executive Engineer
HUDA, Division No. 5
Gurgaon

Checked subject to comments in letter No. 2665 Dt. 26/2/14 ... attaches with the estimate

Superintending Engineer
HUDA Circle No. 1,
Gurgaon

Executive Engineer (W)
for Chief Engineer
HUDA Panchkula

Director General
Town & Country Planning,
Haryana, Chandigarh

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. I. **WATER SUPPLY**

ABSTRACT OF COST

SUB HEAD NO.	NAME OF SUB HEAD		COST (Rs. In Lacs)
SUB HEAD NO. I	Head Works.	201.70 :	~~456.50~~ 203.30
SUB HEAD NO. II	Pumping Machinery.	60.00 :	~~440.00~~ 29.40
SUB HEAD NO. III	Distribution System/ Rising Mains	225.40 :	~~225.80~~ 184.7
SUB HEAD NO IV	IRRIGATION		50.00
	Sub Total	543.70	~~866.30~~ 417.40
	ADD: Contingencies @ : 3%	16.32	~~25.99~~ 12.62
	Add Deptt Charges 49%	559.98	~~892.29~~ 430.02
	TOTAL:	873.90 :	~~1329.51~~ 429.92
			~~833.88~~

CO To Final Abstract of Cost.

~~Say Rs: 1330.00~~ 832.90 lacs

ESTIMATE FOR INTERNAL DEVELOPMENT WORKS IN 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR108, GURGAON, (HARYANA)

DESIGN CALCULATIONS

WATER SUPPLY:

S. No. Description

TOTAL LICENSED AREA

License No. 57 of 2013 = 100.48125 Acs

I. POPULATION

(i)	No. of plots, General Category			613 Nos.
(ii)	No. of plots, EWS Category			157 Nos.
a.	**Total No. of Plots**			**770 Nos.**
b.	**Population:**			
	(i) General Plots @	13.50 Persons/Plot	=	8276 Persons
	(ii) EWS Plots @	9.00 Persons/Plot	=	1413 Persons
c.	**Total Population of the Licensed Area:**		=	**9689 Persons**

II. WATER REQUIREMENT

a. **Domestic:**

Daily Water Allowance, Domestic	=	150 LPCD
ADD: UFW @ 15%	=	22.50 LPCD
Gross Daily Water Allowance	=	172.50 LPCD
Daily Water Requirement, Domestic (9689 × 172.5)	=	1671.35 KLD
say	=	**1680.00 KLD**

b	**Commercial Areas** *(WS Demand for FAR 175)*	=	2.15 Acres
c.	**Area under UD** UBC	=	2.3 Acres
	Rate of water supply, for Comm. & UD Areas	=	@ 25 KLD/ Acre
d.	**Daily Water Requirement, (Comm. & UD Areas)**	=	**151.56 KLD**

e. **Instituitional Demand**

	Name of institute	No.	Rate of W/S in KLD	Water requirement in KLD
a	Creche	0	10	0
b	Nursery School	2	10	20
c	Primary School	2	50	100
d	High School	0	150	0
e	Dispensary	0	50	0
f	Community Centre	0	50	0
g	Taxi Stand	1	50	50
h	Police Post	0	50	0
i	Religious Building	0	25	0
j	ESS	1	50	50
k	N. Homes/Dispensary	2	50	100
			TOTAL:	**320**

f.	**Total Daily Domestic Water Requirement** *(a + d + e)*		=	2152
		say	=	**2160**

1680.00
156.56
320.00
2156.56

Taking 15% (2/3rd) 2160 y 65% for canal water = 1404 and 35% for recycle [1/3rd] 2160 − 1404 = 756 KLD

114.00

III. WATER REQUIREMENT FOR HORTICULTURE & ROADS

1	Green areas	=	12.49 Acres
	Rate of water supply	=	@ 25 KLD/Ac
	Water requirement	=	**312.25 KLD**
2	Area of roads	=	31.66 Acres
	Rate of water supply	=	@ 5 KLD/Ac
	Water requirement	=	**158.30 KLD**
	Total Daily Water requirement for Horticulture & Roads,	=	470.55 KLD
	~~.....~~	=	~~480.00 KLD~~ 470

Treated Water Effluent from STP shall be used to meet the requirement of Horticulture & Roads.

III TUBE WELLS

(760 + 470) = 1230 KLD Taking 40% for initial

Domestic Water Requirement [as per s. no. II(f)] = **2160 KLD**

1	Expected discharge of tubewells	2160 X 40 % = 864 KLD	18 KL/Hr or
		=	300 LPM
2	Running hours of tubewells	864 / 18X16 = 300	= 16 Hrs/Day
3	No of tube wells required		= 7.50 Nos. 300
4	Add 10% standby	030	= 0.75 Nos. 0.30
5	Total no of tube wells required	3.30	= 8.25 Nos. 3.30
	Say		= 9 Nos. 4
6	No of tube wells proposed to be provided (@1/2) (for initial requirement		= 5 Nos 4 (For drinking purpose)

IV PUMPING MACHINERY FOR TUBE WELLS

Subsoil water level	=	25 M
Average fall in S.L.	=	5 M
Depression Head	=	6 M
Friction losses in Mains	=	10 M
Total head required	=	46 M
say	=	**50 M**

$$\text{BHP of motor} = \frac{18000 \times 100 \times 50}{75 \times 3600 \times \eta} = 5.56 \text{ or } \mathbf{10.00\ BHP}$$

Provide submersible pumping sets capable of delivering 18 KL or 300 LPM of water at a head 50 M. driven with electric motors of 10.00 BHP each.

V UNDERGROUND WATER TANK:

Total water demand for domestic use only (Total)	=	**2160.00 KLD**
Reqd. Capacity of UGT (equal to one third of daily requirement). (8 hrs)	=	720.00 KL
(Equal to Recycle) Storage ADD: For Fire Demand	=	310 ~~135.00 KL~~
Total Required Capacity of UGT	=	~~855.00 KL~~ 1030

100 / 9654 / 1000 = 311.27

Provide UGTof ~~1300~~ KL in two compartments to cater to future demand and fire demand of ~~436~~ KL. 1030 310

Say 310 KL

VI OVER HEAD SERVICE RESERVOIR

Total water demand for domestic use only (for canal) 1400 ~~2160.00~~ KLD

Capacity of OHSR (equal to one fourth of daily requirement ~~540.00~~ KL 350

Provide OHSR of ~~681~~ 350 KL, additional capacity for future expansion

VII. BOOSTING MACHINERY

Disharge of Pumps:

Total water demand for domestic use only (for canal)	=	2160.00 KLD
No. of Pumps to be provided	=	2 Nos.
No. of Pumping Hour / Day / Pump 1400	=	8.00 Hrs./Day
Required Discharge of Each Pump	=	~~135000~~ 9750.00 LPH or
Pumping per hour with 2 pumps running for 8 hours a day, say,	=	~~2250.00~~ LPM
	=	1458 **~~2250~~ LPM**

Head of Pumps: 1460

Suction lift	=	4 M
Friction losses	=	4 M
Clear head required	=	30 M
Total Head required	=	38 M
say	=	**40 M**

$$\text{BHP of motor} = \frac{\text{~~135000~~ 9750.00} \times 100 \times 40}{75 \times 3600 \times \eta} = \text{~~33.33~~ 21.60 or ~~40.00 BHP~~ 2.58 HP}$$

Provide 3 nos. electrically driven pumping sets (one pump to act as stand bye) (2+1)

each equipped with an electric motor of ~~40.00~~ 25 HP & capable of Discharge

1460 ~~2250~~ LPM, at a Head of 40 M each.

VIII GENERATING SETS

S.No.	Installation	Quantity	H.P.	Total HP
1	Tubewells 4	~~5~~ Nos.	10.00	~~50~~ 40 HP
2	Booster pump	2 Nos.	~~40.00~~ 25.00	~~80~~ 50 HP

Total HP	=	~~130~~	HP 90
Total KW	=	~~96.98~~	KW 67.14
Lighting Load	=	~~10~~ 5	KW
Total Load	=	~~102~~	KW 77.14
KVA Rating	=	~~127.5~~	KVA 96.425
DG ~~Set loading @ 85%~~	=	~~150.0~~	KVA

Provide a DG Set of ~~150~~ KVA capacity for power back-up

96.42 X 1.25 = 120.53 Say 120 kVA

ESTIMATE FOR INTERNAL DEVELOPMENT WORKS IN 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR108, GURGAON, (HARYANA)

SEWERAGE

A. SEWAGE TREATMENT PLANT CAPACITY:

SEWAGE GENERATED:

1	Total Daily Domestic Water Requirement	=	2160 KLD
2	Sewage Generation @	=	
	80% of daily water supply	=	1728 KLD
3	~~Add 25% spare capecity~~	=	~~432 KLD~~
4	Total capacity of STP required (2160 X 35%) + 470	=	2160 KLD
	Provide STP of total capacity = 760 (Hort. + Road) 1230 + 25% etc 1537 ~~=50~~		~~2200~~ KLD 1540 KLD

B. RE-USE OF TREATED EFFLUENT FOR FLUSHING & HORTICULTURE:

Effluent will be treated up to tertiary level & shall be re-used to meet the Horticulture & flushing demand of the colony for which separate distribution system of uPVC pipes will be laid in the colony.

Quantity of Treated Effluent available @	~~90~~ 80% of sewage flow	=	~~1556~~ 1728 KLD
Daily Water Demand for Horticulture & Roads	(1728 X 40)	=	~~480~~ 470 KLD
Flushing Demand:			
For Residential Areas @	45 LPCD 9869	=	436 KLD
For Institutional & Commercial Areas @	30%	=	141 KLD
Total daily Demand for Horticulture & Flushing	(As above)	=	~~1057~~ KLD 1540
Balance quantity of Treated Effluent which will be discharged in to HUDA Master Sewerage System:		=	**498 KLD**

1047

Surplus = 1728 - 1540 = 188 KLD

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. I — WATER SUPPLY

SUB HEAD NO. 1. — HEAD WORKS

S. No.	DESCRIPTION	Qty.	Unit	Rate (Rs. in lacs)	Amount (Rs. in lacs)
1	Drilling and installing 510 mm i/d tube well with reverse/direct rig complete with pipe and strainer upto a depth of 50 M BGL, complete in all respects	~~5~~ 4	each	~~7.00~~ 7.50	~~35.00~~ 60.00
2	construction of pump chamber as per standard design of HUDA of size 4.9 x 4.25 M	~~5~~ 4	each	~~2.00~~ 3.00	~~10.00~~ 15.00
3	Construction of boundary wall and gate around the tube well site				
a	Water Works site	~~1~~ 1	each	~~1.50~~ 5.00	~~1.50~~ 10.00
b	Tube Well	~~5~~ 4	each	~~1.00~~ 1.00	~~5.00~~ 4.00
4	Construction of footpaths, lawns etc. as required at site.				
a	Water Works site	~~1~~ 1	each	~~1.00~~ 5.00	~~1.00~~ 4.00
b	Tube Well	~~5~~ 4	each	~~0.50~~ 0.50	~~2.50~~ 2.00
5	Construction of OHSR of 681 KL (150000 Glns.) Capacity with 26 M staging height including cost of stair case, inlet, outlet, over flow & scour pipes and all specials complete in all respects	1	each	~~60.00~~ 15000/-	~~60.00~~ 50.00 52.50 10.00
6	Construction of boosting chamber of suitable size	~~1~~ 2	each	~~10.00~~ 15.00	~~10.00~~ 30.00
7	Construction of under ground tank of 1300 KL capacity, complete in all respects including cost of pipes etc @ Rs 3000/KL	1300	1	~~0.69~~ 0.03	~~39.00~~ 52.00 30.90
8	Providing, laying , jointing & testing HDPE/CI/DI pipes including cost of excavation,refilling etc. complete in all respects				
	RISING MAINS BETWEEN TWs and/to UGT :				
	Size: 100 mm Dia.	RM	220	~~1250~~ 1800	~~2.75~~ 3.96
	150mm Dia.	RM	1915	~~1750~~ 2200	~~33.51~~ 42.13
	200 mm Dia.	RM	85	~~2400~~ 2800	~~2.04~~ 2.38
9	Provision for carriage of material and other unforeseen items	1	L.S.	~~1.00~~ 2.00	~~1.00~~ 5.00
10	Provision for facilities for maintenance staff	~~2~~ 2	each	~~3.00~~ 10.00	~~6.00~~ 5.00
				Total	~~203.39~~ 286.887

CO to Abstract of Cost of Sub Work No. I.

Total W/S

Head works - 206.90 lacs

Pumping Machinery 60.00 lacs

Distribution system 225.70 lacs

482.70 lacs

Say Rs. ~~450.50~~ 286.90 lacs

(Details attached)

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. I — WATER SUPPLY

SUB HEAD NO. 2. — PUMPING MACHINERY

S. No.	DESCRIPTION	Nos.	Unit	Rate (Rs. in lacs)	Amount (Rs. in lacs)
1	Providing and installing electrically driven submersible pumping sets on TWs. equipped with 10 BHP motors & capable of delivering about 18 KL of water per hour against a total head of 70 M complete with motor and all other accessories	5 4	each	2.00 2.50	10.00 10.00
2	Provision for automatic type chlorination plant complete in all respects at water works	1	each	1.00	1.00
3	Providing and installing electrically driven Submmmersible pumping sets for boosting station, each equipped with 40 BHP motors & capable of delivering 2240 LPM water against a total head of 40 M complete with motor and all other accessories	3	each	5.00 3.50	15.00 0.00
5	Provision for pipes, valves and specials inside the pump chamber for three booster pumps	1 LS	each	3.00 0.50	3.00 0.00
6	Provision for electric service connection and electric fittings in the tube well and boosting chambers	6	each	1.00 0.40	6.00 2.40
7	Provision for DG Set 150 KVA	1	each	15.00 15.00	18.00 15.00
8	Provision for carriage of material and other unforeseen items	L.S.		2.00 1.00	2.00 1.00
9.	Prov For making foundation	3		3.00	5.00
			Total		29.40 140.00

CO to Abstract of Cost of Sub Work No. I.

Say Rs: 140.00 60.00 Lacs

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. I — WATER SUPPLY

SUB HEAD NO. 3 — DISTRIBUTION SYSTEM / RISING MAINS

S. No.	DESCRIPTION	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Providing, laying , jointing & tesing CI/DI pipes including cost of excavation,refilling etc complete in all respects				
	i) 100 mm i/d	RM	4525	1,250 1500	56,56,250 6787500.00
	ii) 150 mm i/d	RM	2550	1,750 2000	44,62,500 51,00,000
	iii) 200 mm i/d	RM	330	2,400 2600	7,92,000 8,58,000
	iv) 250 mm i/d	RM	140	3,000 3,200	4,20,000 4,48,000
	v) 300 mm i/d	RM	1725	3,500 3,700	60,37,500 63,82,500
2	Providing and fixing of D/F Sluice Valves indcluding cost of brick masonry chamber complete in all respects				
	i) 100 mm i/d	Nos.	15	12,000 14000	1,80,000 2,10,000
	ii) 150 mm i/d	Nos.	10	15,000 17,000	1,50,000 1,70,000
	iii) 200 mm i/d	Nos.	3	18,000 20,000	54,000 60,000
	iv) 250 mm i/d	Nos.	3	25,000 27,000	75,000 81,000
	v) 300 mm i/d	Nos.	5	30,000 32,000	1,50,000 1,60,000
3	Providing and fixing of Air Valves & Scour Valves indcluding cost of brick masonry chamber complete in all respects	Nos.	2	10,000 20,000	20,000 24,000
4	Providing and fixing of Fire Hydrants indcluding cost of brick masonry chamber complete in all respects	Nos.	12	6,000 10,000	72,000 1,20,000
5	Providing and fixing indicating plates for Sluice Valves and Air valves and fire hydrants etc	Nos.	50	4,000 6000	2,00,000 3,00,000
6	Provision for carriage of material and other unforeseen items	L.S.			1,00,000 5,00,000
7	Provision for cutting of roads and making good to its original condition	L.S.			1,00,000 2,00,000
8	Provision for Rising Main from HUDA water supply main line to UGT, 200 mm i/d (DI pipe).	RM	225	2,500 3,000	5,62,500 6,75,000
9.	Making water supply connection U.S.				5,00,000
				Total:	1,84,69,250 225,76,000
			say	Rs.	184.70 Lac 225.80

CO to Abstract of Cost of Sub Work No. I

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. II — SEWERAGE

S. No.	DESCRIPTION	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Providing, lowering, jointing and cutting SW/ RCC NP-3 pipes in to trenches including cost of excavation, bed concrete, including const. of manholes and erection of vent shafts etc.complete as per standard sections.				
	Size Depth				
	i) 200 mm/d 0-2 M BGL	RM	5190	1,250	64,87,500
	i) 200 mm/d 2-4 M BGL	RM	645	1,500	9,67,500
	i) 200 mm/d	RM	730	2,000	14,60,000
	i) 200 mm/d	RM	920	2,200	20,24,000
	i) 200 mm/d	RM	735	2,600	19,11,000
	i) 200 mm/d	RM	830	2,500	20,75,000
2	Provision for providing oblique junctions	L.S.			1,50,000
3	Provision for timbering etc	L.S.			2,00,000
4	Provision for providing and fixing vent shafts at suitable places as per HUDA requirements	L.S.			2,00,000
5	Provision for Const. of 1 nos. STP of 2200 KLD Capacity, including cost of pumping	KLD	2200	12,000	2,64,00,000
6	Provision for laying of HDPE Rising Mains/Distribution System from STP for flushing requirements & disposal of surplus effluent to HUDA Sewers:				
a.	From STP to HUDA Sewer:				
	Size: 200 mm dia.	RM	550	2,400	13,20,000
b.	Treated Effluent Distribution Lines				
	Size: 80 mm dia.	RM	5540	800	44,32,000
	100 mm dia.	RM	1285	1,250	16,06,250
	150 mm dia.	RM	365	1,600	5,84,000
	200 mm dia.	RM	1165	2,000	23,30,000
7	Provision for cutting of roads and making good to its original condition and carriage of material and other unforeseen charges	L.S.			1,50,000
	Sub Total				5,22,97,250
	ADD 3% Contingencies				15,68,918
	Total				5,38,66,168
	Say				538.67 lacs

(CO to Final Abstract of Cost)

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. III — STORM WATER DRAINAGE

S. No.	DESCRIPTION	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Providing, lowering, jointing and cutting RCC NP3 pipes in to trenches including cost of excavation, manholes, vent shafts etc complete as per standard sections.				
	Dia. Depth				
	i) 400 mm i/d. 0-2 M BGL.	RM	6370	1,500.00	95,55,000.00
	i) 400 mm i/d. 2-4 M BGL.	RM	0	1,900.00	0.00
	iii) 600 mm i/d.	RM	1015	2,500.00	25,37,500.00
	iv)800 mm i/d.	RM	770	3,000.00	23,10,000.00
	v)1000 mm i/d.	RM	835	3,500.00	29,22,500.00
2	Provision for Road gullies	L.S.			2,00,000.00
3	Provision for temporary diversion of traffic	L.S.			60,000.00
4	Provision for cutting of roads and making good to its original conditionand carriage of material and other unforeseen charges	L.S.			1,00,000.00
6	Provision of pumping station (if required) including cost of civil works & pumps	L.S.			50,00,000.00
7	Provision for connection with HUDA Storm water Drain/ Sewer	L.S.			50,000.00
	Sub Total				2,27,25,000.00
	ADD: 3% Contingencies				6,81,750.00
	Total				2,34,06,750.00
	Say				234.07 Lac

(CO to Final Abstract of Cost)

Say Rs: 461.40 lacs

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. IV — ROAD WORK

Detail of Roads:

S. No.	Width of road (in M) (A)	Length of road (in M) (B)	Gross Area of Roads (in Acs) (C) =A x B	Metalled Width (in M) (D)	Metalled Area (in SqM) (B x d)
1	12	6450	19.13	5.5	35475
2	15	1435	5.32	5.5	7892.5
3	24	1215	7.21	14	17010
	Total:	9100	31.68 Acs		52485
		Add for curves @		10%	5249
				Total:	57734
				Say	58000

ABSTRACT OF COST

S. No.	DESCRIPTION	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Provision for leveling, earth filling/cutting as per site condition: Total site area 100.48 Area under roads 31.66 Acres	Acre	~~31.66~~ 100.48	1,00,000	~~3166000~~ 1,00,48,000/-
2	a) Preparation of sub grade by dressing to camber and consolidation with road roller including making good undulations etc. & providing, laying & consolidating the road metal as below: +50 mm B.M	Sqm	58000	~~1,000~~ 1500 900/-	~~5,80,00,000~~ 8,70,00,000/- 5320000/-
	(A) For 12 M & 15 M wide roads				
	(1) Granular Sub Base (GSB) = 175 mm				
	(2) Water mix macamum (WMM) = 225 mm				
	(3) ~~Mix seal~~ = 25 mm → 50 mm BM + 20 MSS				
	(B) For 18 M & 24 M wide roads				
	(1) Granular Sub Base (GSB) = 210 mm				
	(2) Water mix macamum (WMM) = 250 mm				
	(3) B M = 50 mm				
	(4) M S S = 20 mm				
3	Provision of Kerb and channel of concrete 1:1 1/2:3 (M 20) as per standard design				

Width of Road in M	Length of road in M	No. of sides where kerb and channel are to be provided	Length of kerb and channel in M
12 M	6450	1	6450
15 M	1435	1	1435
24 M	1215	2	2430
Total =	9100		10315
Add: 10% for curves =			2063
		Total =	12375
		Say =	12400

	RM	12400	~~400~~ 500		~~49,60,000~~ 62,00,000/-

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

4	Provision for cement concrete pavement along 24 M wide roads with pre cast tiles of 1:1.5:3 concrete/pavement tiles							
	24 M wide road	1215	2 x 1215 x2.5 =	6075	Sqm	6075	400	24,30,000
6	Provision for guide map				L.S.			60,000
7	Provision for demarcation burjees				L.S.			30,000
8	Provision for traffic lights.				L.S.			25,000
9	Provision for plot indicator boards				L.S.			60,000
10	Provision for carriage of material & unforeseen items				L.S.			50,000
	Sub Total							6,87,71,000
	ADD 3% Contingencies							20,63,130
	Total							7,08,34,130
							Say Rs.	708.35 Lac

(CO to Final Abstract of Cost)

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. V

STREET LIGHTING

S. No.	DESCRIPTION	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
1	Providing street lighting on roads as per standard specifications complete in all respects. With CFL fitting + LED in Public	Acre	100.48	1,50,000	~~1,50,72,186~~ 1,50,77,109/-
	ADD 3% Contingencies				~~4,52,166~~ 45,2160/-
	Total				~~1,55,24,353~~ 15,52,4140/-
				Say	~~155.25~~ Lac

(CO to Final Abstract of Cost)

125800/-
376800/-
1293600/-
6339030/-
19275832/-

Add: 4% Deptt. Charges

Say Rs: ~~231.40~~ 192.80 lacs

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. VI

HORTICULTURE

S. No.	DESCRIPTION		Unit	Qty.	Rate *(Rs.)*	Amount *(Rs.)*
1	Development of lawn areas. a) Trenching the ordinary soil upto depth of 60 cm. including removal and packing of serviceable material and disposing at a lead of upto 50 M and making up the trenched area to proper level by filling with earth mixed with manure and before and after flooding trench with water including cost of imported earth and manure b) Rough dressing of trenched area c) Grassing with " doob grass" including watering and maintainance of lawns free from weeds and fit for moving in rows 7.5 cm in either direction including for fledges and grill and barbed wire fencing around park and green belt (as per HUDA norms)		Acre	~~12.49~~ 100.48	1,00,000	~~12,49,000~~ 10048000
2	Planting of trees with tree guards on roads at 40' interval		Each	900	~~1000~~ ~~800~~ 850	9,00,000 ~~7,20,000~~ 762500/-

Width of road in M	*Length of road in M*	*No of sides where trees are to be planted*	*Total Length in M*
12	6450	1	6450
15	1435	1	1435
24	1215	2	2430
		Total	10315

Spacing of Trees. 12 M C/C

Number of trees to be planted: 860

Say 900 Nos.

Contd.

Cost of one tree:

Item	*Unit*	*Cost in Rs.*
Excevation	each	50
Manure	each	50
Tree Plants	each	50
Tree Guards	each	650
	Total	800

	Sub Total	~~19,69,000~~ 10810500/- 1,09,48000
ADD: 3% Contingencies		~~59,070~~ 324315/- 328440.00
	Total	~~20,28,070~~ 11134815 11276440.00
	say: Rs.	20.29 Lac

Add 49% Deptt Charges 5456059 5525455.60

(CO to Final Abstract of Cost)

16590874/- 16801895.60

Say Rs. ~~168.16 Lacs~~ 165.90 lacs

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

SUB WORK NO. VII MAINTAINANCE CHARGES AND RESURFACING OF ROADS

S. No.	DESCRIPTION	Unit	Qty.	Rate (Rs. In Lacs)	Amount (Rs. in Lacs)
1	Provision for maintenance charges for water supply,sewerage, storm water drainage,roads, street light, horticulture etc.complete including operation and establishment charges as per HUDA norms after completion	Acre	100.48	5	502.41
2	Provision for resurfacing of roads after 5 years of maintainance i.e.100 mm thick BUSG compacted to 75 mm thick premix carpet with seal coat with mechanical paver.	Sqm	58000	0.0025 ~~0.004~~	290.00 ~~232~~
3	Provision for resurfacing of roads after 10 years of maintainance i.e.25 mm thick premix carpet with seal coat with mechanical paver.	Sqm	58000	0.007 ~~0.006~~	406.00 ~~348.00~~
	Sub Total			1198.00	~~1082.41~~
	ADD: 3% Contingencies			35.95	~~32.47~~
	Total			Rs. 1234.35	~~1114.88~~ Lacs

Add: 49 1/2 DoPH Charges. 604.93

1839.18

Say Rs: 1840.00

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON, (HARYANA).

MATERIAL STATEMENT

WATER SUPPLY

S. No.	NAME OF LINE	Size-wise Length (in M)					
		100 mm Dia.	150mm Dia.	200 mm Dia.	250 mm Dia.	300 mm Dia.	Total
1	R - A					50	
2	A - A1	75					
3	A1 - A2	105					
4	A2 - A3	65					
5	A - B					50	
6	B - B1			210			
7	B1 - B1/1	105					
8	B1 - B2		85				
9	B2 - B2/1	135					
10	B2/1 - B2/2	30					
11	B2/1 - B2/3	135					
12	B2 - B3		65				
13	B3 - B3/1		85				
14	B3/1 - B3/2	85					
15	B3/2 - B3/3	25					
16	B3/2 - B3/4	25					
17	B3/4 - B3/5	60					
18	B3/1 - B2/3	75					
19	B3 - B4	70					
20	B - C					15	
21	C - C1	30					
22	C1 - C2	70					
23	C1 - C1/1	85					
24	C1/1 - C1/2	25					
25	C1/1 - C2/1	75					
26	C2 - C2/1	85					
27	C2/1 - C2/2	35					
28	C - D					205	
29	D - D1	150					
30	D - E					90	
31	E - E1		90				
32	E1 - E1/1	75					
33	E1 - E1/2	70					
34	E1 - E2		35				
35	E2 - E2/1	75					
36	E2 - E3		115				
37	E3 - E4		35				
38	E4 - E5	40					
39	E5 - E5/1	15					
40	E5 - E6	50					
41	E6 - E7	35					

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON, (HARYANA).

S. No.	NAME OF LINE			Size-wise Length (in M)					
				100 mm Dia.	150mm Dia.	200 mm Dia.	250 mm Dia.	300 mm Dia.	Total
42	E7	-	E7/1	15					
43	E7	-	E8	65					
44	E8	-	E9	40					
45	E	-	F					310	
46	F	-	F1	60					
47	F1	-	F2	55					
48	F	-	G					70	
49	G	-	G1	75					
50	G	-	H					220	
51	H	-	H1		235				
52	H1	-	H1/1		50				
53	H1/1	-	H1/2	20					
54	H1/1	-	H1/3	140					
55	H1	-	H2	70					
56	H2	-	H3	55					
57	H	-	J				55		
58	J	-	J1	70					
59	J	-	J2		170				
60	J	-	J3		10				
61	J3	-	J4		130				
62	J4	-	J5		105				
63	J4	-	J6		85				
64	J6	-	J7	20					
65	J6	-	J8	45					
66	H	-	K					95	
67	K	-	K1		235				
68	K	-	L					265	
69	L	-	L1		85				
70	L1	-	L2	80					
71	L2	-	L2/1	70					
72	L2	-	L3	85					
73	L1	-	L4		115				
74	L4	-	L2/1	55					
75	L2/1	-	L7/1	115					
76	L4	-	L5		55				
77	L5	-	L6		95				
78	L6	-	L6/1		30				
79	L6/1	-	L6/2		30				
80	L6/1	-	L8/1		70				
81	L8	-	L7		45				
82	L7	-	L7/1		60				
83	L7/1	-	L7/2		85				
84	L7	-	L8		25				

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON, (HARYANA).

S. No.	NAME OF LINE	Size-wise Length (in M)					
		100 mm Dia.	150mm Dia.	200 mm Dia.	250 mm Dia.	300 mm Dia.	Total
85	L8 - L8/2		150				
86	L1 - L9		80				
87	L9 - L10		95				
88	L - M					15	
89	M - M1	50					
90	M1 - M2	60					
91	M2 - M3	60					
92	M2 - M4	40					
93	M4 - M5	55					
94	M1 - M6	55					
95	M6 - M5	100					
96	M - N					340	
97	N - N1	65					
98	N1 - N2	40					
99	N - N3	75					
100	N3 - N4	110					
101	N3 - N5	25					
102	N1 - P1	65					
103	N - P				85		
104	P - P1	65					
105	P1 - P2	100					
106	P - P3	175					
107	P - Q			60			
108	Q - Q1	170					
109	Q - Q2	110					
110	Q - R			60			
111	R - R1	20					
112	R - R2	45					
		4525	2550	330	140	1725	9270

G INTERNAL DEVELOPMENT WORKS IN THE 100.48125
TTED COLONY "THE WESTERLIES" IN SECTOR-108,
GURGAON, (HARYANA).

	Size-wise Length (in M)				
100 mm Dia.	150mm Dia.	200 mm Dia.	250 mm Dia.	300 mm Dia.	Total
RISING MAINS FROM TWs TO UGT					
10	0	0	0	0	0
40	0	0	0	0	0
0	615	0	0	0	0
60	0	0	0	0	0
0	535	0	0	0	0
90	0	0	0	0	0
0	305	0	0	0	0
0	460	0	0	0	0
0	0	20	0	0	0
20	0	0	0	0	0
0	0	20	0	0	0
0	0	45	0	0	0
20	1915	85	0	0	2220

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON, (HARYANA).

S. No.	NAME OF LINE	Size-wise Length (in M)					
		100 mm Dia.	150mm Dia.	200 mm Dia.	250 mm Dia.	300 mm Dia.	Total
	RISING MAINS FROM TWs TO UGT						
1	TW5 - A	10	0	0	0	0	0
2	A-B	40	0	0	0	0	0
3	B-C	0	615	0	0	0	0
4	TW4 - C	60	0	0	0	0	0
5	C - D	0	535	0	0	0	0
6	TW 3-D	90	0	0	0	0	0
7	D - E	0	305	0	0	0	0
9	TW 2-E	0	460	0	0	0	0
10	E - F	0	0	20	0	0	0
11	TW 1-F	20	0	0	0	0	0
12	F-G	0	0	20	0	0	0
13	G-UGT	0	0	45	0	0	0
SUB TOTALS *(Size-*		**220**	**1915**	**85**	**0**	**0**	**2220**
	TOTAL						

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THEWESTERLIES" IN SECTOR-108, GURGAON, (HARYANA).

MATERIAL STATEMENT OF SEWERAGE SCHEME									
S.	Name of Sewer Line			SIZES OF SWP SEWER LINES (i/d)					RCC NP-3
				200 mm		250 mm	300 mm	400 mm	600 mm
				Depth 0 - 2 M BGL	Depth 2 - 4 M BGL				
				Lengths of					
1	R	-	Q	60					
2	Q2	-	Q	100					
3	Q1	-	Q	170					
4	Q	-	P	55					
5	P2	-	P	160					
6	P1	-	P	160					
7	P	-	N			90			
8	N3	-	N2	105					
9	N2	-	N	60					
10	N1/2	-	N1	85					
11	N1/1	-	N1	55					
12	N1	-	N	65					
13	N	-	M					350	
14	M6	-	M5	95					
15	M5	-	M1	55					
16	M4	-	M3	50					
17	M3	-	M2	45					
18	M2/1	-	M2	70					
19	M2	-	M1	60					
20	M1	-	M	50					
21	M	-	L					20	
22	L6	-	L1				175		
23	L5/1	-	L5				160		
24	L5	-	L4				70		
25	L4/3	-	L4/1	60					
26	L4/2	-	L4/1	35					
27	L4/1	-	L4			30			
28	L4	-	L3				95		
29	L3	-	L2				50		
30	L2/2	-	L2/1	95					
31	L2/1	-	L2				170		
32	L2	-	L1				120		
33	L1/3	-	L1/1	90					
34	L1/2	-	L1/1	65					
35	L1/1	-	L1	75					
36	L1	-	L				80		
37	L	-	K					270	
38	K1	-	K	205					
39	K	-	J					95	
40	J7	-	J6	20					
41	J6/1	-	J6	140					
42	J6	-	J5	55					
43	J5/2	-	J5/1	60					
44	J5/1	-	J5	65					
45	J5	-	J			250			
46	J4	-	J3	105					
47	J3/3	-	J3/1	40					
48	J3/2	-	J3/1	25					
49	J3/1	-	J3	85					
50	J3	-	J2	130					
51	J2/1	-	J2			170			
52	J2	-	J1			10			
53	J1/1	-	J1	75					

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THEWESTERLIES" IN SECTOR-108, GURGAON, (HARYANA).

MATERIAL STATEMENT OF SEWERAGE SCHEME

S.	Name of Sewer Line			SIZES OF SWP SEWER LINES (i/d)					RCC NP-3
				200 mm		250 mm	300 mm	400 mm	600 mm
				Depth 0 - 2 M BGL	Depth 2 - 4 M BGL				
				Lengths of					
54	J1	-	J			55			
55	J	-	H						225
56	H1	-	H	75					
57	H	-	G						60
58	G2	-	G1	55					
59	G1	-	G	60					
60	G	-	F						320.00
61	F9	-	F8	45					
62	F8	-	F7	75					
63	F7	-	F6	40					
64	F6	-	F5		45				
65	F5/1	-	F5	15					
66	F5	-	F4		45				
67	F4	-	F3		30				
68	F3	-	F2		115				
69	F2/1	-	F2	75					
70	F2	-	F1			30			
71	F1/2	-	F1	70					
72	F1/1	-	F1	75					
73	F1	-	F			95			
74	F	-	B						90
75	E2/5	-	E2/4	55					
76	E2/4	-	E2/3	25					
77	E2/3	-	E2/1	85					
78	E2/2	-	E2/1	105					
79	E2/1	-	E2	90					
80	E3	-	E2	70					
81	E2	-	E1	65					
82	E1/3	-	E1/1	125					
83	E1/2	-	E1/1	25					
84	E1/1	-	E1	130					
85	E1	-	E	80					
86	E/1	-	E	95					
87	E	-	D		200				
88	D3	-	D2	60					
89	D2	-	D1	90					
90	D1	-	D	130					
91	D	-	C		10				
92	C3	-	C2	70					
93	C2	-	C1	70					
94	C1/3	-	C1/1	30					
95	C1/2	-	C1/1	100					
96	C1/1	-	C1	80					
97	C1	-	C	45					
98	C	-	B		200				
99	B	-	A						105
100	A1	-	A	55					
101	A	-	STP						30
				5190	645	730	920	735	830
				9050					

MATERIAL STATEMENT

TREATED EFFLUENT DISTRIBUTION SYSTEM

S. No.	NAME OF LINE	Size-wise Length			
		80 mm Dia.	100 mm Dia.	150mm Dia.	200 mm Dia.
1	STP - 1	0	0	0	25
2	1 - 2	40	0	0	0
3	1 - 3	0	0	0	100
4	3 - 4	0	205	0	0
5	4 - 5	30	0	0	0
6	5 - 6	85	0	0	0
7	6 - 7	30	0	0	0
8	6 - 8	75	0	0	0
9	8 - 9	30	0	0	0
10	5 - 10	60	0	0	0
11	10 - 8	85	0	0	0
12	4 - 11	0	0	20	0
13	11 - 12	125	0	0	0
14	12 - 13	110	0	0	0
15	13 - 14	70	0	0	0
16	11 - 15	0	215	0	0
17	15 - 16	105	0	0	0
18	15 - 17	0	80	0	0
19	17 - 18	130	0	0	0
20	18 - 19	35	0	0	0
21	18 - 27	135	0	0	0
22	17 - 20	0	55	0	0
23	20 - 21	80	0	0	0
24	20 - 22	0	85	0	0
25	22 - 23	95	0	0	0
26	23 - 24	35	0	0	0
27	23 - 25	25	0	0	0
28	25 - 26	60	0	0	0
29	22 - 27	100	0	0	0
30	3 - 28	0	0	0	90
31	28 - 29	0	0	0	310
32	29 - 30	60	0	0	0
33	30 - 31	60	0	0	0
34	29 - 32	0	0	0	65
35	32 - 33	80	0	0	0
36	32 - 34	0	0	0	220
37	34 - 35	0	60	0	0
38	35 - 36	80	0	0	0
39	35 - 37	0	10	0	0
40	37 - 38	170	0	0	0
41	37 - 39	120	0	0	0
42	39 - 40	120	0	0	0
43	39 - 41	100	0	0	0

MATERIAL STATEMENT

TREATED EFFLUENT DISTRIBUTION SYSTEM

S. No.	NAME OF LINE	Size-wise Length			
		80 mm Dia.	100 mm Dia.	150mm Dia.	200 mm Dia.
44	41 - 42	20	0	0	0
45	41 - 43	40	0	0	0
46	34 - 44	0	245	0	0
47	44 - 45	65	0	0	0
48	45 - 46	60	0	0	0
49	44 - 47	60	0	0	0
50	47 - 48	20	0	0	0
51	47 - 49	140	0	0	0
52	34 - 50	0	0	0	95
53	50 - 51	160	0	0	0
54	50 - 52	0	0	0	260
55	52 - 53	0	80	0	0
56	53 - 54	95	0	0	0
57	54 - 55	90	0	0	0
58	53 - 56	65	0	0	0
59	56 - 57	95	0	0	0
60	56 - 58	70	0	0	0
61	53 - 59	0	110	0	0
62	59 - 58	55	0	0	0
63	58 - 70	95	0	0	0
64	70 - 68	20	0	0	0
65	59 - 60	50	0	0	0
66	60 - 61	90	0	0	0
67	61 - 62	35	0	0	0
68	62 - 63	35	0	0	0
69	62 - 66	75	0	0	0
70	61 - 64	45	0	0	0
71	64 - 65	30	0	0	0
72	65 - 66	35	0	0	0
73	66 - 67	125	0	0	0
74	64 - 68	45	0	0	0
75	68 - 69	80	0	0	0
76	52 - 71	0	0	20	0
77	71 - 72	50	0	0	0
78	72 - 73	60	0	0	0
79	73 - 74	100	0	0	0
80	72 - 75	45	0	0	0
81	75 - 76	25	0	0	0
82	76 - 74	55	0	0	0
83	75 - 77	40	0	0	0
84	71 - 78	0	0	325	0
85	78 - 79	0	85	0	0
86	79 - 80	165	0	0	0

MATERIAL STATEMENT

TREATED EFFLUENT DISTRIBUTION SYSTEM

S. No.	NAME OF LINE	Size-wise Length			
		80 mm Dia.	100 mm Dia.	150mm Dia.	200 mm Dia.
87	79 - 81	155	0	0	0
88	79 - 82	0	55	0	0
89	82 - 83	100	0	0	0
90	82 - 84	175	0	0	0
91	82 - 85	60	0	0	0
92	85 - 86	35	0	0	0
93	76 - 87	65	0	0	0
94	87 - 88	30	0	0	0
95	87 - 89	100	0	0	0
96	78 - 90	55	0	0	0
97	90 - 91	100	0	0	0
		5540	1285	365	1165
		8355			

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

MATERIAL STATEMENT OF SWD SCHEME

S. No.	Name of SWD Line			SIZES OF RCC NP -3 PIPES (i/d)				
				400 mm		600 mm	800 mm	1000 mm
				Depth 0 - 2 M BGL	Depth 2 - 4 M BGL			
1	Q9	-	Q8	95				
2	Q8	-	Q	80				
3	Q7/1	-	Q7	150				
4	Q7	-	Q6	75				
5	Q6/3	-	Q6/1	35				
6	Q6/2	-	Q6/1	60				
7	Q6/1	-	Q6	35				
8	Q6	-	Q5	90				
9	Q5	-	Q4	50				
10	Q4/2	-	Q4/1	90				
11	Q4/1	-	Q4	160				
12	Q4	-	Q			115		
13	Q3	-	Q1	85				
14	Q2	-	Q1	60				
15	Q1	-	Q	70				
16	Q	-	P			80		
17	P	-	N			265		
18	N2	-	N	190				
19	N1	-	N	40				
20	N	-	M			95		
21	M11	-	M10	60				
22	M10	-	M8	70				
23	M9	-	M8	70				
24	M8	-	M	230				
25	M7	-	M6	40				
26	M6	-	M4	80				
27	M5	-	M4	105				
28	M4	-	M1	130				
29	M3	-	M1	300				
30	M2	-	M1	170				
31	M1	-	M			70		
32	M	-	L				210	
33	L1	-	L	80				
34	L	-	K				70	
35	K2	-	K1	55				
36	K1	-	K	55				
37	K	-	J				310	

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

MATERIAL STATEMENT OF SWD SCHEME

S. No.	Name of SWD Line			SIZES OF RCC NP -3 PIPES (i/d)				
				400 mm		600 mm	800 mm	1000 mm
				Depth 0 - 2 M BGL	Depth 2 - 4 M BGL			
38	J9	-	J8	40				
39	J8	-	J7	75				
40	J7	-	J6	45				
41	J6	-	J5	40				
42	J5	-	J4	45				
43	J4	-	J3	35				
44	J3	-	J2	115				
45	J2/1	-	J2	70				
46	J2	-	J1	35				
47	J1/2	-	J1	60				
48	J1/1	-	J1	75				
49	J1	-	J	85				
50	J	-	H					95
51	H1	-	H	150				
52	H	-	G					190
53	G4	-	G2	100				
54	G3	-	G2	20				
55	G2	-	G1	85				
56	G1/2	-	G1/1	70				
57	G1/1	-	G1	70				
58	G1	-	G	40				
59	G	-	F					15
60	F3	-	F2	60				
61	F2	-	F1	90				
62	F1	-	F	130				
63	F	-	E					200
64	E1	-	E	100				
65	E	-	D					135
66	D1	-	D	70				
67	D	-	C					90
68	C3	-	C2	55				
69	C2	-	C1	30				
70	C1	-	C	90				
71	C	-	B					65
72	B2	-	B1	125				
73	B1	-	B	135				
74	B	-	A					45

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY "THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

MATERIAL STATEMENT OF SWD SCHEME								
S. No.	Name of SWD Line			SIZES OF RCC NP -3 PIPES *(i/d)*				
				400 mm		600 mm	800 mm	1000 mm
				Depth 0 - 2 M BGL	Depth 2 - 4 M BGL			
75	R1	-	R	90				
	R	-	S	60				
77	S3	-	S1	65				
78	S2	-	S1	20				
79	S1	-	S	105				
80	S	-	T			50		
81	T	-	U			340		
82	X2	-	X	25				
83	X1	-	X	40				
84	X	-	W	55				
85	W2	-	W	170				
86	W1	-	W	100				
87	W	-	V	55				
88	V2	-	V	160				
89	V1	-	V	165				
90	V	-	U	85				
91	U2	-	U1	105				
92	U1	-	U	55				
93	U	-	Y				65	
94	Y	-	Z				115	
				6370	0	1015	770	835
				8990				

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA)

ROAD LENGTHS

S. No.	NAME OF ROAD			LENGTH OF ROAD		
				12 M	15 M	24 M
1	A	-	A1	0	0	170
2	A1	-	A2	0	0	50
3	A2	-	A3	0	0	65
4	A3	-	A4	0	0	105
5	A4	-	A5	0	0	50
6	A5	-	A6	0	0	45
7	A6	-	A7	0	0	90
8	A7	-	A8	0	0	85
9	A8	-	A9	0	0	35
10	A9	-	A10	0	0	100
11	A10	-	A11	0	0	300
12	A11	-	A12	0	0	140
13	A12	-	A13	0	0	110
14	A12	-	A14	0	0	200
15	A14	-	A15	0	0	125
16	A15	-	A16	0	0	95
17	A17	-	A18	0	0	60
18	A18	-	A19	0	0	45
19	A20	-	A21	0	0	105
20	A6	-	A19	0	75	0
21	A7	-	B7	0	50	0
22	A14	-	B1	0	190	0
23	B1	-	B2	0	80	0
24	B2	-	B3	0	55	0
25	B3	-	B4	0	85	0
26	B3	-	B5	0	90	0
27	B5	-	B6	0	100	0
28	A21	-	C1	0	30	0
34	C1	-	C4	0	65	0
29	C4	-	C4/1	0	225	0
30	C4/1	-	A19	0	100	0
31	F1	-	A13/1	0	290	0
31	C1	-	C2	80	0	0
32	C2	-	C3	100	0	0
33	C2	-	C5	60	0	0
35	C4	-	C5	85	0	0
36	C5	-	C6	170	0	0
37	C5	-	C7	55	0	0
38	C7	-	C8	175	0	0
39	C7	-	C9	105	0	0
40	C7	-	C10	60	0	0
41	C10	-	C11	30	0	0
42	C10	-	C12	35	0	0
43	C4	-	C13	40	0	0
44	C13	-	C14	30	0	0
45	C13	-	C15	115	0	0
46	A18	-	D	90	0	0

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA)

ROAD LENGTHS

S. No.	NAME OF ROAD			LENGTH OF ROAD		
				12 M	15 M	24 M
47	D	-	D1	35	0	0
48	D	-	D2	45	0	0
49	D2	-	D3	20	0	0
50	D2	-	A17	100	0	0
51	A19	-	E	240	0	0
52	E	-	E1	60	0	0
53	E	-	E2	225	0	0
54	E	-	E4	100	0	0
55	E4	-	E12	55	0	0
56	E4	-	E3	200	0	0
57	A18	-	E5	70	0	0
58	E4	-	A18	295	0	0
59	E5	-	E6	45	0	0
60	E6	-	E7	25	0	0
61	E6	-	E8	125	0	0
62	E8	-	E9	20	0	0
63	E9	-	E10	15	0	0
64	E10	-	E11	30	0	0
65	E11	-	E12	70	0	0
66	E12	-	E13	185	0	0
67	E12	-	E14	170	0	0
68	E14	-	E15	45	0	0
69	E15	-	E16	25	0	0
70	E15	-	E17	35	0	0
71	E14	-	E18	70	0	0
72	E3	-	F	85	0	0
73	E3	-	F1	55	0	0
74	F1	-	F2	135	0	0
75	F2	-	F3	20	0	0
76	F2	-	F4	50	0	0
78	A13	-	G	65	0	0
79	G	0	G1	70	0	0
80	G	0	G2	55	0	0
81	G	0	G3	30	0	0
82	G3	-	G4	70	0	0
83	G3	-	G5	120	0	0
84	G5	-	G6	40	0	0
85	G6	-	G7	40	0	0
86	G7	-	G8	20	0	0
87	G7	-	G9	35	0	0
88	G9	-	G10	30	0	0
89	G10	-	G11	20	0	0
90	G11	-	G12	60	0	0
91	G12	-	G13	50	0	0
92	A14	-	H	20	0	0
93	H	-	H1	65	0	0
94	H1	-	H2	50	0	0
95	H	-	H3	70	0	0

C.E. No. 2665
Dated 26/2/14
Annexure-

SUB:- Approval of Service Plan / Estimate for Residential Plotted Colony for an area of 100.48125 acres in Sector-108, Village Dharmpur, Gurgaon (Under License No. 57 of 2013 dated 11.07.2013) (M/S. Experion Developers Pvt.Ltd.)

Technical note and comments:-

1. All detailed working drawings would have to be prepared by the colonizer for Integrating the internal services proposals with the master proposals of town.
2. The correctness of the levels will be the sole, responsibility of the colonizer for the integration of internal proposals, with the master proposals, of town and will be got confirmed before execution.
3. The material to be used shall the same specifications as are being adopted by HUDA and further shall also confirm to such directions, as issued by Chief Engineer, HUDA from time to time.
4. The work shall be carried out according to Haryana PWD specification or such specifications as are being followed by HUDA. Further it shall also confirm to such other directions, as are issued by Chief Engineer, HUDA from time to time.
5. The colonizer will be fully responsible to meet the demand of water supply and allied services till such time these are made available by State Government/ HUDA. All link connections with the State Government/ HUDA system and services will be done by the colonizer. If necessary extra tube-wells shall also be installed to meet extra demand of water beyond the provision according to EDC deposited.
6. Structural design & drawings of all the structures, such as pump chamber, boosting chamber, RCC OHSR underground tanks quarters, manholes chamber, sections of RCC pipes sewer and SW pipes, sewer, ventilating shafts for sewerage and Masonry Ventilation Chamber for Chamber for storm water drainage, temporary disposal/ arrangement etc. will be as per relevant I.S codes and PWD specifications; colonizer himself will be responsible for structural stability of all structures.
7. Potability of water will be checked and confirmed and the tube-wells will be put into operation after getting chemical analysis of water tested.

C.E. No. 2665
Dated:- 26/2/14

8. Only C.I/D.I pipes will be used in water supply and flushing system, UPVC/HDPE pipe for irrigation purposes.

9. A minimum 100 i/d C.I/D.I, 200mm i/d SW and 400mm id RCC NP-3 pipes will be used for water supply, sewerage and storm water drainage respectively.

10. Standard X-section for S.W. pipes sewer, RCC pipes sewer etc. will be followed as are being adopted in Haryana Public Health Engineering Deptt.or HUDA.

11. The X-section, width of roads, will be followed as approved by the Chief Town Planner, Haryana, Chandigarh. The kerbs and channels will also be provided as per approved X-section and specifications.

12. The specifications for various roads will be followed as per IRC/MORTH specifications.

13. The wiring system of street lighting and specifications of street lighting fixture will be as per relevant standards.

14. This shall confirm to such other conditions as are incorporated in the approved estimate and the letter of approval.

For Executive Engineer (W),
Chief Administrator, HUDA,
Panchkula
26/2/14

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA)

ROAD LENGTHS

S. No.	NAME OF ROAD			LENGTH OF ROAD		
				12 M	15 M	24 M
96	H3	-	H4	30	0	0
97	H3	-	H5	60	0	0
98	H5	-	H6	50	0	0
99	H1	-	H5	75	0	0
100	A15	-	K	115	0	0
101	K	-	K1	60	0	0
102	B1	-	J1	105	0	0
103	B2	-	J2	120	0	0
104	J2	-	J3	30	0	0
105	J3	-	J4	135	0	0
106	B5	-	J5	75	0	0
107	J5	-	J6	20	0	0
108	J5	-	J7	30	0	0
109	J7	-	J8	55	0	0
110	A6	-	L1	90	0	0
111	L1	-	B7	70	0	0
112	B7	-	A9	65	0	0
113	L1	-	L2	70	0	0
114	L2	-	L3	95	0	0
115	L3	-	L4	20	0	0
116	L4	-	L5	40	0	0
117	L4	-	L8	55	0	0
118	L3	-	L6	45	0	0
119	L6	-	L7	35	0	0
120	L7	-	L8	20	0	0
121	L7	-	L9	155	0	0
122	L6	-	A9	40	0	0
TOTAL (Width-wise)				6550	1435	1975
DEDUCT: ROADS OUTSIDE LICENSED AREA						
1	A	-	A1	0	0	170
3	A2	-	A3	0	0	65
5	A4	-	A5	0	0	50
6	A5	-	A6	0	0	45
9	A8	-	A9	0	0	35
11	A10	-	A11	0	0	300
16	A15	-	A16	0	0	95
62	E8	-	E9	20	0	0
64	E10	-	E11	30	0	0
94	H1	-	H2	50	0	0
TOTAL-Outside Lic. Area (Width-wise)				100	0	760
NET LENGTH WITHIN LICENSED AREA (Width-wise)				6450	1435	1215
GRAND TOTAL				9100		

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN THE 100.48125 ACRES RESIDENTIAL PLOTTED COLONY " THE WESTERLIES" IN SECTOR-108, GURGAON (HARYANA).

DESIGN OF RISING MAINS: TWs to UGT

S. No.	Name of R. Main	Disch. of/from TW		Daily Working Hours of TW	Total Daily Disharge		Design Discharge @ 1.5 Times of Daily Discharge		Length of R. Main (in M)	Size of R/Main (i/d in mm)	Loss of Head Per 1000 M	Total Loss of Head
		LPM	GPH		KLD	GPD	KLD	GPD				
1	TW5 - A	300	3965	16	288	63436	432	95154	10	100	8.58 M	0.09 M
2	A-B	300	3965	16	288	63436	432	95154	40	100	8.58 M	0.34 M
3	B-C	300	3965	16	288	63436	432	95154	615	150	1.19 M	0.73 M
4	TW4 - C	300	3965	16	288	63436	432	95154	60	100	8.58 M	0.51 M
5	C - D	600	7930	16	576	126872	864	190308	535	150	4.30 M	2.30 M
6	TW 3-D	300	3965	16	288	63436	432	95154	90	100	8.58 M	0.77 M
7	D - E	900	11894	16	864	190308	1296	285463	305	150	9.11 M	2.78 M
9	TW 2-E	300	3965	16	288	63436	432	95154	460	150	1.19 M	0.55 M
10	E - F	1200	15859	16	1152	253744	1728	380617	20	200	3.82 M	0.08 M
11	TW 1-F	300	3965	16	288	63436	432	95154	20	100	8.58 M	0.17 M
12	F-G	1500	19824	16	1440	317181	2160	475771	20	200	5.78 M	0.12 M
13	G-UGT	1500	19824	16	1440	317181	2160	475771	45	200	5.78 M	0.26 M

SUNBEAM

Certificate No.

TEST CERTIFICATE

Party Name : EXPERION DEVELOPERS PVT LTD
THE HEART SONG
SECTOR-108
GURGAON

Date : 19/10/2013

Job Order No. : 310-611-0632

Reference No. :

Date : 10.10.2013

Sample Particulars : SOIL SAMPLING POINT-ROAD ALIGNMENT

RESULTS

S.No.	Parameters	Observed	Protocol
1	Proctor Test (Heavy Compaction)		IS:2720 Pt-8
	i) Maximum Dry Density(M.D.D)	1.876 gm/cc	
	ii) Optimum Moisture Content (O.M.C)	12.0%	
2	CBR Value(Dynamic Compaction) 96 hrs Soaked)		IS:2720 Pt-16
	i) C.B.R Value (Avg.)	18.2%	

*****End of Result*****

FRESH WATER SUPPLY

TERMINAL HEAD STATEMENT *(Value of C = 100)*

S. No.	Name of Pipe Link			No. of Plots			Popu-lation @ 13.5 persons per plot.	Require-ment @ 172.5 LPCD (in KL)	Requirement from Commercial, U.D. & Community Buildings (KLD)			Total Require-ment (in KL)	Peak require-ment @ 4 Times (in KLD)	Total Dis-charge (in Gallons)	Propo-sed size of pipe line (in mm)	Velo city of Flow "V" in MPS	Lengt h of Pipe line (in M)	Loss of Head Per 1000 M	Total Loss of Head (in M)	Hydraulic level (in M)		Form-ation Level at Lower End (in M)	Termin al Head Avail-able (in M)	Remarks		
	Jn. Nodes			Self	Branch	Total			Self	Branch	Total	(7 + 10)								Upper End	Lower End					
1	2			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1	R	-	A	0	770	770	10395	1793.1	0.00	472.19	472.2	2265.3	9061.3	1995881	300	1.48	50	11.41	0.57	238.13	237.56	212.13	25.43	FFL at WW =	212.13	M
2	A	-	A1	0	14	14	189	32.6	0.00	0.00	0.0	32.6	130.4	28725	100	0.19	75	0.93	0.07	237.56	237.49	212.13	25.36			
3	A1	-	A2	0	14	14	189	32.6	0.00	0.00	0.0	32.6	130.4	28725	100	0.19	105	0.93	0.10	237.49	237.39	212.17	25.22	Height of OHSR (M) =	26.00	M
4	A2	-	A3	14	0	14	189	32.6	0.00	0.00	0.0	32.6	130.4	28725	100	0.19	65	0.93	0.06	237.39	237.33	212.19	25.14			
5	A	-	B	0	756	756	10206	1760.5	0.00	472.19	472.2	2232.7	8930.9	1967156	300	1.46	50	11.11	0.56	237.56	237.00	211.85	25.15	Hydrauli c Level at OHSR	238.13	M
6	B	-	B1	0	61	61	824	142.1	0.00	50.31	50.3	192.5	769.8	169562	200	0.28	210	0.85	0.18	237.00	236.82	211.88	24.94			
7	B1	-	B1/1	7	0	7	95	16.4	0.00	0.00	0.0	16.4	65.6	14438	100	0.10	105	0.26	0.03	236.82	236.80	211.92	24.88			
8	B1	-	B2	0	54	54	729	125.8	0.00	50.31	50.3	176.1	704.3	155123	150	0.46	85	2.94	0.25	236.82	236.57	211.91	24.66			
9	B2	-	B2/1	17	17	34	459	79.2	0.00	0.00	0.0	79.2	316.7	69760	100	0.47	135	4.83	0.65	236.57	235.92	211.95	23.97			
10	B2/1	-	B2/2	2	0	2	27	4.7	0.00	0.00	0.0	4.7	18.6	4104	100	0.03	30	0.03	0.00	236.57	236.57	212.05	24.52			
11	B2/1	-	B2/3	15	0	15	203	35.0	0.00	0.00	0.0	35.0	140.1	30852	100	0.21	135	1.07	0.14	236.57	236.43	212.50	23.93			
12	B2	-	B3	0	20	20	270	46.6	0.00	50.31	50.3	96.9	387.6	85363	150	0.25	65	0.97	0.06	236.57	236.51	211.93	24.58			
13	B3	-	B3/1	0	15	15	203	35.0	0.00	50.31	50.3	85.3	341.3	75181	150	0.22	85	0.77	0.07	236.51	236.45	212.30	24.15			
14	B3/1	-	B3/2	6	9	15	203	35.0	0.00	50.31	50.3	85.3	341.3	75181	100	0.50	85	5.54	0.47	236.45	235.97	212.33	23.64			
15	B3/2	-	B3/3	1	0	1	14	2.4	50.31	0.00	50.3	52.7	210.9	46456	100	0.31	25	2.27	0.06	235.97	235.92	212.34	23.58			
16	B3/2	-	B3/4	2	6	8	108	18.6	0.00	0.00	0.0	18.6	74.5	16414	100	0.11	25	0.33	0.01	235.97	235.97	212.34	23.63			
17	B3/4	-	B3/5	6	0	6	81	14.0	0.00	0.00	0.0	14.0	55.9	12311	100	0.08	60	0.19	0.01	235.97	235.95	212.36	23.59			
18	B3/1	-	B2/3	0	0	0	0	0.0	0.00	0.00	0.0	0.0	0.0	0	100	0.00	75	0.00	0.00	236.45	236.45	212.50	23.95			
19	B3	-	B4	5	0	5	68	11.7	0.00	0.00	0.0	11.7	46.9	10335	100	0.07	70	0.14	0.01	236.51	236.50	211.96	24.54			
20	B	-	C	0	695	695	9383	1618.6	0.00	421.88	421.9	2040.4	8161.8	1797747	300	1.34	15	9.40	0.14	237.00	236.86	211.82	25.04			
21	C	-	C1	0	33	33	446	76.9	0.00	0.00	0.0	76.9	307.7	67784	100	0.45	30	4.58	0.14	236.86	236.73	211.83	24.90			
22	C1	-	C2	6	27	33	446	76.9	0.00	0.00	0.0	76.9	307.7	67784	100	0.45	70	4.58	0.32	236.73	236.41	211.85	24.56			
23	C1	-	C1/1	12	7	19	257	44.3	0.00	0.00	0.0	44.3	177.3	39059	100	0.26	85	1.65	0.14	236.73	236.59	211.85	24.74			
24	C1/1	-	C1/2	2	5	7	95	16.4	0.00	0.00	0.0	16.4	65.6	14438	100	0.10	25	0.26	0.01	236.59	236.58	211.86	24.72			
25	C1/1	-	C2/1	5	0	5	68	11.7	0.00	0.00	0.0	11.7	46.9	10335	100	0.07	75	0.14	0.01	236.59	236.58	211.87	24.71			
26	C2	-	C2/1	5	3	8	108	18.6	0.00	0.00	0.0	18.6	74.5	16414	100	0.11	85	0.33	0.03	236.41	236.38	211.87	24.51			
27	C2/1	-	C2/2	3	0	3	41	7.1	0.00	0.00	0.0	7.1	28.3	6231	100	0.04	35	0.06	0.00	236.38	236.38	211.89	24.49			
28	C	-	D	0	662	662	8937	1541.6	10.00	411.88	421.9	1963.5	7854.0	1729963	300	1.29	205	8.75	1.79	236.86	235.07	211.32	23.75			
29	D	-	D1	8	0	8	108	18.6	0.00	0.00	0.0	18.6	74.5	16414	100	0.11	150	0.33	0.05	235.07	235.02	211.35	23.67			
30	D	-	E	0	654	654	8829	1523.0	50.00	361.88	411.9	1934.9	7739.5	1704738	300	1.27	90	8.52	0.77	235.07	234.30	211.34	22.96			
31	E	-	E1	6	151	157	2120	365.7	0.00	0.00	0.0	365.7	1462.8	322203	150	0.96	90	11.39	1.03	234.30	233.28	211.36	21.92			
32	E1	-	E1/1	13	0	13	176	30.4	0.00	0.00	0.0	30.4	121.4	26749	100	0.18	75	0.82	0.06	233.28	233.22	211.39	21.83			

FRESH WATER SUPPLY

TERMINAL HEAD STATEMENT *(Value of C = 100)*

S. No.	Name of Pipe Link Jn. Nodes			No. of Plots Self	Branch	Total	Popu-lation @ 13.5 persons per plot.	Require-ment @ 172.5 LPCD (in KL)	Requirement from Commercial, U.D. & Community Buildings (KLD) Self	Branch	Total	Total Require-ment (in KL) (7 + 10)	Peak require-ment @ 4 Times (in KLD)	Total Dis-charge (in Gallons)	Propo-sed size of pipe line (in mm)	Velo city of Flow "V" in MPS	Lengt h of Pipe line (in M)	Loss of Head Per 1000 M	Total Loss of Head (in M)	Hydraulic level (in M) Upper End	Lower End	Form-ation Level at Lower End (in M)	Termin al Head Avail-able (in M)	Remarks
1	2			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
33	E1	-	E1/2	20	0	20	270	46.6	0.00	0.00	0.0	46.6	186.3	41035	100	0.27	70	1.81	0.13	233.22	233.09	211.38	21.71	
34	E1	-	E2	0	118	118	1593	274.8	0.00	0.00	0.0	274.8	1099.2	242108	150	0.72	35	6.71	0.23	233.22	232.98	211.37	21.61	
35	E2	-	E2/1	28	0	28	378	65.2	0.00	0.00	0.0	65.2	260.8	57449	100	0.38	75	3.37	0.25	232.98	232.73	211.40	21.33	
36	E2	-	E3	39	51	90	1215	209.6	0.00	0.00	0.0	209.6	838.4	184659	150	0.55	115	4.06	0.47	232.98	232.51	211.41	21.10	
37	E3	-	E4	0	51	51	689	118.9	0.00	0.00	0.0	118.9	475.4	104716	150	0.31	35	1.42	0.05	232.51	232.46	211.43	21.03	
38	E4	-	E5	6	45	51	689	118.9	0.00	0.00	0.0	118.9	475.4	104716	100	0.70	40	10.24	0.41	232.46	232.05	211.44	20.61	
39	E5	-	E5/1	3	0	3	41	7.1	0.00	0.00	0.0	7.1	28.3	6231	100	0.04	15	0.06	0.00	232.05	232.05	211.45	20.60	
40	E5	-	E6	13	29	42	567	97.8	0.00	0.00	0.0	97.8	391.2	86174	100	0.58	50	7.14	0.36	232.05	231.70	211.45	20.25	
41	E6	-	E7	0	29	29	392	67.6	0.00	0.00	0.0	67.6	270.5	59577	100	0.40	35	3.60	0.13	231.70	231.57	211.46	20.11	
42	E7	-	E7/1	3	0	3	41	7.1	0.00	0.00	0.0	7.1	28.3	6231	100	0.04	15	0.06	0.00	231.57	231.57	211.47	20.10	
43	E7	-	E8	8	18	26	351	60.5	0.00	0.00	0.0	60.5	242.2	53346	100	0.36	65	2.94	0.19	231.57	231.38	211.49	19.89	
44	E8	-	E9	18	0	18	243	41.9	0.00	0.00	0.0	41.9	167.7	36932	100	0.25	40	1.49	0.06	231.38	231.32	211.51	19.81	
45	E	-	F	21	476	497	6710	1157.5	9.50	352.38	361.9	1519.4	6077.4	1338634	300	0.99	310	5.44	1.69	234.30	232.61	211.37	21.24	
46	F	-	F1	0	5	5	68	11.7	0.00	0.00	0.0	11.7	46.9	10335	100	0.07	60	0.14	0.01	232.61	232.61	211.41	21.20	
47	F1	-	F2	5	0	5	68	11.7	0.00	0.00	0.0	11.7	46.9	10335	100	0.07	55	0.14	0.01	232.61	232.61	211.43	21.18	
48	F	-	G	0	471	471	6359	1096.9	0.00	352.38	352.4	1449.3	5797.2	1276919	300	0.95	70	4.99	0.35	232.61	232.27	211.39	20.88	
49	G	-	G1	7	0	7	95	16.4	0.00	0.00	0.0	16.4	65.6	14438	100	0.10	75	0.26	0.02	232.27	232.25	211.41	20.84	
50	G	-	H	25	439	464	6264	1080.5	3.25	349.13	352.4	1432.9	5731.7	1262480	300	0.94	220	4.88	1.07	232.27	231.19	211.41	19.78	
51	H	-	H1	34	41	75	1013	174.7	0.00	1.00	1.0	175.7	703.0	154839	150	0.46	235	2.93	0.69	231.19	230.50	211.47	19.03	
52	H1	-	H1/1	4	29	33	446	76.9	0.00	1.00	1.0	77.9	311.7	68665	150	0.20	50	0.65	0.03	230.50	230.47	211.49	18.98	
53	H1/1	-	H1/2	3	0	3	41	7.1	0.00	0.00	0.0	7.1	28.3	6231	100	0.04	20	0.06	0.00	230.47	230.47	211.50	18.97	
54	H1/1	-	H1/3	26	0	26	351	60.5	1.00	0.00	1.0	61.5	246.2	54227	100	0.36	140	3.03	0.42	230.47	230.04	211.45	18.59	
55	H1	-	H2	4	4	8	108	18.6	0.00	0.00	0.0	18.6	74.5	16414	100	0.11	70	0.33	0.02	230.50	230.48	211.50	18.98	
56	H2	-	H3	4	0	4	54	9.3	0.00	0.00	0.0	9.3	37.3	8207	100	0.05	55	0.09	0.01	230.48	230.47	211.51	18.96	
57	H	-	J	0	79	79	1067	184.1	1.75	7.25	9.0	193.1	772.2	170095	250	0.18	55	0.29	0.02	231.19	231.17	211.41	19.76	
58	J	-	J1	6	0	6	81	14.0	7.25	0.00	7.3	21.2	84.9	18698	100	0.13	70	0.42	0.03	231.17	231.14	211.42	19.72	
59	J	-	J2	27	0	27	365	63.0	0.00	0.00	0.0	63.0	251.9	55474	150	0.16	170	0.44	0.07	231.17	231.10	211.46	19.64	
60	J	-	J3	0	46	46	621	107.1	0.00	0.00	0.0	107.1	428.5	94381	150	0.28	10	1.17	0.01	231.17	231.16	211.41	19.75	
61	J3	-	J4	20	26	46	621	107.1	0.00	0.00	0.0	107.1	428.5	94381	150	0.28	130	1.17	0.15	231.16	231.01	211.46	19.55	
62	J4	-	J5	13	0	13	176	30.4	0.00	0.00	0.0	30.4	121.4	26749	150	0.08	105	0.11	0.01	231.01	231.00	211.48	19.52	
63	J4	-	J6	8	5	13	176	30.4	0.00	0.00	0.0	30.4	121.4	26749	150	0.08	85	0.11	0.01	231.01	231.00	211.47	19.53	
64	J6	-	J7	2	0	2	27	4.7	0.00	0.00	0.0	4.7	18.6	4104	100	0.03	20	0.03	0.00	231.00	231.00	211.48	19.52	
65	J6	-	J8	3	0	3	41	7.1	0.00	0.00	0.0	7.1	28.3	6231	100	0.04	45	0.06	0.00	231.00	231.00	211.48	19.52	

FRESH WATER SUPPLY

TERMINAL HEAD STATEMENT *(Value of C = 100)*

S. No.	Name of Pipe Link Jn. Nodes			No. of Plots Self	Branch	Total	Population @ 13.5 persons per plot.	Requirement @ 172.5 LPCD (in KL)	Requirement from Commercial, U.D. & Community Buildings (KLD) Self	Branch	Total	Total Requirement (in KL) (7 + 10)	Peak requirement @ 4 Times (in KLD)	Total Discharge (in Gallons)	Proposed size of pipe line (in mm)	Velocity of Flow "V" in MPS	Length of Pipe line (in M)	Loss of Head Per 1000 M	Total Loss of Head (in M)	Hydraulic level (in M) Upper End	Lower End	Formation Level at Lower End (in M)	Terminal Head Available (in M)	Remarks
1	2			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
66	H	-	K	0	285	285	3848	663.8	0.00	339.13	339.1	1002.9	4011.6	883617	300	0.66	95	2.52	0.24	231.19	230.95	211.41	19.54	
67	K	-	K1	8	0	8	108	18.6	9.25	0.00	9.3	27.9	111.5	24564	150	0.07	235	0.10	0.02	231.00	230.98	211.48	19.50	
68	K	-	L	16	261	277	3740	645.2	0.00	329.88	329.9	975.0	3900.1	859053	300	0.64	265	2.39	0.63	230.95	230.32	211.49	18.83	
69	L	-	L1	0	93	93	1256	216.7	0.00	83.13	83.1	299.8	1199.1	264128	150	0.78	85	7.89	0.67	230.32	229.65	211.47	18.18	
70	L1	-	L2	5	13	18	243	41.9	0.00	8.25	8.3	50.2	200.7	44200	100	0.30	80	2.07	0.17	229.65	229.48	211.45	18.03	
71	L2	-	L2/1	8	5	13	176	30.4	0.00	8.25	8.3	38.6	154.4	34018	100	0.23	70	1.28	0.09	229.48	229.39	211.47	17.92	
72	L2	-	L3	5	0	5	68	11.7	8.25	0.00	8.3	20.0	79.9	17604	100	0.12	85	0.38	0.03	229.48	229.45	211.44	18.01	
73	L1	-	L4	12	58	70	945	163.0	0.00	14.88	14.9	177.9	711.6	156729	150	0.47	115	3.00	0.34	229.65	229.30	211.50	17.80	
74	L4	-	L2/1	6	7	13	176	30.4	0.00	0.00	0.0	30.4	121.4	26749	100	0.18	55	0.82	0.04	229.30	229.26	211.47	17.79	
75	L2/1	-	L7/1	7	0	7	95	16.4	0.00	0.00	0.0	16.4	65.6	14436	100	0.10	115	0.26	0.03	229.26	229.23	211.43	17.80	
76	L4	-	L5	0	45	45	608	104.9	0.00	14.88	14.9	119.8	479.0	105511	150	0.31	55	1.44	0.08	229.30	229.22	211.52	17.70	
77	L5	-	L6	9	36	45	608	104.9	0.00	14.88	14.9	119.8	479.0	105511	150	0.31	95	1.44	0.14	229.22	229.08	211.56	17.52	
78	L6	-	L6/1	2	7	9	122	21.0	0.00	0.00	0.0	21.0	84.2	18542	150	0.06	30	0.06	0.00	229.08	229.08	211.56	17.52	
79	L6/1	-	L6/2	3	0	3	41	7.1	0.00	0.00	0.0	7.1	28.3	6231	150	0.02	30	0.01	0.00	229.08	229.08	211.58	17.50	
80	L6/1	-	L8/1	4	0	4	54	9.3	0.00	0.00	0.0	9.3	37.3	8207	150	0.02	70	0.01	0.00	229.08	229.08	211.58	17.50	
81	L6	-	L7	4	23	27	365	63.0	0.00	14.88	14.9	77.8	311.4	68579	150	0.20	45	0.65	0.03	229.08	229.06	211.57	17.49	
82	L7	-	L7/1	0	3	3	41	7.1	0.00	14.88	14.9	21.9	87.8	19337	150	0.06	60	0.06	0.00	229.06	229.05	211.43	17.62	
83	L7/1	-	L7/2	3	0	3	41	7.1	14.88	0.00	14.9	21.9	87.8	19337	150	0.06	85	0.06	0.01	229.05	229.05	211.41	17.64	
84	L7	-	L8	0	20	20	270	46.6	0.00	0.00	0.0	46.6	186.3	41035	150	0.12	25	0.25	0.01	229.06	229.05	211.58	17.47	
85	L8	-	L8/2	20	0	20	270	46.6	0.00	0.00	0.0	46.6	186.3	41035	150	0.12	150	0.25	0.04	229.05	229.01	211.63	17.38	
86	L1	-	L9	0	5	5	68	11.7	0.00	60.00	60.0	71.7	286.9	63198	150	0.19	80	0.56	0.04	229.65	229.60	211.58	18.02	
87	L9	-	L10	5	0	5	68	11.7	60.00	0.00	60.0	71.7	286.9	63198	150	0.19	95	0.56	0.05	229.60	229.55	211.79	17.76	
88	L	-	M	0	168	168	2268	391.2	0.00	246.75	246.8	638.0	2551.9	562097	300	0.42	15	1.09	0.02	230.32	230.30	211.49	18.81	
89	M	-	M1	0	31	31	419	72.3	0.00	0.00	0.0	72.3	289.1	63681	100	0.43	50	4.08	0.20	230.30	230.10	211.50	18.60	
90	M1	-	M2	9	13	22	297	51.2	0.00	0.00	0.0	51.2	204.9	45139	100	0.30	60	2.16	0.13	230.10	229.97	211.53	18.44	
91	M2	-	M3	5	0	5	68	11.7	0.00	0.00	0.0	11.7	46.9	10335	100	0.07	60	0.14	0.01	229.97	229.96	211.54	18.42	
92	M2	-	M4	2	6	8	108	18.6	0.00	0.00	0.0	18.6	74.5	16414	100	0.11	40	0.33	0.01	229.97	229.95	211.53	18.42	
93	M4	-	M5	6	0	6	81	14.0	0.00	0.00	0.0	14.0	55.9	12311	100	0.08	55	0.19	0.01	229.95	229.94	211.55	18.39	
94	M1	-	M6	0	9	9	122	21.0	0.00	0.00	0.0	21.0	84.2	18542	100	0.12	55	0.41	0.02	230.10	230.07	211.51	18.56	
95	M6	-	M5	9	0	9	122	21.0	0.00	0.00	0.0	21.0	84.2	18542	100	0.12	100	0.41	0.04	230.07	230.03	211.55	18.48	
96	M	-	N	16	121	137	1850	319.1	0.00	246.75	246.8	565.9	2263.5	498568	300	0.37	340	0.87	0.30	230.30	230.00	211.32	18.68	
97	N	-	N1	0	10	10	135	23.3	50.00	43.75	93.8	117.0	468.2	103117	100	0.69	65	9.95	0.65	230.00	229.36	211.29	18.07	
98	N1	-	N2	0	0	0	0	0.0	43.75	0.00	43.8	43.8	175.0	38546	100	0.26	40	1.61	0.06	229.36	229.29	211.27	18.02	

FRESH WATER SUPPLY

TERMINAL HEAD STATEMENT *(Value of C = 100)*

S. No.	Name of Pipe Link Jn. Nodes	No. of Plots Self	Branch	Total	Popu-lation @ 13.5 persons per plot.	Require-ment @ 172.5 LPCD (in KL)	Requirement from Commercial, U.D. & Community Buildings (KLD) Self	Branch	Total	Total Require-ment (in KL) (7 + 10)	Peak require-ment @ 4 Times (in KLD)	Total Dis-charge (in Gallons)	Propo-sed size of pipe line (in mm)	Velo city of Flow "V" in MPS	Lengt h of Pipe line (in M)	Loss of Head Per 1000 M	Total Loss of Head (in M)	Hydraulic level (in M) Upper End	Lower End	Form-ation Level at Lower End (in M)	Termin al Head Avail-able (in M)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
99	N - N3	5	8	13	176	30.4	0.00	1.00	1.0	31.4	125.4	27630	100	0.18	75	0.67	0.07	230.00	229.94	211.33	18.61	
100	N3 - N4	7	0	7	95	16.4	1.00	0.00	1.0	17.4	69.6	15319	100	0.10	110	0.29	0.03	229.94	229.91	211.37	18.54	
101	N3 - N5	1	0	1	14	2.4	0.00	0.00	0.0	2.4	9.7	2128	100	0.01	25	0.01	0.00	229.94	229.94	211.34	18.60	
102	N1 - P1	10	0	10	135	23.3	0.00	0.00	0.0	23.3	93.2	20518	100	0.14	65	0.50	0.03	229.36	229.32	211.31	18.01	
103	N - P	6	92	98	1323	228.2	0.00	152.00	152.0	380.2	1520.9	334993	250	0.36	85	1.02	0.09	230.00	229.92	211.35	18.57	
104	P P1	5	14	19	257	44.3	0.00	0.00	0.0	44.3	177.3	39059	100	0.26	65	1.65	0.11	229.92	229.81	211.31	18.50	
105	P1 - P2	14	0	14	189	32.6	0.00	0.00	0.0	32.6	130.4	28725	100	0.19	100	0.93	0.09	229.81	229.72	211.37	18.35	
106	P - P3	25	0	25	338	58.3	0.00	0.00	0.0	58.3	233.2	51370	100	0.34	175	2.74	0.48	229.92	229.44	211.40	18.04	
107	P - Q	0	48	48	648	111.8	0.00	152.00	152.0	263.8	1055.1	232405	200	0.39	60	1.53	0.09	229.92	229.82	211.36	18.46	
108	Q - Q1	31	0	31	419	72.3	0.00	0.00	0.0	72.3	289.1	63681	100	0.43	170	4.08	0.69	229.82	229.13	211.42	17.71	
109	Q - Q2	17	0	17	230	39.7	2.00	0.00	2.0	41.7	166.7	36718	100	0.25	110	1.47	0.16	229.82	229.66	211.40	18.26	
110	Q - R	0	0	0	0	0.0	0.00	150.00	150.0	150.0	600.0	132159	200	0.22	60	0.54	0.03	229.82	229.79	211.38	18.41	
111	R - R1	0	0	0	0	0.0	50.00	0.00	50.0	50.0	200.0	44053	100	0.29	20	2.06	0.04	229.79	229.75	211.39	18.36	
112	R - R2	0	0	0	0	0.0	100.00	0.00	100.0	100.0	400.0	88106	100	0.59	45	7.44	0.33	229.79	229.46	211.40	18.06	

DESIGN STATEMENT OF SEWERAGE SCHEME

S. No.	Name of Sewer Line			No. of Plots to be served			Population @ 13.50 Persons Per Plot	Discharge @ 172.5 LPCD Load	Discharge from Community Buildings,Commercial a& UD areas (in KLD)			Total Discharge	Peak Discharge @ 75 % of 3 times DWF	Size of Sewer Line	Velocity	Design Discharge	Length of Sewer Line	Slope	Fall (in M)	Final FormationLevel (FFL) (in M)		Invert Level from FFL (in M)		Depth of Sewer from FFL (in M)		
				Self	Branch	Total			Self	Branch	Total	(in KLD)	(in Cusecs)	(in mm)	(Ft./Sec.)	(in Cusecs)	(in M)			Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	Average
1	2			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	R	-	Q	0	0	0	0	0.00	150.00	0	150.00	150.00	0.14	200	2.50	0.42	60	1/ 220	0.27	211.38	211.36	210.16	209.89	1.22	1.47	1.35
2	Q2	-	Q	18	0	18	243	41.92	0.00	0	0.00	41.92	0.04	200	2.50	0.42	100	1/ 220	0.45	211.40	211.36	210.18	209.73	1.22	1.63	1.43
3	Q1	-	Q	31	0	31	419	72.28	0.00	0	0.00	72.28	0.07	200	2.50	0.42	170	1/ 220	0.77	211.42	211.36	210.20	209.43	1.22	1.93	1.58
4	Q	-	P	0	49	49	662	114.20	0.00	150	150.00	264.20	0.24	200	2.50	0.42	55	1/ 220	0.25	211.36	211.35	209.43	209.18	1.93	2.17	2.05
5	P2	-	P	25	0	25	338	58.31	0.00	0	0.00	58.31	0.05	200	2.50	0.42	160	1/ 220	0.73	211.40	211.35	210.18	209.45	1.22	1.90	1.56
6	P1	-	P	19	0	19	257	44.33	0.00	0	0.00	44.33	0.04	200	2.50	0.42	160	1/ 220	0.73	211.37	211.35	210.15	209.42	1.22	1.93	1.57
7	P	-	N	6	93	99	1337	230.63	0.00	150	150.00	380.63	0.35	250	2.50	0.66	90	1/ 300	0.30	211.35	211.32	209.18	208.88	2.17	2.44	2.31
8	N3	-	N2	7	0	7	95	16.39	0.00	0	0.00	16.39	0.02	200	2.50	0.42	105	1/ 220	0.48	211.37	211.33	210.15	209.67	1.22	1.66	1.44
9	N2	-	N	6	7	13	176	30.36	0.00	0	0.00	30.36	0.03	200	2.50	0.42	60	1/ 220	0.27	211.33	211.32	209.67	209.40	1.66	1.92	1.79
10	N1/2	-	N1	10	0	10	135	23.29	0.00	0	0.00	23.29	0.02	200	2.50	0.42	85	1/ 220	0.39	211.31	211.29	210.09	209.70	1.22	1.59	1.40
11	N1/1	-	N1	0	0	0	0	0.00	43.75	0	43.75	43.75	0.04	200	2.50	0.42	55	1/ 220	0.25	211.27	211.29	210.05	209.80	1.22	1.49	1.35
12	N1	-	N	0	10	10	135	23.29	50.00	43.75	93.75	117.04	0.11	200	2.50	0.42	65	1/ 220	0.30	211.29	211.32	209.70	209.41	1.59	1.91	1.75
13	N	-	M	15	122	137	1850	319.13	0.00	243.75	243.75	562.88	0.52	400	2.50	1.69	350	1/ 550	0.64	211.32	211.49	208.88	208.24	2.44	3.25	2.85
14	M6	-	M5	9	0	9	122	21.05	0.00	0	0.00	21.05	0.02	200	2.50	0.42	95	1/ 220	0.43	211.54	211.51	210.32	209.89	1.22	1.62	1.42
15	M5	-	M1	0	9	9	122	21.05	0.00	0	0.00	21.05	0.02	200	2.50	0.42	55	1/ 220	0.25	211.51	211.50	209.89	209.64	1.62	1.86	1.74
16	M4	-	M3	6	0	6	81	13.97	0.00	0	0.00	13.97	0.01	200	2.50	0.42	50	1/ 220	0.23	211.54	211.53	210.32	210.09	1.22	1.44	1.33
17	M3	-	M2	3	6	9	122	21.05	0.00	0	0.00	21.05	0.02	200	2.50	0.42	45	1/ 220	0.20	211.53	211.53	210.09	209.89	1.44	1.64	1.54
18	M2/1	-	M2	6	0	6	81	13.97	0.00	0	0.00	13.97	0.01	200	2.50	0.42	70	1/ 220	0.32	211.53	211.52	210.31	209.99	1.22	1.53	1.37
19	M2	-	M1	7	15	22	297	51.23	0.00	0	0.00	51.23	0.05	200	2.50	0.42	50	1/ 220	0.27	211.52	211.50	209.89	209.62	1.63	1.88	1.76
20	M1	-	M	0	31	31	419	72.28	0.00	0	0.00	72.28	0.07	200	2.50	0.42	50	1/ 220	0.23	211.50	211.49	209.62	209.39	1.88	2.10	1.99
21	M	-	L	0	168	168	2268	391.23	0.00	243.75	243.75	634.98	0.58	400	2.50	1.69	20	1/ 550	0.04	211.49	211.49	208.24	208.20	3.25	3.29	3.27
22	L6	-	L1	5	0	5	68	11.73	70.00	0	70.00	81.73	0.08	300	2.50	0.95	175	1/ 380	0.46	211.79	211.47	210.57	210.11	1.22	1.36	1.29
23	L5/1	-	L5	20	0	20	270	46.58	0.00	0	0.00	46.58	0.04	300	2.50	0.95	160	1/ 380	0.42	211.63	211.58	210.41	209.99	1.22	1.59	1.41
24	L5	-	L4	4	20	24	324	55.89	0.00	0	0.00	55.89	0.05	300	2.50	0.95	70	1/ 380	0.18	211.58	211.56	209.99	209.80	1.59	1.76	1.67
25	L4/3	-	L4/1	4	0	4	54	9.32	0.00	0	0.00	9.32	0.01	200	2.50	0.42	60	1/ 220	0.27	211.58	211.56	210.36	210.09	1.22	1.47	1.35
26	L4/2	-	L4/1	3	0	3	41	7.07	0.00	0	0.00	7.07	0.01	200	2.50	0.42	35	1/ 220	0.16	211.58	211.56	210.36	210.20	1.22	1.36	1.29
27	L4/1	-	L4	2	7	9	122	21.05	0.00	0	0.00	21.05	0.02	250	2.50	0.66	30	1/ 300	0.10	211.56	211.56	210.09	209.99	1.47	1.57	1.52
28	L4	-	L3	9	33	42	567	97.81	0.00	0	0.00	97.81	0.09	300	2.50	0.95	95	1/ 380	0.25	211.56	211.52	209.80	209.55	1.76	1.97	1.86
29	L3	-	L2	0	42	42	567	97.81	0.00	0	0.00	97.81	0.09	300	2.50	0.95	50	1/ 380	0.13	211.52	211.50	209.55	209.42	1.97	2.08	2.02
30	L2/2	-	L2/1	3	0	3	41	7.07	5.38	0	5.38	12.45	0.01	200	2.50	0.42	95	1/ 220	0.43	211.41	211.43	210.19	209.76	1.22	1.67	1.45
31	L2/1	-	L2	13	3	16	216	37.26	0.00	5.375	5.38	42.64	0.04	300	2.50	0.95	170	1/ 380	0.45	211.43	211.50	209.76	209.31	1.67	2.19	1.93
32	L2	-	L1	12	58	70	945	163.01	0.00	5.375	5.38	168.39	0.15	300	2.50	0.95	120	1/ 380	0.32	211.50	211.47	209.31	209.00	2.19	2.47	2.33
33	L1/3	-	L1/1	5	0	5	68	11.73	8.25	0	8.25	19.98	0.02	200	2.50	0.42	90	1/ 220	0.41	211.44	211.45	210.22	209.81	1.22	1.64	1.43
34	L1/2	-	L1/1	8	0	8	108	18.63	0.00	0	0.00	18.63	0.02	200	2.50	0.42	65	1/ 220	0.30	211.47	211.45	210.25	209.95	1.22	1.50	1.36
35	L1/1	-	L1	5	13	18	243	41.92	0.00	8.25	8.25	50.17	0.05	200	2.50	0.42	75	1/ 220	0.34	211.45	211.47	209.81	209.47	1.64	2.00	1.82
36	L1	-	L	0	93	93	1256	216.66	0.00	83.625	83.63	300.29	0.28	300	2.50	0.95	80	1/ 380	0.21	211.47	211.49	209.00	208.78	2.47	2.71	2.59
37	L	-	K	16	261	277	3740	645.15	0.00	327.375	327.38	972.53	0.89	400	2.50	1.69	270	1/ 550	0.49	211.49	211.41	208.20	207.71	3.29	3.70	3.49
38	K1	-	K	7	0	7	95	16.39	7.75	0	7.75	24.14	0.02	200	2.50	0.42	205	1/ 220	0.93	211.48	211.41	210.26	209.33	1.22	2.08	1.65
39	K	-	J	0	284	284	3834	661.37	0.00	335.125	335.13	996.49	0.91	400	2.50	1.69	95	1/ 550	0.17	211.41	211.41	207.71	207.54	3.70	3.87	3.78
40	J7	-	J6	2	0	2	27	4.66	0.00	0	0.00	4.66	0.00	200	2.50	0.42	20	1/ 220	0.09	211.50	211.49	210.28	210.19	1.22	1.30	1.26
41	J6/1	-	J6	26	0	26	351	60.55	8.25	0	8.25	68.80	0.06	200	2.50	0.42	140	1/ 220	0.64	211.45	211.49	210.23	209.59	1.22	1.90	1.56
42	J6	-	J5	7	28	35	473	81.59	0.00	8.25	8.25	89.84	0.08	200	2.50	0.42	55	1/ 220	0.25	211.49	211.47	209.59	209.34	1.90	2.13	2.01
43	J5/2	-	J5/1	4	0	4	54	9.32	0.00	0	0.00	9.32	0.01	200	2.50	0.42	60	1/ 220	0.27	211.51	211.50	210.29	210.02	1.22	1.48	1.35
44	J5/1	-	J5	4	4	8	108	18.63	0.00	0	0.00	18.63	0.02	200	2.50	0.42	65	1/ 220	0.30	211.50	211.47	210.02	209.72	1.48	1.75	1.62
45	J5	-	J	33	43	76	1026	176.99	0.00	8.25	8.25	185.24	0.17	250	2.50	0.66	250	1/ 300	0.83	211.47	211.41	209.34	208.51	2.13	2.90	2.51
46	J4	-	J3	13	0	13	176	30.36	0.00	0	0.00	30.36	0.03	200	2.50	0.42	105	1/ 220	0.48	211.48	211.45	210.26	209.78	1.22	1.67	1.44

S. No.	Name of Sewer Line			No. of Plots to be served			Population @ 13.50 Persons Per Plot	Discharge @ 172.5 LPCD Load	Discharge from Community Buildings,Commercial a& UD areas (in KLD)			Total Discharge	Peak Discharge @ 75 % of 3 times DWF	Size of Sewer Line	Velocity	Design Discharge	Length of Sewer Line	Slope	Fall (in M)	Final FormationLevel (FFL) (in M)		Invert Level from FFL (in M)		Depth of Sewer from FFL (in M)		
				Self	Branch	Total			Self	Branch	Total	(in KLD)	(in Cusecs)	(in mm)	(Ft./Sec.)	(in Cusecs)	(in M)			Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	Average
1	2			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
47	J3/3	-	J3/1	3	0	3	41	7.07	0.00	0	0.00	7.07	0.01	200	2.50	0.42	40	1/220	0.18	211.48	211.47	210.26	210.08	1.22	1.39	1.31
48	J3/2	-	J3/1	2	0	2	27	4.66	0.00	0	0.00	4.66	0.00	200	2.50	0.42	25	1/220	0.11	211.48	211.47	210.26	210.15	1.22	1.32	1.27
49	J3/1	-	J3	8	5	13	176	30.36	0.00	0	0.00	30.36	0.03	200	2.50	0.42	85	1/220	0.39	211.47	211.45	210.08	209.69	1.39	1.76	1.58
50	J3	-	J2	21	26	47	635	109.54	0.00	0	0.00	109.54	0.10	200	2.50	0.42	130	1/220	0.59	211.45	211.41	209.69	209.10	1.76	2.31	2.03
51	J2/1	-	J2	26	0	26	351	60.55	0.00	0	0.00	60.55	0.06	250	2.50	0.66	170	1/300	0.57	211.46	211.41	210.24	209.67	1.22	1.74	1.48
52	J2	-	J1	0	73	73	986	170.09	0.00	0	0.00	170.09	0.16	250	2.50	0.66	10	1/300	0.03	211.41	211.41	209.10	209.07	2.31	2.34	2.33
53	J1/1	-	J1	6	0	6	81	13.97	7.25	0	7.25	21.22	0.02	200	2.50	0.42	75	1/220	0.34	211.42	211.41	210.20	209.86	1.22	1.55	1.39
54	J1	-	J	0	79	79	1067	184.06	1.75	7.25	9.00	193.06	0.18	250	2.50	0.66	55	1/300	0.18	211.41	211.41	209.07	208.88	2.34	2.53	2.43
55	J	-	H	25	439	464	6264	1080.54	4.25	352.375	356.63	1437.17	1.32	600	2.50	3.81	225	1/950	0.24	211.41	211.39	207.54	207.30	3.87	4.09	3.98
56	H1	-	H	7	0	7	95	16.39	0.00	0	0.00	16.39	0.02	200	2.50	0.42	75	1/220	0.34	211.41	211.39	210.19	209.85	1.22	1.54	1.38
57	H	-	G	0	471	471	6359	1096.93	0.00	356.625	356.63	1453.55	1.33	600	2.50	3.81	60	1/950	0.06	211.39	211.37	207.30	207.24	4.09	4.13	4.11
58	G2	-	G1	5	0	5	68	11.73	0.00	0	0.00	11.73	0.01	200	2.50	0.42	55	1/220	0.25	211.43	211.41	210.21	209.96	1.22	1.45	1.33
59	G1	-	G	0	5	5	68	11.73	0.00	0	0.00	11.73	0.01	200	2.50	0.42	60	1/220	0.27	211.41	211.37	209.96	209.69	1.45	1.68	1.57
60	G	-	F	21	476	497	6710	1157.48	9.50	356.625	366.13	1523.60	1.40	600	2.50	3.81	320	1/950	0.34	211.37	211.34	207.24	206.90	4.13	4.44	4.28
61	F9	-	F8	18	0	18	243	41.92	0.00	0	0.00	41.92	0.04	200	2.50	0.42	45	1/220	0.20	211.51	211.49	210.29	210.09	1.22	1.40	1.31
62	F8	-	F7	11	18	29	392	67.62	0.00	0	0.00	67.62	0.06	200	2.50	0.42	75	1/220	0.34	211.49	211.47	210.09	209.74	1.40	1.73	1.57
63	F7	-	F6	0	29	29	392	67.62	0.00	0	0.00	67.62	0.06	200	2.50	0.42	40	1/220	0.18	211.47	211.45	209.74	209.56	1.73	1.89	1.81
64	F6	-	F5	13	29	42	567	97.81	0.00	0	0.00	97.81	0.09	200	2.50	0.42	45	1/220	0.20	211.45	211.44	209.56	209.36	1.89	2.08	1.98
65	F5/1	-	F5	3	0	3	41	7.07	0.00	0	0.00	7.07	0.01	200	2.50	0.42	15	1/220	0.07	211.45	211.44	210.23	210.16	1.22	1.28	1.25
66	F5	-	F4	6	45	51	689	118.85	0.00	0	0.00	118.85	0.11	200	2.50	0.42	45	1/220	0.20	211.44	211.43	209.36	209.15	2.08	2.28	2.18
67	F4	-	F3	0	51	51	689	118.85	0.00	0	0.00	118.85	0.11	200	2.50	0.42	30	1/220	0.14	211.43	211.41	209.15	209.02	2.28	2.39	2.33
68	F3	-	F2	37	51	88	1188	204.93	0.00	0	0.00	204.93	0.19	200	2.50	0.42	115	1/220	0.52	211.41	211.37	209.02	208.49	2.39	2.88	2.63
69	F2/1	-	F2	30	0	30	405	69.86	0.00	0	0.00	69.86	0.06	200	2.50	0.42	75	1/220	0.34	211.40	211.37	210.18	209.84	1.22	1.53	1.38
70	F2	-	F1	0	118	118	1593	274.79	0.00	0	0.00	274.79	0.25	250	2.50	0.66	30	1/220	0.14	211.37	211.36	208.49	208.36	2.88	3.00	2.94
71	F1/2	-	F1	20	0	20	270	46.58	0.00	0	0.00	46.58	0.04	200	2.50	0.42	70	1/220	0.32	211.38	211.36	210.16	209.84	1.22	1.52	1.37
72	F1/1	-	F1	13	0	13	176	30.36	0.00	0	0.00	30.36	0.03	200	2.50	0.42	75	1/220	0.34	211.39	211.36	210.17	209.83	1.22	1.53	1.38
73	F1	-	F	6	151	157	2120	365.70	0.00	0	0.00	365.70	0.34	250	2.50	0.66	95	1/220	0.43	211.36	211.34	208.36	207.93	3.00	3.41	3.21
74	F	-	B	0	654	654	8829	1523.00	50.00	366.125	416.13	1939.13	1.78	600	2.50	3.81	90	1/950	0.09	211.34	211.32	206.90	206.81	4.44	4.51	4.47
75	E2/5	-	E2/4	6	0	6	81	13.97	0.00	0	0.00	13.97	0.01	200	2.50	0.42	55	1/220	0.25	212.36	212.34	211.14	210.89	1.22	1.45	1.33
76	E2/4	-	E2/3	3	6	9	122	21.05	0.00	0	0.00	21.05	0.02	200	2.50	0.42	25	1/220	0.11	212.34	212.33	210.89	210.78	1.45	1.55	1.50
77	E2/3	-	E2/1	6	9	15	203	35.02	0.00	0	0.00	35.02	0.03	200	2.50	0.42	85	1/220	0.39	212.33	212.30	210.78	210.39	1.55	1.91	1.73
78	E2/2	-	E2/1	0	0	0	0	0.00	43.13	0	43.13	43.13	0.04	200	2.50	0.42	105	1/220	0.48	212.72	212.30	211.50	211.02	1.22	1.28	1.25
79	E2/1	-	E2	0	15	15	203	35.02	0.00	43.125	43.13	78.14	0.07	200	2.50	0.42	90	1/220	0.41	212.30	211.93	210.39	209.98	1.91	1.95	1.93
80	E3	-	E2	5	0	5	68	11.73	0.00	0	0.00	11.73	0.01	200	2.50	0.42	70	1/220	0.32	211.96	211.93	210.74	210.42	1.22	1.51	1.36
81	E2	-	E1	0	20	20	270	46.58	0.00	43.125	43.13	89.70	0.08	200	2.50	0.42	65	1/220	0.30	211.93	211.91	209.98	209.69	1.95	2.22	2.09
82	E1/3	-	E1/1	15	0	15	203	35.02	0.00	0	0.00	35.02	0.03	200	2.50	0.42	125	1/220	0.57	212.50	211.95	211.28	210.71	1.22	1.24	1.23
83	E1/2	-	E1/1	2	0	2	27	4.66	0.00	0	0.00	4.66	0.00	200	2.50	0.42	25	1/220	0.11	212.05	211.95	210.83	210.72	1.22	1.23	1.23
84	E1/1	-	E1	17	17	34	459	79.18	0.00	0	0.00	79.18	0.07	200	2.50	0.42	130	1/220	0.59	211.95	211.91	210.71	210.12	1.24	1.79	1.51
85	E1	-	E	0	54	54	729	125.75	0.00	43.125	43.13	168.88	0.15	200	2.50	0.42	80	1/220	0.36	211.91	211.88	209.69	209.32	2.22	2.56	2.39
86	E/1	-	E	7	0	7	95	16.39	0.00	0	0.00	16.39	0.02	200	2.50	0.42	95	1/220	0.43	211.92	211.88	210.70	210.27	1.22	1.61	1.42
87	E	-	D	0	61	61	824	142.14	3.65	43.125	46.78	188.92	0.17	200	2.50	0.42	200	1/220	0.91	211.88	211.82	209.32	208.41	2.56	3.41	2.98
88	D3	-	D2	14	0	14	189	32.60	0.00	0	0.00	32.60	0.03	200	2.50	0.42	60	1/220	0.27	212.19	212.17	210.97	210.70	1.22	1.47	1.35
89	D2	-	D1	0	14	14	189	32.60	0.00	0	0.00	32.60	0.03	200	2.50	0.42	90	1/220	0.41	212.17	212.13	210.70	210.29	1.47	1.84	1.66
90	D1	-	D	0	14	14	189	32.60	0.00	0	0.00	32.60	0.03	200	2.50	0.42	130	1/220	0.59	212.13	211.82	210.29	209.70	1.84	2.12	1.98
91	D	-	C	0	75	75	1013	174.74	0.00	46.775	46.78	221.52	0.20	200	2.50	0.42	10	1/220	0.05	211.82	211.82	208.41	208.37	3.41	3.45	3.43
92	C3	-	C2	5	0	5	68	11.73	0.00	0	0.00	11.73	0.01	200	2.50	0.42	70	1/220	0.32	211.87	211.85	210.65	210.33	1.22	1.52	1.37
93	C2	-	C1	6	5	11	149	25.70	0.00	0	0.00	25.70	0.02	200	2.50	0.42	70	1/220	0.32	211.85	211.83	210.33	210.01	1.52	1.82	1.67

(HARYANA).

S. No.	Name of Sewer Line			No. of Plots to be served			Population @ 13.50 Persons Per Plot	Discharge @ 172.5 LPCD Load	Discharge from Community Buildings,Commercial a& UD areas (in KLD)			Total Discharge	Peak Discharge @ 75 % of 3 times DWF	Size of Sewer Line	Velocity	Design Dis-charge	Length of Sewer Line	Slope	Fall (in M)	Final FormationLevel (FFL) (in M)		Invert Level from FFL (in M)		Depth of Sewer from FFL (in M)		
				Self	Branch	Total			Self	Branch	Total	(in KLD)	(in Cusecs)	(in mm)	(Ft./Sec.)	(in Cusecs)	(in M)			Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	Average
1	2			3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
94	C1/3	-	C1/1	2	0	2	27	4.66	0.00	0	0.00	4.66	0.00	200	2.50	0.42	30	1/220	0.14	211.86	211.85	210.64	210.50	1.22	1.35	1.28
95	C1/2	-	C1/1	8	0	8	108	18.63	0.00	0	0.00	18.63	0.02	200	2.50	0.42	100	1/220	0.45	211.89	211.85	210.67	210.22	1.22	1.63	1.43
96	C1/1	-	C1	12	10	22	297	51.23	0.00	0	0.00	51.23	0.05	200	2.50	0.42	80	1/220	0.36	211.85	211.83	210.22	209.85	1.63	1.98	1.81
97	C1	-	C	0	33	33	446	76.94	0.00	0	0.00	76.94	0.07	200	2.50	0.42	45	1/220	0.20	211.83	211.82	209.85	209.65	1.98	2.17	2.08
98	C	-	B	0	108	108	1458	251.51	10.00	46.775	56.78	308.28	0.28	200	2.50	0.42	200	1/220	0.91	211.82	211.32	208.37	207.46	3.45	3.86	3.66
99	B	-	A	4	762	766	10341	1783.82	0.00	472.9	472.90	2256.72	2.07	600	2.50	3.81	105	1/950	0.11	211.32	211.34	206.81	206.70	4.51	4.64	4.58
100	A1	-	A	4	0	4	54	9.32	0.00	0	0.00	9.32	0.01	200	2.50	0.42	55	1/220	0.25	211.35	211.34	210.13	209.88	1.22	1.46	1.34
101	A	-	STP	0	770	770	10395	1793.14	0.00	472.9	472.90	2266.04	2.08	600	2.50	3.81	30	1/950	0.03	211.34	211.34	206.70	206.67	4.64	4.67	4.66

TREATED EFFLUENT DISTRIBUTION SYSTEM

TERMINAL HEAD STATEMENT (Value of C = 100)

S. No.	Name of Pipe Link Jn. Nodes	No. of Plots			Population @ 13.5 persons per plot	Requirement @ 45 LPCD (in KL)	Requirement from Roads (KLD) @ 5 KLD/Acre			Requirement from Commercial & Community Buildings (KLD) @ 30% of			Requirement from Parks/Greens (KLD)				Total Requirement (in KL) (7 + 10 + 14)	Peak requirement @ 2 Times (in KLD)	Total Discharge (in Gallons)	Proposed size of pipe line (in mm)	Velocity of Flow "V" in MPS	Length of Pipe line (in M)	Loss of Head Per 1000 M	Total Loss of Head (in M)	Hydraulic level (in M)		Formation Level at Lower End (in M)	Terminal Head Available (in M)	Remarks
		Self	Branch	Total			Self	Branch	Total	Self	Branch	Total	Area (in Acres)			Requirement @ 25 KL per acre								Upper End	Lower End			
													Self	Branch	Total													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	STP -1	0	613	613	8276	372.42	0.00	134.75	134.75	0.00	69.19	69.19	0.00	12.75	12.75	318.8	895.1	1790.2	394321	200	0.66	25	4.08	0.10	231.35	231.25	211.35	19.90	FFL at STP = 211.4 M
2	1 -2	3	0	3	41	1.85	1.19	0.00	1.19	0.00	0.00	0.00	0.00	0	0.00	0.0	3.0	6.1	1335	80	0.01	40	0.01	0.00	231.25	231.25	211.35	19.90	
3	1 -3	5	605	610	8235	370.58	2.97	130.60	133.57	0.00	69.19	69.19	0.00	12.75	12.75	318.8	892.1	1784.2	392986	200	0.66	100	4.05	0.41	231.25	230.84	211.32	19.52	Head of Pump at STP (M) = 20.00 M
4	3 -4	0	108	108	1458	65.61	6.08	31.56	37.64	0.00	12.94	12.94	0.00	1.68	1.68	42.0	156.2	316.4	69686	100	0.47	205	4.82	0.99	230.84	229.85	211.82	18.03	
5	4 -5	0	33	33	446	20.07	0.44	5.41	5.86	0.00	0.00	0.00	0.00	0.4	0.40	10.0	35.9	71.9	15827	80	0.17	30	0.92	0.03	229.85	229.83	211.83	18.00	
6	5 -6	12	10	22	297	13.37	1.26	2.00	3.26	0.00	0.00	0.00	0.00	0	0.00	0.0	16.6	33.3	7325	80	0.08	85	0.22	0.02	229.83	229.81	211.85	17.96	Hydraulic Level at STP= 231.35 M
7	6 -7	2	0	2	27	1.22	0.44	0.00	0.44	0.00	0.00	0.00	0.00	0	0.00	0.0	1.7	3.3	731	80	0.01	30	0.00	0.00	229.81	229.81	211.86	17.95	
8	6 -8	6	2	8	108	4.86	1.11	0.44	1.56	0.00	0.00	0.00	0.00	0	0.00	0.0	6.4	12.8	2827	80	0.03	75	0.04	0.00	229.81	229.81	211.87	17.94	
9	8 -9	2	0	2	27	1.22	0.44	0.00	0.44	0.00	0.00	0.00	0.00	0	0.00	0.0	1.7	3.3	731	80	0.01	30	0.00	0.00	229.81	229.81	211.89	17.92	
10	5 -10	6	5	11	149	6.71	0.89	1.26	2.15	0.00	0.00	0.00	0.00	0.4	0.40	10.0	18.9	37.7	8306	80	0.09	60	0.28	0.02	229.83	229.81	211.85	17.96	
11	10 -8	5	0	5	68	3.06	1.26	0.00	1.26	0.00	0.00	0.00	0.40	0	0.40	10.0	14.3	28.6	6308	80	0.07	85	0.17	0.01	229.81	229.80	211.87	17.93	
12	4 -11	0	75	75	1013	45.59	0.59	25.11	25.71	0.00	12.94	12.94	0.00	1.28	1.28	32.0	116.2	232.5	51202	150	0.15	20	0.38	0.01	229.85	229.85	211.85	18.00	
13	11 -12	0	14	14	189	8.51	3.71	2.67	6.38	0.00	0.00	0.00	0.04	0	0.04	1.0	15.9	31.8	6996	80	0.07	125	0.20	0.03	229.85	229.82	212.13	17.69	
14	12 -13	0	14	14	189	8.51	1.63	1.04	2.67	0.00	0.00	0.00	0.00	0	0.00	0.0	11.2	22.3	4922	80	0.05	110	0.11	0.01	229.82	229.81	212.17	17.64	
15	13 -14	14	0	14	189	8.51	1.04	0.00	1.04	0.00	0.00	0.00	0.00	0	0.00	0.0	9.5	19.1	4204	80	0.04	70	0.08	0.01	229.81	229.80	212.19	17.61	
16	11 -15	0	61	61	824	37.08	3.98	14.75	18.74	0.00	12.94	12.94	0.00	1.24	1.24	31.0	99.8	199.5	43945	100	0.29	215	2.05	0.44	229.85	229.41	211.88	17.53	
17	15 -16	7	0	7	95	4.28	1.56	0.00	1.56	0.00	0.00	0.00	0.12	0	0.12	3.0	8.8	17.7	3891	80	0.04	105	0.07	0.01	229.41	229.40	211.92	17.48	
18	15 -17	0	54	54	729	32.81	1.48	11.71	13.20	0.00	12.94	12.94	0.00	1.12	1.12	28.0	86.9	173.9	38299	100	0.26	80	1.59	0.13	229.41	229.28	211.91	17.37	
19	17 -18	17	17	34	459	20.66	1.93	2.52	4.45	0.00	0.00	0.00	0.00	0	0.00	0.0	25.1	50.2	11059	80	0.12	130	0.47	0.06	229.28	229.22	211.95	17.27	
20	18 -19	3	0	3	41	1.85	0.52	0.00	0.52	0.00	0.00	0.00	0.00	0	0.00	0.0	2.4	4.7	1041	80	0.01	35	0.01	0.00	229.22	229.22	212.05	17.17	
21	18 -27	14	0	14	189	8.51	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0	0.00	0.0	10.5	21.0	4628	80	0.05	135	0.09	0.01	229.22	229.20	212.50	16.70	
22	17 -20	0	20	20	270	12.15	1.02	6.25	7.26	0.00	12.94	12.94	0.00	1.12	1.12	28.0	60.4	120.7	26587	100	0.18	55	0.81	0.04	229.28	229.23	211.93	17.30	
23	20 -21	5	0	5	68	3.06	1.48	0.00	1.48	0.00	0.00	0.00	0.00	0	0.00	0.0	4.5	9.1	2001	80	0.02	80	0.02	0.00	229.23	229.23	211.96	17.27	
24	20 -22	0	15	15	203	9.14	1.58	3.19	4.76	0.00	12.94	12.94	0.83	0.29	1.12	28.0	54.8	109.7	24157	100	0.16	85	0.68	0.06	229.23	229.18	212.30	16.88	
25	22 -23	6	9	15	203	9.14	1.41	1.78	3.19	0.00	12.94	12.94	0.29	0	0.29	7.3	32.5	65.0	14322	80	0.15	95	0.76	0.07	229.18	229.10	212.33	16.77	
26	23 -24	2	0	2	27	1.22	0.52	0.00	0.52	12.94	0.00	12.94	0.00	0	0.00	0.0	14.7	29.3	6463	80	0.07	35	0.17	0.01	229.10	229.10	212.34	16.76	
27	23 -25	1	6	7	95	4.28	0.37	0.89	1.26	0.00	0.00	0.00	0.00	0	0.00	0.0	5.5	11.1	2438	80	0.03	25	0.03	0.00	229.10	229.10	212.34	16.76	
28	25 -26	8	0	8	81	3.65	0.89	0.00	0.89	0.00	0.00	0.00	0.00	0	0.00	0.0	4.5	9.1	1998	80	0.02	60	0.02	0.00	229.10	229.10	212.35	16.74	
29	22 -27	0	0	0	0	0.00	1.85	0.00	1.85	0.00	0.00	0.00	0.08	0	0.08	2.0	3.9	7.7	1697	80	0.02	100	0.01	0.00	229.18	229.18	212.50	16.68	
30	3 -28	0	497	497	6710	301.95	2.57	90.29	92.86	0.00	56.25	56.25	0.00	11.07	11.07	276.8	727.9	1455.8	320656	200	0.54	90	2.78	0.25	230.84	230.59	211.34	19.25	
31	28 -29	20	477	497	6710	301.95	4.60	85.70	90.29	0.00	56.25	56.25	1.84	9.23	11.07	276.8	725.2	1450.5	319490	200	0.53	310	2.76	0.85	230.59	229.74	211.37	18.37	
32	29 -30	0	5	5	68	3.06	0.89	0.89	1.78	0.00	0.00	0.00	0.00	0.06	0.06	1.5	6.3	12.7	2793	80	0.03	60	0.04	0.00	229.74	229.73	211.41	18.32	
33	30 -31	5	0	5	68	3.06	0.89	0.00	0.89	0.00	0.00	0.00	0.06	0	0.06	1.5	5.4	10.9	2401	80	0.03	60	0.03	0.00	229.73	229.73	211.43	18.30	
34	29 -32	0	472	472	6372	286.74	0.96	82.95	83.92	0.00	56.25	56.25	0.18	8.99	9.17	229.3	656.2	1312.3	289056	200	0.48	65	2.30	0.15	229.74	229.59	211.39	18.20	
35	32 -33	7	0	7	95	4.28	1.19	0.00	1.19	0.00	0.00	0.00	0.00	0	0.00	0.0	5.5	10.9	2406	80	0.03	80	0.03	0.00	229.59	229.58	211.41	18.17	
36	32 -34	23	442	465	6278	282.51	3.26	78.51	81.77	0.00	56.25	56.25	0.04	8.95	8.99	224.8	645.3	1290.6	284253	200	0.48	220	2.23	0.49	229.59	229.10	211.41	17.69	
37	34 -35	0	78	78	1053	47.39	0.89	9.79	10.67	0.00	0.00	0.00	0.00	0.49	0.49	12.3	70.3	140.6	30974	100	0.21	60	1.07	0.06	229.10	229.03	211.41	17.62	
38	35 -36	6	0	6	81	3.65	1.19	0.00	1.19	0.00	0.00	0.00	0.26	0	0.26	6.5	11.3	22.7	4992	80	0.05	80	0.11	0.01	229.03	229.02	211.42	17.60	
39	35 -37	0	72	72	972	43.74	0.15	8.45	8.60	0.00	0.00	0.00	0.00	0.23	0.23	5.8	58.1	116.2	25590	100	0.17	10	0.75	0.01	229.03	229.02	211.41	17.61	
40	37 -38	26	0	26	351	15.80	2.52	0.00	2.52	0.00	0.00	0.00	0.09	0	0.09	2.3	20.6	41.1	9080	80	0.09	170	0.33	0.06	229.02	228.97	211.46	17.51	
41	37 -39	19	27	46	621	27.95	1.78	4.15	5.93	0.00	0.00	0.00	0.00	0.14	0.14	3.5	37.4	74.8	16465	80	0.17	120	0.99	0.12	229.02	228.91	211.46	17.45	
42	39 -40	13	0	13	176	7.92	1.78	0.00	1.78	0.00	0.00	0.00	0.14	0	0.14	3.5	13.2	26.4	5815	80	0.06	120	0.14	0.02	228.91	228.89	211.48	17.41	
43	39 -41	10	4	14	189	8.51	1.48	0.89	2.37	0.00	0.00	0.00	0.00	0	0.00	0.0	10.9	21.8	4792	80	0.05	100	0.10	0.01	228.91	228.90	211.47	17.43	
44	41 -42	1	0	1	14	0.63	0.30	0.00	0.30	0.00	0.00	0.00	0.00	0	0.00	0.0	0.9	1.9	408	80	0.00	20	0.00	0.00	228.90	228.90	211.48	17.42	

TREATED EFFLUENT DISTRIBUTION SYSTEM

TERMINAL HEAD STATEMENT *(Value of C = 100)*

S. No.	Name of Pipe Link Jn. Nodes	No. of Plots			Population @ 13.5 persons per plot	Requirement @ 45 LPCD (in KL)	Requirement from Roads (KLD) @ 5 KLD/Acre			Requirement from Commercial & Community Buildings (KLD) @ 30% of			Requirement from Parks/Greens (KLD)				Total Requirement (in KL) (7 + 10 + 14)	Peak requirement @ 2 Times (in KLD)	Total Discharge (in Gallons)	Proposed size of pipe line (in mm)	Velocity of Flow "V" in MPS	Length of Pipe line (in M)	Loss of Head Per 1000 M	Total Loss of Head (in M)	Hydraulic level (in M)		Formation Level at Lower End (in M)	Terminal Head Available (in M)	Remarks
		Self	Branch	Total			Self	Branch	Total	Self	Branch	Total	Area (in Acres)			Requirement @ 25 KL per acre								Upper End	Lower End			
													Self	Branch	Total													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
45	41 -43	3	0	3	41	1.85	0.59	0.00	0.59	0.00	0.00	0.00	0.00	0	0.00	0.0	2.4	4.9	1074	80	0.01	40	0.01	0.00	228.90	228.90	211.48	17.42	
46	34 -44	31	39	70	945	42.53	3.63	6.00	9.64	0.00	0.00	0.00	0.00	0	0.00	0.0	52.2	104.3	22979	100	0.15	245	0.62	0.15	229.10	228.95	211.47	17.48	
47	44 -45	4	4	8	108	4.86	0.96	1.78	2.74	0.00	0.00	0.00	0.00	0	0.00	0.0	7.6	15.2	3349	80	0.03	65	0.05	0.00	228.95	228.94	211.50	17.44	
48	45 -46	4	0	4	54	2.43	1.78	0.00	1.78	0.00	0.00	0.00	0.00	0	0.00	0.0	4.2	8.4	1854	80	0.02	60	0.02	0.00	228.95	228.94	211.51	17.43	
49	44 -47	5	26	31	419	18.86	0.89	2.37	3.26	0.00	0.00	0.00	0.00	0	0.00	0.0	22.1	44.2	9743	80	0.10	60	0.37	0.02	228.95	228.92	211.49	17.43	
50	47 -48	2	0	2	27	1.22	0.30	0.00	0.30	0.00	0.00	0.00	0.00	0	0.00	0.0	1.5	3.0	666	80	0.01	20	0.00	0.00	228.92	228.92	211.50	17.42	
51	47 -49	24	0	24	324	14.58	2.08	0.00	2.08	0.00	0.00	0.00	0.00	0	0.00	0.0	16.7	33.3	7337	80	0.08	140	0.22	0.03	228.92	228.89	211.45	17.44	
52	34 -50	0	294	294	3969	178.61	1.41	56.78	58.19	0.00	56.25	56.25	0.00	8.46	8.46	211.5	504.5	1009.1	222268	200	0.37	95	1.41	0.13	229.10	228.96	211.41	17.55	
53	50 -51	8	0	8	108	4.86	2.37	0.00	2.37	0.00	0.00	0.00	1.85	0	1.85	46.3	53.5	107.0	23560	80	0.25	160	1.92	0.31	228.96	228.66	211.48	17.18	
54	50 -52	16	270	286	3861	173.75	3.85	50.56	54.41	0.00	56.25	56.25	1.80	4.81	6.61	165.3	449.7	899.3	198087	200	0.33	260	1.14	0.30	228.96	228.67	211.49	17.18	
55	52 -53	0	93	93	1256	56.52	1.19	19.57	20.76	0.00	0.00	0.00	0.00	0.55	0.55	13.8	91.0	182.1	40100	100	0.27	80	1.73	0.14	228.67	228.53	211.47	17.06	
56	53 -54	0	5	5	68	3.06	1.41	1.33	2.74	0.00	0.00	0.00	0.00	0	0.00	0.0	5.8	11.6	2556	80	0.03	95	0.03	0.00	228.53	228.52	211.58	16.94	
57	54 -55	5	0	5	68	3.06	1.33	0.00	1.33	0.00	0.00	0.00	0.00	0	0.00	0.0	4.4	8.8	1936	80	0.02	90	0.02	0.00	228.52	228.52	211.79	16.73	
58	53 -56	5	13	18	243	10.94	0.96	2.45	3.41	0.00	0.00	0.00	0.00	0.11	0.11	2.8	17.1	34.2	7531	80	0.08	65	0.23	0.02	228.53	228.51	211.46	17.05	
59	56 -57	5	0	5	68	3.06	1.41	0.00	1.41	0.00	0.00	0.00	0.11	0	0.11	2.8	7.2	14.4	3180	80	0.03	95	0.05	0.00	228.51	228.51	211.44	17.07	
60	56 -58	8	0	8	108	4.86	1.04	0.00	1.04	0.00	0.00	0.00	0.00	0	0.00	0.0	5.9	11.8	2598	80	0.03	70	0.03	0.00	228.51	228.51	211.47	17.04	
61	53 -59	12	58	70	945	42.53	1.63	11.79	13.42	0.00	0.00	0.00	0.00	0.44	0.44	11.0	66.9	133.9	29490	100	0.20	110	0.98	0.11	228.53	228.42	211.50	16.92	
62	59 -58	6	7	13	176	7.92	0.82	1.41	2.22	0.00	0.00	0.00	0.00	0	0.00	0.0	10.1	20.3	4469	80	0.05	55	0.09	0.00	228.42	228.42	211.47	16.95	
63	58 -70	7	0	7	95	4.26	1.41	0.00	1.41	0.00	0.00	0.00	0.00	0	0.00	0.0	5.7	11.4	2504	80	0.03	95	0.03	0.00	228.42	228.41	211.43	16.98	
64	70 -68	0	0	0	0	0.00	0.30	0.00	0.30	0.00	0.00	0.00	0.00	0	0.00	0.0	0.3	0.6	131	80	0.00	20	0.00	0.00	228.41	228.41	211.43	16.98	
65	59 -60	0	45	45	608	27.36	0.74	8.82	9.56	0.00	0.00	0.00	0.00	0.44	0.44	11.0	47.9	95.8	21111	80	0.22	50	1.56	0.08	228.42	228.34	211.52	16.82	
66	60 -61	9	36	45	608	27.36	1.33	7.49	8.82	0.00	0.00	0.00	0.00	0.44	0.44	11.0	47.2	94.4	20785	80	0.22	90	1.52	0.14	228.34	228.20	211.56	16.64	
67	61 -62	2	7	9	122	5.49	0.52	1.63	2.15	0.00	0.00	0.00	0.00	0	0.00	0.0	7.6	15.3	3366	80	0.04	35	0.05	0.00	228.20	228.20	211.56	16.64	
68	62 -63	3	0	3	41	1.85	0.52	0.00	0.52	0.00	0.00	0.00	0.00	0	0.00	0.0	2.4	4.7	1041	80	0.01	35	0.01	0.00	228.20	228.20	211.58	16.62	
69	62 -66	4	0	4	54	2.43	1.11	0.00	1.11	0.00	0.00	0.00	0.00	0	0.00	0.0	3.5	7.1	1560	80	0.02	75	0.01	0.00	228.20	228.20	211.58	16.62	
70	61 -64	4	23	27	365	16.43	0.67	4.67	5.34	0.00	0.00	0.00	0.21	0.23	0.44	11.0	32.8	65.5	14433	80	0.15	45	0.77	0.03	228.20	228.17	211.57	16.60	
71	64 -65	0	20	20	270	12.15	0.44	2.37	2.82	0.00	0.00	0.00	0.00	0.06	0.06	1.5	16.5	32.9	7254	80	0.08	30	0.22	0.01	228.17	228.16	211.58	16.58	
72	65 -66	3	17	20	270	12.15	0.52	1.85	2.37	0.00	0.00	0.00	0.00	0.06	0.06	1.5	16.0	32.0	7058	80	0.07	35	0.21	0.01	228.16	228.16	211.58	16.58	
73	66 -67	17	0	17	230	10.35	1.85	0.00	1.85	0.00	0.00	0.00	0.06	0	0.06	1.5	13.7	27.4	6037	80	0.06	125	0.15	0.02	228.16	228.14	211.63	16.51	
74	64 -68	0	3	3	41	1.85	0.67	1.19	1.85	0.00	0.00	0.00	0.17	0	0.17	4.3	7.9	15.9	3501	80	0.04	45	0.06	0.00	228.17	228.17	211.43	16.74	
75	68 -69	3	0	3	41	1.85	1.19	0.00	1.19	0.00	0.00	0.00	0.00	0	0.00	0.0	3.0	6.1	1335	80	0.01	80	0.01	0.00	228.17	228.17	211.41	16.76	
76	52 -71	0	177	177	2390	107.55	0.30	29.50	29.80	0.00	56.25	56.25	0.00	4.26	4.26	106.5	300.1	600.2	132203	150	0.39	20	2.19	0.04	228.67	228.52	211.49	17.13	
77	71 -72	0	34	34	459	20.66	1.48	5.71	7.19	0.00	0.00	0.00	0.00	0	0.00	0.0	27.8	55.7	12267	80	0.13	50	0.57	0.03	228.62	228.59	211.50	17.09	
78	72 -73	0	34	34	459	20.66	1.78	3.93	5.71	0.00	0.00	0.00	0.00	0	0.00	0.0	26.4	52.7	11614	80	0.12	60	0.52	0.03	228.59	228.56	211.51	17.05	
79	73 -74	9	0	9	122	5.49	1.48	0.00	1.48	0.00	0.00	0.00	0.00	0	0.00	0.0	7.0	13.9	3072	80	0.03	100	0.04	0.00	228.56	228.56	211.54	17.02	
80	72 -75	11	14	25	338	15.21	0.67	1.78	2.45	0.00	0.00	0.00	0.00	0	0.00	0.0	17.7	35.3	7778	80	0.08	45	0.25	0.01	228.59	228.58	211.53	17.05	
81	75 -76	3	6	9	122	5.49	0.37	0.82	1.19	0.00	0.00	0.00	0.00	0	0.00	0.0	6.7	13.4	2941	80	0.03	25	0.04	0.00	228.58	228.58	211.53	17.05	
82	76 -74	6	0	6	81	3.65	0.82	0.00	0.82	0.00	0.00	0.00	0.00	0	0.00	0.0	4.5	8.9	1965	80	0.02	55	0.02	0.00	228.58	228.58	211.54	17.04	
83	75 -77	5	0	5	68	3.06	0.59	0.00	0.59	0.00	0.00	0.00	0.00	0	0.00	0.0	3.7	7.3	1609	80	0.02	40	0.01	0.00	228.58	228.58	211.54	17.04	
84	71 -78	15	127	143	1931	86.90	4.82	17.50	22.31	11.25	45.00	56.25	2.00	2.26	4.26	106.5	272.0	543.9	119806	150	0.36	325	1.82	0.59	228.82	228.03	211.32	16.71	
85	78 -79	6	92	98	1323	59.54	1.26	11.05	12.31	0.00	30.00	30.00	0.00	1.74	1.74	43.5	145.3	290.7	64027	100	0.43	85	4.12	0.35	228.03	227.68	211.35	16.33	
86	79 -80	25	0	25	338	15.21	2.45	0.00	2.45	0.00	0.00	0.00	0.07	0	0.07	1.8	19.4	38.8	8549	80	0.09	165	0.29	0.05	227.68	227.63	211.40	16.23	
87	79 -81	19	0	19	257	11.57	2.30	0.00	2.30	0.00	0.00	0.00	0.00	0	0.00	0.0	13.9	27.7	6107	80	0.06	155	0.16	0.02	227.68	227.66	211.37	16.29	
88	79 -82	0	48	48	648	29.16	0.82	5.49	6.30	0.00	30.00	30.00	0.00	1.67	1.67	41.8	107.2	214.4	47230	100	0.32	55	2.34	0.13	227.68	227.55	211.36	16.19	

TREATED EFFLUENT DISTRIBUTION SYSTEM

TERMINAL HEAD STATEMENT *(Value of C = 100)*

S. No.	Name of Pipe Link	No. of Plots			Popu-lation @ 13.5 persons per plot	Require-ment @ 45 LPCD (in KL)	Requirement from Roads (KLD) @ 5 KLD/Acre			Requirement from Commercial & Community Buildings (KLD) @ 30% of			Requirement from Parks/Greens (KLD)				Total Require-ment (in KL) (7 + 10 + 14)	Peak require-ment @ 2 Times (in KLD)	Total Dis-charge (in Gallons)	Propo-sed size of pipe line (in mm)	Veloci-ty of Flow "V" in MPS	Length of Pipe line (in M)	Loss of Head Per 1000 M	Total Loss of Head (in M)	Hydraulic level (in M)		Form-ation Level at Lower End (in M)	Termin-al Head Avail-able (in M)	Remarks
	Jn. Nodes	Self	Branch	Total			Self	Branch	Total	Self	Branch	Total	Area (in Acres) Self	Branch	Total	Requi-rement @ 25 KL per acre									Upper End	Lower End			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
89	82 -83	17	0	17	230	10.35	1.48	0.00	1.48	0.00	0.00	0.00	0.10	0	0.10	2.5	14.3	28.7	6314	80	0.07	100	0.17	0.02	227.55	227.53	211.40	16.13	
90	82 -84	31	0	31	419	18.86	2.59	0.00	2.59	0.00	0.00	0.00	0.00	0	0.00	0.0	21.4	42.9	9449	80	0.10	175	0.35	0.06	227.55	227.49	211.42	16.07	
91	82 -85	0	0	0	0	0.00	0.89	0.00	0.89	0.00	0.00	0.00	1.57	0	1.57	39.3	40.1	80.3	17683	80	0.18	60	1.13	0.07	227.55	227.48	211.38	16.10	
92	85 -86	0	0	0	0	0.00	0.52	0.00	0.52	30.00	0.00	30.00	0.00	0	0.00	0.0	30.5	61.0	13444	80	0.14	35	0.68	0.02	227.48	227.46	211.40	16.06	
93	78 -87	5	24	29	392	17.64	0.96	4.23	5.19	0.00	15.00	15.00	0.00	0.52	0.52	13.0	50.8	101.7	22392	80	0.23	65	1.74	0.11	228.03	227.92	211.29	16.63	
94	87 -88	1	0	1	14	0.63	0.44	0.00	0.44	15.00	0.00	15.00	0.00	0	0.00	0.0	16.1	32.1	7081	80	0.07	30	0.21	0.01	227.92	227.91	211.27	16.64	
95	87 -89	10	13	23	311	14.00	1.48	2.30	3.78	0.00	0.00	0.00	0.00	0.52	0.52	13.0	30.8	61.6	13558	80	0.14	100	0.69	0.07	227.92	227.85	211.31	16.54	
96	78 -90	6	0	6	81	3.65	0.82	0.00	0.82	0.00	0.00	0.00	0.52	0	0.52	13.0	17.5	34.9	7692	80	0.08	55	0.24	0.01	227.85	227.83	211.33	16.50	
97	90 -91	7	0	7	95	4.28	1.48	0.00	1.48	0.00	0.00	0.00	0.00	0	0.00	0.0	5.8	11.5	2536	80	0.03	100	0.03	0.00	227.85	227.84	211.37	16.47	

GURGAON (HARYANA).

DESIGN OF STORM WATER DRAINAGE SCHEME

S. NO.	NAME OF PIPE LINE	LENGTH OF DRAIN	AREA TO BE SERVED (in Acres)			DISCH-ARGE @ 1/2" Rainfall/ Hr. (in Cusecs)	DIA OF RCC PIPE (in mm)	DESIGN VELOCITY (in Ft./sec)	DESIGNED DISCHARGE (in Cusecs)	Gradient	FALL (in M)	G L IN METERS		FORMATION LEVEL (FL) (in M)		INVERT LEVELS IN METERS		DEPTH OF LINE BELOW FL (in M)		
			SELF	BRANCH	TOTAL							Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	AVERAGE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Q9 - Q8	95	1.873	0	1.87	0.94	400	2.52	3.4	1 In 650	0.15	209.31	209.29	211.79	211.58	210.79	210.64	1.00	0.94	0.97
2	Q8 - Q	80	1.164	1.87	3.04	1.52	400	2.52	3.4	1 In 650	0.12	209.29	209.35	211.58	211.47	210.64	210.52	0.94	0.95	0.94
3	Q7/1 - Q7	150	2.366	0	2.37	1.18	400	2.52	3.4	1 In 650	0.23	209.86	209.66	211.63	211.58	210.63	210.40	1.00	1.18	1.09
4	Q7 - Q6	75	0.629	2.37	3	1.5	400	2.52	3.4	1 In 650	0.12	209.66	209.47	211.58	211.56	210.40	210.28	1.18	1.28	1.23
5	Q6/3 - Q6/1	35	0.318	0	0.32	0.16	400	2.52	3.4	1 In 650	0.05	209.56	209.53	211.58	211.56	210.58	210.53	1.00	1.03	1.02
6	Q6/2 - Q6/1	60	0.779	0	0.78	0.39	400	2.52	3.4	1 In 650	0.09	209.64	209.53	211.58	211.56	210.58	210.49	1.00	1.07	1.04
7	Q6/1 - Q6	35	0.297	1.1	1.39	0.7	400	2.52	3.4	1 In 650	0.05	209.53	209.47	211.56	211.56	210.49	210.43	1.07	1.13	1.10
8	Q6 - Q5	90	0.741	4.39	5.13	2.56	400	2.52	3.4	1 In 650	0.14	209.47	209.4	211.56	211.52	210.28	210.15	1.28	1.37	1.33
9	Q5 - Q4	50	0.124	5.13	5.25	2.63	400	2.52	3.4	1 In 650	0.08	209.4	209.35	211.52	211.5	210.15	210.07	1.37	1.43	1.40
10	Q4/2 - Q4/1	90	1.613	0	1.61	0.81	400	2.52	3.4	2 In 650	0.14	209.77	209.64	211.41	211.43	210.41	210.27	1.00	1.16	1.08
11	Q4/1 - Q4	160	1.121	1.61	2.73	1.37	400	2.52	3.4	1 In 650	0.25	209.64	209.35	211.43	211.5	210.27	210.03	1.16	1.47	1.32
12	Q4 - Q	115	0.838	7.99	8.83	4.41	600	2.54	7.7	1 In 1100	0.10	209.35	209.35	211.5	211.47	210.03	209.92	1.47	1.55	1.51
13	Q3 - Q1	85	1.799	0	1.8	0.9	400	2.52	3.4	1 In 650	0.13	209.42	209.32	211.44	211.45	210.44	210.31	1.00	1.14	1.07
14	Q2 - Q1	60	0.87	0	0.87	0.43	400	2.52	3.4	1 In 650	0.09	209.38	209.32	211.47	211.45	210.47	210.38	1.00	1.07	1.04
15	Q1 - Q	70	1.018	2.67	3.69	1.84	400	2.52	3.4	1 In 650	0.11	209.32	209.35	211.45	211.47	210.31	210.20	1.14	1.27	1.20
16	Q - P	80	0.297	15.55	15.85	3.96	600	2.54	7.7	1 In 1100	0.07	209.35	209.23	211.47	211.49	209.92	209.85	1.55	1.64	1.60
17	P - N	265	3.793	15.85	19.64	4.91	600	2.54	7.7	1 In 1100	0.24	209.23	209.72	211.49	211.41	209.85	209.61	1.64	1.80	1.72
18	N2 - N	190	3.1	0	3.1	1.55	400	2.52	3.4	1 In 650	0.29	210.16	209.72	211.48	211.41	210.48	210.19	1.00	1.22	1.11
19	N1 - N	40	0.119	0	0.12	0.06	400	2.52	3.4	1 in 650	0.06	209.65	209.72	211.43	211.41	210.43	210.37	1.00	1.04	1.02
20	N - M	95	0.282	22.74	23.02	5.76	600	2.54	7.7	1 In 1100	0.09	209.72	210.15	211.41	211.41	209.61	209.52	1.80	1.89	1.85
21	M11 - M10	60	0.837	0	0.84	0.42	400	2.52	3.4	1 in 650	0.09	209.28	209.26	211.51	211.5	210.51	210.42	1.00	1.08	1.04
22	M10 - M8	70	0.641	0.84	1.48	0.74	400	2.52	3.4	1 in 650	0.11	209.26	209.31	211.5	211.47	210.42	210.31	1.08	1.16	1.12
23	M9 - M8	70	0.623	0	0.62	0.31	400	2.52	3.4	1 in 650	0.11	209.5	209.31	211.5	211.47	210.5	210.39	1.00	1.08	1.04
24	M8 - M	230	3.542	2.1	5.64	2.82	400	2.52	3.4	1 in 650	0.35	209.31	210.15	211.47	211.41	210.39	210.04	1.08	1.37	1.22
25	M7 - M6	40	0.287	0	0.29	0.14	400	2.52	3.4	1 In 650	0.06	210.04	210.02	211.48	211.47	210.48	210.42	1.00	1.05	1.03
26	M6 - M4	80	0.806	0.29	1.09	0.55	400	2.52	3.4	1 In 650	0.12	210.02	210.23	211.47	211.43	210.42	210.30	1.05	1.13	1.09
27	M5 - M4	105	0.949	0	0.95	0.47	400	2.52	3.4	1 In 650	0.16	210.09	210.23	211.48	211.43	210.48	210.32	1.00	1.11	1.06
28	M4 - M1	130	1.018	2.04	3.06	1.53	400	2.52	3.4	1 In 650	0.20	210.23	210.25	211.43	211.41	210.30	210.10	1.13	1.31	1.22
29	M3 - M1	300	3.188	0	3.19	1.59	400	2.52	3.4	1 In 650	0.46	209.48	210.25	211.49	211.41	210.49	210.03	1.00	1.38	1.19
30	M2 - M1	170	2.39	0	2.39	1.2	400	2.52	3.4	1 In 650	0.26	210.32	210.25	211.46	211.41	210.46	210.20	1.00	1.21	1.11
31	M1 - M	70	0.208	8.64	8.84	4.42	600	2.54	7.7	1 In 1100	0.06	210.25	210.15	211.41	211.41	210.03	209.96	1.38	1.45	1.41
32	M - L	210	3.332	37.51	40.84	10.21	800	2.51	13.6	1 In 1650	0.13	210.15	209.3	211.41	211.39	209.52	209.39	1.89	2.00	1.94
33	L1 - L	80	0.662	0	0.66	0.33	400	2.52	3.4	1 In 650	0.12	209.16	209.3	211.41	211.39	210.41	210.29	1.00	1.10	1.05
34	L - K	70	0.208	41.5	41.71	10.43	800	2.51	13.6	1 In 1650	0.04	209.3	210.22	211.39	211.37	209.39	209.35	2.00	2.02	2.01
35	K2 - K1	55	0.86	0	0.86	0.43	400	2.52	3.4	1 In 650	0.08	210.39	210.33	211.43	211.41	210.43	210.35	1.00	1.06	1.03
36	K1 - K	55	0.163	0.86	1.02	0.51	400	2.52	3.4	1 In 650	0.08	210.33	210.22	211.41	211.37	210.35	210.26	1.06	1.11	1.09
37	K - J	310	5.624	42.73	48.36	12.09	800	2.51	13.6	1 In 1650	0.19	210.22	210.74	211.37	211.34	209.35	209.16	2.02	2.18	2.10
38	J9 - J8	40	0.358	0	0.36	0.18	400	2.52	3.4	1 In 650	0.06	209.1	209.11	211.51	211.49	210.51	210.45	1.00	1.04	1.02
39	J8 - J7	75	0.432	0.36	0.79	0.4	400	2.52	3.4	1 In 650	0.12	209.11	208.97	211.49	211.47	210.45	210.33	1.04	1.14	1.09
40	J7 - J6	45	0.133	0.79	0.92	0.46	400	2.52	3.4	1 In 650	0.07	208.97	210.36	211.47	211.45	210.33	210.26	1.14	1.19	1.16
41	J6 - J5	40	0.457	0.92	1.38	0.69	400	2.52	3.4	1 In 650	0.06	210.36	210.44	211.45	211.44	210.26	210.20	1.19	1.24	1.21
42	J5 - J4	45	0.235	1.38	1.62	0.81	400	2.52	3.4	1 In 650	0.07	210.44	210.53	211.44	211.43	210.20	210.13	1.24	1.30	1.27
43	J4 - J3	35	0.104	1.62	1.72	0.86	400	2.52	3.4	1 In 650	0.05	210.53	210.57	211.43	211.41	210.13	210.08	1.30	1.33	1.31
44	J3 - J2	115	0.806	1.72	2.53	1.26	400	2.52	3.4	1 In 650	0.18	210.57	210.69	211.41	211.37	210.08	209.90	1.33	1.47	1.40
45	J2/1 - J2	70	0.572	0	0.57	0.29	400	2.52	3.4	1 In 650	0.11	210.72	210.69	211.4	211.37	210.4	210.29	1.00	1.08	1.04
46	J2 - J1	35	0.104	3.1	3.2	1.6	400	2.52	3.4	1 In 650	0.05	210.69	210.72	211.37	211.36	209.90	209.85	1.47	1.51	1.49
47	J1/2 - J1	60	0.469	0	0.47	0.23	400	2.52	3.4	1 In 650	0.09	210.78	210.72	211.38	211.36	210.38	210.29	1.00	1.07	1.04

S. NO.	NAME OF PIPE LINE	LENGTH OF DRAIN	AREA TO BE SERVED (in Acres)			DISCH-ARGE @ 1/2" Rainfall/ Hr. (in Cusecs)	DIA OF RCC PIPE (in mm)	DESIGN VELOCITY (in Ft./sec)	DESIGNED DISCHARGE (in Cusecs)	Gradient	FALL (in M)	G L IN METERS		FORMATION LEVEL (FL) (in M)		INVERT LEVELS IN METERS		DEPTH OF LINE BELOW FL (in M)		
			SELF	BRANCH	TOTAL							Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	AVERAGE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
48	J1/1 - J1	75	0.445	0	0.44	0.22	400	2.52	3.4	1 In 650	0.12	210.72	210.72	211.39	211.36	210.39	210.27	1.00	1.09	1.04
49	J1 - J	85	0.508	4.12	4.62	2.31	400	2.52	3.4	1 In 650	0.13	210.72	210.74	211.36	211.34	209.85	209.72	1.51	1.62	1.57
50	J - H	95	1.563	52.98	54.54	13.64	800	2.55	13.8	1 In 1600	0.06	210.74	210.8	211.34	211.32	209.72	209.66	1.62	1.66	1.64
51	H1 - H	150	2.361	0	2.36	1.18	400	2.52	3.4	1 In 650	0.23	210.19	210.8	211.35	211.32	210.35	210.12	1.00	1.20	1.10
52	H - G	190	1.473	56.9	58.38	14.59	800	2.73	14.8	1 In 1400	0.14	210.8	209.6	211.32	211.82	209.66	209.52	1.66	2.30	1.98
53	G4 - G2	100	1.307	0	1.31	0.65	400	2.52	3.4	1 In 650	0.15	209.57	210	211.89	211.85	210.89	210.74	1.00	1.11	1.06
54	G3 - G2	20	0.35	0	0.35	0.17	400	2.52	3.4	1 In 650	0.03	210	210	211.86	211.85	210.86	210.83	1.00	1.02	1.01
55	G2 - G1	85	1.221	1.66	2.88	1.44	400	2.52	3.4	1 In 650	0.13	210	210	211.85	211.83	210.74	210.61	1.11	1.22	1.17
56	G1/2 - G1/1	70	1.24	0	1.24	0.62	400	2.52	3.4	1 In 650	0.11	210	210	211.87	211.85	210.87	210.76	1.00	1.09	1.04
57	G1/1 - G1	70	0.55	1.24	1.79	0.9	400	2.52	3.4	1 In 650	0.11	210	210	211.85	211.83	210.76	210.65	1.09	1.18	1.13
58	G1 - G	40	0.12	4.67	4.79	2.39	400	2.52	3.4	1 In 650	0.06	210	209.6	211.83	211.82	210.61	210.54	1.22	1.28	1.25
59	G - F	15	0.09	63.16	63.25	15.81	1000	2.52	21.3	1 In 2200	0.01	209.6	210.14	211.82	211.85	209.52	209.52	2.30	2.33	2.32
60	F3 - F2	60	0.88	0	0.88	0.44	400	2.52	3.4	1 In 650	0.09	210	210	212.19	212.17	211.19	211.10	1.00	1.07	1.04
61	F2 - F1	90	0.27	0.88	1.15	0.58	400	2.52	3.4	1 In 650	0.14	210	210	212.17	212.13	211.10	210.96	1.07	1.17	1.12
62	F1 - F	130	1.15	1.15	2.3	1.15	400	2.52	3.4	1 In 650	0.20	210	210.14	212.13	211.85	210.96	210.76	1.17	1.09	1.13
63	F - E	200	0.74	65.55	66.3	16.57	1000	2.52	21.3	1 In 2200	0.09	210.14	210.95	211.85	211.88	209.52	209.42	2.33	2.46	2.39
64	E1 - E	100	1.44	0	1.44	0.72	400	2.52	3.4	1 In 650	0.15	210.9	210.95	211.92	211.88	210.92	210.77	1.00	1.11	1.06
65	E - D	135	0.5	67.73	68.23	17.06	1000	2.52	21.3	1 In 2200	0.06	210.95	210	211.88	211.93	209.42	209.36	2.46	2.57	2.51
66	D1 - D	70	0.79	0	0.79	0.4	400	2.52	3.4	1 In 650	0.11	210	210	211.96	211.93	210.96	210.85	1.00	1.08	1.04
67	D - C	90	1.07	69.02	70.1	17.52	1000	2.52	21.3	1 In 2200	0.04	210	210	211.93	212.3	209.36	209.32	2.57	2.98	2.77
68	C3 - C2	55	0.49	0	0.49	0.25	400	2.52	3.4	1 In 650	0.08	210	210	212.36	212.34	211.36	211.28	1.00	1.06	1.03
69	C2 - C1	30	0.22	0.49	0.71	0.36	400	2.52	3.4	1 In 650	0.05	210	210	212.34	212.33	211.28	211.23	1.06	1.10	1.08
70	C1 - C	90	0.72	0.71	1.44	0.72	400	2.52	3.4	1 In 650	0.14	210	210	212.33	212.3	211.23	211.09	1.10	1.21	1.16
71	C - B	65	0.56	71.54	72.09	18.02	1000	2.52	21.3	1 In 2200	0.03	210	210	212.3	212.5	209.32	209.29	2.98	3.21	3.09
72	B2 - B1	125	2.17	0	2.17	1.09	400	2.52	3.4	1 In 650	0.19	210	210	211.91	211.95	210.91	210.72	1.00	1.23	1.12
73	B1 - B	135	2.48	2.17	4.65	2.33	400	2.52	3.4	1 In 650	0.21	210	210	211.95	212.5	210.72	210.51	1.23	1.99	1.61
74	B - A	45	1.4	76.75	78.14	19.54	1000	2.52	21.3	1 In 2200	0.02	210	210	212.5	212.72	209.29	209.27	3.21	3.45	3.33
75	R1 - R	90	0.584	0	0.58	0.29	400	2.52	3.4	1 In 650	0.14	209.22	209.22	211.55	211.51	210.55	210.41	1.00	1.10	1.05
76	R - S	60	0.178	0.58	0.76	0.38	400	2.52	3.4	1 In 650	0.09	209.22	209.25	211.51	211.5	210.41	210.32	1.10	1.18	1.14
77	S3 - S1	65	0.518	0	0.52	0.26	400	2.52	3.4	1 in 650	0.10	209.23	209.18	211.54	211.53	210.54	210.44	1.00	1.09	1.05
78	S2 - S1	20	0.276	0	0.28	0.14	400	2.52	3.4	1 In 650	0.03	209.26	209.18	211.54	211.53	210.54	210.51	1.00	1.02	1.01
79	S1 - S	105	1.116	0.79	1.91	0.96	400	2.52	3.4	1 In 650	0.16	209.18	209.25	211.53	211.5	210.44	210.28	1.09	1.22	1.16
80	S - T	50	0.148	2.67	2.82	1.41	400	2.52	3.4	1 In 650	0.08	209.25	209.22	211.5	211.49	210.28	210.20	1.22	1.29	1.26
81	T - U	340	6.276	2.82	9.1	4.55	600	2.54	7.7	1 In 1100	0.31	209.22	209.52	211.49	211.32	210.20	209.89	1.29	1.43	1.36
82	X2 - X	25	0.766	0	0.77	0.38	400	2.52	3.4	1 In 650	0.04	209.28	209.25	211.39	211.38	210.39	210.35	1.00	1.03	1.01
83	X1 - X	40	0.469	0	0.47	0.23	400	2.52	3.4	1 In 650	0.06	209.32	209.25	211.4	211.38	210.4	210.34	1.00	1.04	1.02
84	X - W	55	1.68	1.24	2.92	1.46	400	2.52	3.4	1 In 650	0.08	209.25	209.29	211.38	211.36	210.34	210.25	1.04	1.11	1.07
85	W2 - W	170	2.125	0	2.13	1.06	400	2.52	3.4	1 In 650	0.26	209.51	209.29	211.42	211.36	210.42	210.16	1.00	1.20	1.10
86	W1 - W	100	1.137	0	1.14	0.57	400	2.52	3.4	1 In 650	0.15	209.24	209.29	211.4	211.36	210.4	210.25	1.00	1.11	1.06
87	W - V	55	0.326	6.18	6.5	3.25	400	2.52	3.4	1 In 650	0.08	209.29	209.39	211.36	211.35	210.16	210.07	1.20	1.28	1.24
88	V2 - V	160	2.372	0	2.37	1.19	400	2.52	3.4	1 In 650	0.25	209.56	209.39	211.37	211.35	210.37	210.12	1.00	1.23	1.11
89	V1 - V	165	1.835	0	1.83	0.92	400	2.52	3.4	1 In 650	0.25	209.26	209.39	211.4	211.35	210.4	210.15	1.00	1.20	1.10
90	V - U	85	0.735	10.71	11.45	5.72	600	2.54	7.7	1 In 1100	0.08	209.39	209.52	211.35	211.32	210.07	210.00	1.28	1.32	1.30
91	U2 - U1	105	1.377	0	1.38	0.69	400	2.52	3.4	1 In 650	0.16	209.3	209.53	211.37	211.33	210.37	210.21	1.00	1.12	1.06
92	U1 - U	55	0.511	1.38	1.89	0.94	400	2.52	3.4	1 In 650	0.08	209.53	209.52	211.33	211.32	210.21	210.12	1.12	1.20	1.16
93	U - Y	65	0.241	22.43	22.67	11.34	800	2.55	13.8	1 In 1600	0.04	209.52	209.43	211.32	211.29	209.89	209.85	1.43	1.44	1.43
94	Y1 - Y	65	0.241	0	0.24	0.12	400	2.52	3.4	1 in 650	0.10	209.48	209.43	211.31	211.29	210.31	210.21	1.00	1.08	1.04
95	Y - Z	115	0.682	22.67	23.35	11.68	800	2.55	13.8	1 In 1600	0.07	209.43	209.11	211.29	212.32	209.85	209.78	1.44	2.54	1.99

ROAD LEVELS

S. No.	Name		Length (M)	Road Formation Level (in Meters)		GRADIENT	ROAD WIDTH (in Meters)		ROAD AREA (in Acres)	ROAD THICKNESS (in Meters)	GROUND LEVELS (in Meters)				SUBGRADE LEVELS (in Meters)			AVERAGE DEPTH OF EARTH WORK (in Meters)	QTY. OF EARTH WORK IN FILLING (in Cubic meters)
	Node First End	Node Second End		Node First End	Node Second End		ROW	WIDTH OF CARRIAGEWAY			Node First End	INTERMEDIATE GROUND LEVELs	Node Second End	AVERAGE GROUND LEVEL	Node First End	Node Second End	AVERAGE SUBGRADE LEVEL		
1	2		3	4	5	6	7		8	9	10	11	12	13	14	15	16	17	18	19
1	A	A1	170	212.36	212.02	1 in 500	24	14.00	1.01	0.530	209.11	NA	NA	209.40	209.26	211.83	211.49	211.66	2.405	9812.40
2	A1	A2	50	212.02	211.92	1 in 500	24	14.00	0.30	0.530	209.40	209.38	209.39	209.40	209.39	211.49	211.39	211.44	2.048	2457.00
3	A2	A3	65	211.92	211.79	1 in 500	24	14.00	0.39	0.530	209.40	NA	NA	209.32	209.36	211.39	211.26	211.33	1.965	3065.40
4	A3	A4	105	211.79	211.58	1 in 500	24	14.00	0.62	0.530	209.32	209.30	209.28	209.27	209.29	211.26	211.05	211.16	1.863	4693.50
5	A4	A5	50	211.58	211.48	1 in 500	24	14.00	0.30	0.530	209.27	209.25	209.28	209.30	209.28	211.05	210.95	211.00	1.725	2070.00
6	A5	A6	45	211.48	211.47	1 in 5000	24	14.00	0.27	0.530	209.30	209.28	209.26	209.27	209.28	210.95	210.94	210.95	1.668	1801.44
7	A6	A7	90	211.47	211.45	1 in 5000	24	14.00	0.53	0.530	209.27	209.35	209.32	209.34	209.32	210.94	210.92	210.93	1.612	3481.92
8	A7	A8	85	211.45	211.44	1 in 5000	24	14.00	0.50	0.530	209.34	209.35	209.40	209.50	209.40	210.92	210.91	210.91	1.517	3094.68
9	A8	A9	35	211.44	211.43	1 in 5000	24	14.00	0.21	0.530	209.50	209.61	209.64	209.55	209.58	210.91	210.90	210.90	1.328	1115.10
10	A9	A10	100	211.43	211.41	1 in 5000	24	14.00	0.59	0.530	209.55	209.64	209.76	209.77	209.68	210.90	210.88	210.89	1.209	2901.60
11	A10	A11	300	211.41	211.35	1 in 5000	24	14.00	1.78	0.530	209.77	NA	NA	210.19	209.98	210.88	210.82	210.85	0.869	6256.80
12	A11	A12	140	211.35	211.32	1 in 5000	24	14.00	0.83	0.530	210.19	210.71	210.74	210.78	210.61	210.82	210.79	210.81	0.200	672.00
13	A12	A13	110	211.32	211.34	1 in 5000	24	14.00	0.65	0.530	210.78	210.80	210.72	210.74	210.76	210.79	210.81	210.80	0.042	110.88
14	A12	A14	200	211.32	211.82	1 in 400	24	14.00	1.19	0.530	210.78	210.83	210.88	210.14	210.66	210.79	211.29	211.04	0.384	1840.80
15	A14	A15	125	211.82	212.13	1 in 400	24	14.00	0.74	0.530	210.14	NA	NA	210.00	210.07	211.29	211.60	211.45	1.377	4131.75
16	A15	A16	95	212.13	212.51	1 in 250	24	14.00	0.59	0.530	210.14	NA	NA	210.00	210.07	211.60	211.98	211.79	1.724	4115.12
17	A17	A18	60	211.51	211.50	1 in 5000	24	14.00	0.36	0.530	209.23	209.27	209.26	209.25	209.25	210.98	210.97	210.97	1.719	2474.64
18	A18	A19	45	211.50	211.49	1 in 5000	24	14.00	0.27	0.530	209.25	209.25	209.24	209.23	209.24	210.97	210.96	210.96	1.718	1855.44

ROAD LEVELS

S. No.	Name		Length (M)	Road Formation Level (in Meters)		GRADIENT	ROAD WIDTH (in Meters)		ROAD AREA (in Acres)	ROAD THICKNESS (in Meters)	GROUND LEVELS (in Meters)				SUBGRADE LEVELS (in Meters)			AVERAGE DEPTH OF EARTH WORK (in Meters)	QTY. OF EARTH WORK IN FILLING (in Cubic meters)
	Node First End	Node Second End		Node First End	Node Second End		ROW	WIDTH OF CARRIAGEWAY			Node First End	INTERMEDIATE GROUND LEVELs	Node Second End	AVERAGE GROUND LEVEL	Node First End	Node Second End	AVERAGE SUBGRADE LEVEL		
1	2		3	4	5	6	7		8	9	10	11	12	13	14	15	16	17	18	19
19	A20	A21	105	212.32	211.27	1 in 100	24	14.00	0.62	0.530	209.12	209.11	209.10	209.08	209.10	211.79	210.74	211.27	2.162	5449.50
20	A6	A19	75	211.47	211.49	1 in 5000	15	7.00	0.28	0.425	209.27	209.31	209.22	209.23	209.26	211.05	211.06	211.05	1.796	2020.50
21	A7	B7	50	211.45	211.47	1 in 3000	15	7.00	0.19	0.425	209.34	209.34	209.36	209.39	209.36	211.03	211.04	211.04	1.679	1259.13
22	A14	B1	190	211.82	211.88	1 in 3000	15	7.00	0.70	0.425	210.14	NA	NA	210.00	210.07	211.40	211.46	211.43	1.358	3869.35
23	B1	B2	80	211.88	211.91	1 in 3000	15	7.00	0.30	0.425	210.00	NA	NA	210.00	210.00	211.46	211.49	211.47	1.473	1767.20
24	B2	B3	55	211.91	211.93	1 in 3000	15	7.00	0.20	0.425	210.00	NA	NA	210.00	210.00	211.49	211.50	211.50	1.495	1233.51
25	B3	B4	85	211.93	211.96	1 in 3000	15	7.00	0.32	0.425	210.00	NA	NA	210.00	210.00	211.50	211.53	211.52	1.519	1936.09
26	B3	B5	90	211.93	212.30	1in 240	15	7.00	0.33	0.425	210.00	NA	NA	210.00	210.00	211.50	211.88	211.69	1.692	2283.98
27	B5	B6	100	212.30	212.72	1 in 240	15	7.00	0.37	0.425	210.00	NA	NA	210.00	210.00	211.88	212.30	212.09	2.088	3131.50
28	A21	C1	30	211.27	211.29	1 in 2000	15	7.00	0.11	0.425	209.08	208.76	208.79	209.11	208.94	210.85	210.86	210.85	1.912	860.62
34	C1	C4	65	211.29	211.32	1 in 2000	15	7.00	0.24	0.425	208.80	209.45	209.46	209.48	209.30	210.86	210.89	210.88	1.579	1539.28
29	C4	C4/1	325	211.32	211.48	1 in 2000	15	7.00	1.20	0.425	209.48	209.25	209.31	209.23	209.32	210.89	211.06	210.97	1.656	8043.15
31	F1	A13	290	211.37	211.34	1 in 10000	15	7.00	1.26	0.425	210.22	210.34	210.55	210.74	210.46	210.94	210.92	210.93	0.468	2387.21
31	C1	C2	80	211.29	211.31	1 in 3000	12	5.50	0.24	0.425	209.11	209.09	208.79	209.43	209.11	210.86	210.89	210.87	1.768	1697.60
32	C2	C3	100	211.31	211.37	1 in 1800	12	5.50	0.30	0.425	209.43	209.39	209.40	208.80	209.26	210.89	210.94	210.91	1.659	1991.33
33	C2	C5	60	211.31	211.35	1 in 1800	12	5.50	0.18	0.425	208.80	208.81	208.79	208.76	208.79	210.89	210.92	210.90	2.113	1521.60
35	C4	C5	85	211.32	211.35	1 in 3000	12	5.50	0.25	0.425	209.48	209.58	209.57	209.56	209.55	210.89	210.92	210.91	1.359	1386.35
36	C5	C6	170	211.35	211.40	1 in 3000	12	5.50	0.50	0.425	209.48	209.47	209.49	209.39	209.46	210.92	210.98	210.95	1.492	3043.00
37	C5	C7	55	211.35	211.36	1 in 3000	12	5.50	0.16	0.425	209.53	209.30	209.47	209.39	209.42	210.92	210.94	210.93	1.507	994.95
38	C7	C8	175	211.36	211.42	1 in 3000	12	5.50	0.52	0.425	209.39	209.34	209.28	209.26	209.32	210.94	211.00	210.97	1.651	3466.75
39	C7	C9	105	211.36	211.40	1 in 3000	12	5.50	0.31	0.425	209.39	209.37	209.36	209.31	209.36	210.94	210.97	210.96	1.599	2014.95
40	C7	C10	60	211.36	211.38	1 in 3000	12	5.50	0.18	0.425	209.31	209.32	209.59	209.50	209.43	210.94	210.96	210.95	1.519	1093.80
41	C10	C11	30	211.38	211.39	1 in 3000	12	5.50	0.09	0.425	209.31	209.26	209.24	209.23	209.26	210.96	210.97	210.96	1.704	613.50
42	C10	C12	35	211.38	211.40	1 in 3000	12	5.50	0.10	0.425	209.31	209.29	209.27	209.25	209.28	210.96	210.97	210.97	1.685	707.70
43	C4	C13	40	211.32	211.33	1 in 3000	12	5.50	0.12	0.425	209.25	209.27	209.25	209.28	209.26	210.89	210.91	210.90	1.637	785.60
44	C13	C14	30	211.33	211.34	1 in 3000	12	5.50	0.09	0.425	209.25	209.28	209.29	209.32	209.29	210.91	210.92	210.91	1.626	585.30
45	C13	C15	115	211.33	211.37	1 in 3000	12	5.50	0.34	0.425	209.43	209.44	209.47	209.53	209.47	210.91	210.94	210.93	1.457	2011.35
46	A18	D	90	211.50	211.53	1 in 3000	12	5.50	0.27	0.425	209.25	209.24	209.19	209.18	209.22	211.07	211.10	211.09	1.870	2019.60

ROAD LEVELS

S. No.	Name		Length (M)	Road Formation Level (in Meters)		GRADIENT	ROAD WIDTH (in Meters)		ROAD AREA (In Acres)	ROAD THICKNESS (in Meters)	GROUND LEVELS (in Meters)				SUBGRADE LEVELS (in Meters)			AVERAGE DEPTH OF EARTH WORK (in Meters)	QTY. OF EARTH WORK IN FILLING (in Cubic meters)
	Node First End	Node Second End		Node First End	Node Second End		ROW	WIDTH OF CARRIAGEWAY			Node First End	INTERMEDIATE GROUND LEVELs		Node Second End	AVERAGE GROUND LEVEL	Node First End	Node Second End	AVERAGE SUBGRADE LEVEL		
1	2		3	4	5	6	7		8	9	10	11	12	13	14	15	16	17	18	19
47	D	D1	35	211.53	211.54	1 in 3000	12	5.50	0.10	0.425	209.18	209.17	209.17	209.25	209.19	211.10	211.11	211.11	1.913	803.60
48	D	D2	45	211.53	211.54	1in 3000	12	5.50	0.13	0.425	209.18	209.21	209.22	209.23	209.21	211.10	211.12	211.11	1.897	1024.65
49	D2	D3	20	211.54	211.55	1 in 3000	12	5.50	0.06	0.425	209.23	209.21	209.18	209.14	209.19	211.12	211.12	211.12	1.928	462.80
50	D2	A17	100	211.54	211.51	1 in 3000	12	5.50	0.30	0.425	209.23	209.21	209.22	209.23	209.22	211.12	211.08	211.10	1.876	2251.00
51	A19	E	240	211.49	211.41	1 in 3000	12	5.50	0.71	0.425	209.23	209.27	209.52	209.68	209.43	211.06	210.98	211.02	1.596	4596.48
52	E	E1	60	211.41	211.43	1 in 3000	12	5.50	0.18	0.425	209.68	209.69	209.64	209.65	209.67	210.98	211.00	210.99	1.326	954.72
53	E	E2	225	211.41	211.48	1 in 3000	12	5.50	0.67	0.425	209.68	209.75	210.12	210.19	209.94	210.98	211.06	211.02	1.083	2925.45
54	E	E4	100	211.41	211.41	FLAT SLOPE	12	5.50	0.30	0.425	209.68	209.72	210.14	210.11	209.91	210.98	210.98	210.98	1.069	1282.20
55	E4	E12	55	211.41	211.41	FLAT SLOPE	12	5.50	0.16	0.425	210.11	210.15	210.16	210.26	210.17	210.98	210.98	210.98	0.811	535.26
56	E4	E3	200	211.41	211.39	1 in 10000	12	5.50	0.59	0.425	210.11	210.15	209.37	210.12	209.94	210.98	210.96	210.97	1.034	2480.40
57	A18	E5	70	211.50	211.47	1 in 3000	12	5.50	0.21	0.425	210.11	210.05	209.41	209.32	209.72	211.07	211.05	211.06	1.336	1122.10
58	E4	A18	295	211.40	211.50	1in 3000	12	5.50	0.87	0.425	209.32	209.30	209.24	209.25	209.28	210.97	211.07	211.02	1.743	6171.40
59	E5	E6	45	211.47	211.49	1 in 3000	12	5.50	0.13	0.425	209.32	209.48	209.30	209.47	209.39	211.05	211.06	211.05	1.662	897.30
60	E6	E7	25	211.49	211.50	1 in 3000	12	5.50	0.07	0.425	209.47	209.47	209.48	209.50	209.48	211.06	211.07	211.07	1.586	475.75
61	E6	E8	125	211.49	211.45	1 in 3000	12	5.50	0.37	0.425	209.47	209.47	209.87	209.89	209.68	211.06	211.02	211.04	1.366	2048.75
62	E8	E9	20	211.45	211.44	1 in 3000	12	5.50	0.06	0.425	209.89	210.10	210.21	210.21	210.10	211.02	211.01	211.02	0.914	219.40
63	E9	E10	15	211.44	211.43	1 in 3000	12	5.50	0.04	0.425	210.21	210.22	210.11	210.13	210.17	211.01	211.01	211.01	0.843	151.80
64	E10	E11	30	211.43	211.42	1 in 3000	12	5.50	0.09	0.425	210.13	210.15	210.17	210.13	210.15	211.01	211.00	211.00	0.858	309.00
65	E11	E12	70	211.42	211.40	1 in 3000	12	5.50	0.21	0.425	210.13	210.26	210.27	210.26	210.23	211.00	210.98	210.99	0.757	635.60
66	E12	E13	185	211.40	211.46	1 in 3000	12	5.50	0.55	0.425	210.26	210.22	210.21	210.74	210.36	210.98	211.04	211.01	0.648	1439.30
67	E12	E14	170	211.40	211.46	1 in 3000	12	5.50	0.50	0.425	210.26	210.23	210.29	210.21	210.25	210.98	211.03	211.00	0.756	1541.90
68	E14	E15	45	211.46	211.47	1 in 3000	12	5.50	0.13	0.425	210.21	210.23	210.04	210.01	210.12	211.03	211.05	211.04	0.917	495.00
69	E15	E16	25	211.47	211.48	1 in 3000	12	5.50	0.07	0.425	210.01	209.97	209.98	209.75	209.93	211.05	211.06	211.05	1.123	337.00
70	E15	E17	35	211.47	211.48	1 in 3000	12	5.50	0.10	0.425	210.01	210.03	210.02	210.08	210.04	211.05	211.06	211.05	1.017	427.35
71	E14	E18	70	211.46	211.48	1 in 3000	12	5.50	0.21	0.425	210.29	210.15	210.16	210.05	210.16	211.03	211.06	211.04	0.881	739.90

ROAD LEVELS

S. No.	Name		Length (M)	Road Formation Level (in Meters)		GRADIENT	ROAD WIDTH (in Meters)		ROAD AREA (in Acres)	ROAD THICKNESS (in Meters)	GROUND LEVELS (in Meters)				SUBGRADE LEVELS (in Meters)			AVERAGE DEPTH OF EARTH WORK (in Meters)	QTY. OF EARTH WORK IN FILLING (in Cubic meters)
	Node First End	Node Second End		Node First End	Node Second End		ROW	WIDTH OF CARRIAGEWAY			Node First End	INTERMEDIATE GROUND LEVELs	Node Second End	AVERAGE GROUND LEVEL	Node First End	Node Second End	AVERAGE SUBGRADE LEVEL		
1	2		3	4	5	6	7		8	9	10	11	12	13	14	15	16	17	18	19
72	E3	F	85	211.39	211.41	1 in 3000	12	5.50	0.25	0.425	210.12	209.01	209.19	209.14	209.37	210.96	210.99	210.98	1.610	1642.37
73	E3	F1	55	211.39	211.37	1 in 3000	12	5.50	0.16	0.425	210.12	209.64	209.07	210.22	209.76	210.96	210.94	210.95	1.189	784.96
74	F1	F2	135	211.37	211.41	1 in 3000	12	5.50	0.40	0.425	210.22	210.23	210.27	210.24	210.24	210.94	210.99	210.97	0.725	1174.77
75	F2	F3	20	211.41	211.42	1 in 3000	12	5.50	0.06	0.425	210.24	210.24	210.30	210.25	210.26	210.99	210.99	210.99	0.733	176.04
76	F2	F4	50	211.41	211.43	1 in 3000	12	5.50	0.15	0.425	210.24	210.28	210.37	210.39	210.32	210.99	211.00	211.00	0.676	405.60
78	A13	G	65	211.34	211.36	1 in 3000	12	5.50	0.19	0.425	210.74	210.30	210.40	210.73	210.54	210.92	210.94	210.93	0.386	301.34
79	G	G1	70	211.36	211.39	1 in 3000	12	5.50	0.21	0.425	210.73	210.73	210.74	210.71	210.73	210.94	210.96	210.95	0.224	188.02
80	G	G2	55	211.36	211.38	1 in 3000	12	5.50	0.16	0.425	210.73	210.72	210.69	210.68	210.71	210.94	210.96	210.95	0.244	160.93
81	G	G3	30	211.36	211.37	1 in 3000	12	5.50	0.09	0.425	210.73	210.71	210.72	210.70	210.72	210.94	210.95	210.94	0.230	82.68
82	G3	G4	70	211.37	211.40	1 in 3000	12	5.50	0.21	0.425	210.70	210.68	210.73	210.74	210.71	210.95	210.97	210.96	0.249	209.02
83	G3	G5	120	211.37	211.41	1 in 3000	12	5.50	0.36	0.425	210.70	210.56	210.69	210.55	210.63	210.95	210.99	210.97	0.345	496.32
84	G5	G6	40	211.41	211.43	1 in 3000	12	5.50	0.12	0.425	210.55	210.56	210.58	210.53	210.56	210.99	211.00	211.00	0.441	211.84
85	G6	G7	40	211.43	211.44	1 in 3000	12	5.50	0.12	0.425	210.53	210.49	210.47	210.43	210.48	211.00	211.02	211.01	0.530	254.24
86	G7	G8	20	211.44	211.45	1 in 3000	12	5.50	0.06	0.425	210.43	210.43	210.43	210.43	210.43	211.02	211.02	211.02	0.590	141.52
87	G7	G9	35	211.44	211.45	1 in 3000	12	5.50	0.10	0.425	210.43	210.43	210.45	210.42	210.43	211.02	211.03	211.02	0.590	247.66
88	G9	G10	30	211.45	211.46	1 in 3000	12	5.50	0.09	0.425	210.42	210.36	209.19	208.92	209.72	211.03	211.04	211.03	1.310	471.78
89	G10	G11	20	211.46	211.47	1 in 3000	12	5.50	0.06	0.425	208.92	NA	NA	208.93	208.93	211.04	211.04	211.04	2.116	507.92
90	G11	G12	60	211.47	211.49	1 in 3000	12	5.50	0.18	0.425	208.93	209.23	NA	209.11	209.09	211.04	211.06	211.05	1.965	1414.56
91	G12	G13	50	211.49	211.51	1 in 3000	12	5.50	0.15	0.425	209.11	209.10	209.12	209.10	209.11	211.06	211.08	211.07	1.965	1179.30
92	A14	H	20	211.82	211.83	1 in 3000	12	5.50	0.06	0.425	210.14	NA	NA	210.00	210.07	211.40	211.40	211.40	1.329	319.04
93	H	H1	65	211.83	211.85	1 in 3000	12	5.50	0.19	0.425	210.00	NA	NA	210.00	210.00	211.40	211.42	211.41	1.414	1102.53
94	H1	H2	50	211.85	211.87	1 in 3000	12	5.50	0.15	0.425	210.00	NA	NA	210.00	210.00	211.42	211.44	211.43	1.433	859.60
95	H	H3	70	211.83	211.85	1 in 3000	12	5.50	0.21	0.425	210.00	NA	NA	210.00	210.00	211.40	211.43	211.41	1.414	1188.04
96	H3	H4	30	211.85	211.86	1 in 3000	12	5.50	0.09	0.425	210.00	NA	NA	210.00	210.00	211.43	211.44	211.43	1.431	515.16
97	H3	H5	60	211.85	211.87	1 in 3000	12	5.50	0.18	0.425	210.00	NA	NA	210.00	210.00	211.43	211.45	211.44	1.436	1033.92
98	H5	H6	50	211.87	211.89	1 in 3000	12	5.50	0.15	0.425	210.00	NA	NA	210.00	210.00	211.45	211.46	211.45	1.454	872.60
99	H1	H5	75	211.85	211.87		12	5.50	0.22	0.425	210.00	NA	NA	210.00	210.00	211.42	211.45	211.44	1.435	1291.65
100	A15	K	115	212.13	212.17	1 in 3000	12	5.50	0.34	0.425	210.00	NA	NA	210.00	210.00	211.71	211.75	211.73	1.728	2384.18
101	K	K1	60	212.17	212.19	1 in 3000	12	5.50	0.18	0.425	209.25	NA	NA	210.00	209.63	211.75	211.77	211.76	2.132	1534.92
102	B1	J1	105	211.88	211.92	1 in 3000	12	5.50	0.31	0.425	209.23	NA	NA	210.00	209.62	211.46	211.49	211.48	1.862	2345.91

ROAD LEVELS

S. No.	Name		Length (M)	Road Formation Level (in Meters)		GRADIENT	ROAD WIDTH (in Meters)		ROAD AREA (in Acres)	ROAD THICKNESS (in Meters)	GROUND LEVELS (in Meters)				SUBGRADE LEVELS (in Meters)			AVERAGE DEPTH OF EARTH WORK (in Meters)	QTY. OF EARTH WORK IN FILLING (in Cubic meters)
	Node First End	Node Second End		Node First End	Node Second End		ROW	WIDTH OF CARRIAGEWAY			Node First End	INTERMEDIATE GROUND LEVELs	Node Second End	AVERAGE GROUND LEVEL	Node First End	Node Second End	AVERAGE SUBGRADE LEVEL		
1	2		3	4	5	6	7		8	9	10	11	12	13	14	15	16	17	18	19
103	B2	J2	120	211.91	211.95	1 in 3000	12	5.50	0.36	0.425	210.00	NA	NA	210.00	210.00	211.49	211.53	211.51	1.506	2168.64
104	J2	J3	30	211.95	212.05	1 in 300	12	5.50	0.09	0.425	209.23	NA	NA	210.00	209.62	211.53	211.63	211.58	1.961	705.96
105	J3	J4	135	212.05	212.50	1 in 300	12	5.50	0.40	0.425	209.39	NA	NA	210.00	209.70	211.63	212.08	211.85	2.156	3492.72
106	B5	J5	75	212.30	212.33	1 in 3000	12	5.50	0.22	0.425	210.00	NA	NA	210.00	210.00	211.88	211.90	211.89	1.892	1702.65
107	J5	J6	20	212.33	212.34	1 in 3000	12	5.50	0.06	0.425	210.00	NA	NA	210.00	210.00	211.90	211.91	211.91	1.908	457.84
108	J5	J7	30	212.33	212.34	1 in 3000	12	5.50	0.09	0.425	210.00	NA	NA	210.00	210.00	211.90	211.91	211.91	1.909	687.36
109	J7	J8	55	212.34	212.36	1 in 3000	12	5.50	0.16	0.425	210.00	NA	NA	210.00	210.00	211.91	211.93	211.92	1.924	1269.51
110	A6	L1	90	211.47	211.50	1 in 3000	12	5.50	0.27	0.425	209.30	209.34	209.36	209.33	209.33	211.05	211.08	211.06	1.729	1866.78
111	L1	B7	70	211.50	211.47		12	5.50	0.21	0.425	209.33	209.32	209.34	209.39	209.35	211.08	211.04	211.06	1.715	1440.88
112	B7	A9	65	211.47	211.43		12	5.50	0.19	0.425	209.39	209.39	209.47	209.55	209.45	211.04	211.00	211.02	1.574	1227.98
113	L1	L2	70	211.50	211.52	1 in 3000	12	5.50	0.21	0.425	209.33	209.34	209.39	209.37	209.36	211.08	211.10	211.09	1.730	1453.34
114	L2	L3	95	211.52	211.56	1 in 3000	12	5.50	0.28	0.425	209.37	209.39	209.46	209.47	209.42	211.10	211.13	211.12	1.693	1929.64
115	L3	L4	20	211.56	211.56	1 in 3000	12	5.50	0.06	0.425	209.47	209.51	209.53	209.52	209.51	211.13	211.14	211.13	1.627	390.44
116	L4	L5	40	211.56	211.58	1 in 3000	12	5.50	0.12	0.425	209.52	209.54	209.56	209.59	209.55	211.14	211.15	211.14	1.592	764.08
117	L4	L8	55	211.56	211.58	1 in 3000	12	5.50	0.16	0.425	209.52	209.56	209.65	209.64	209.59	211.14	211.16	211.15	1.554	1025.86
118	L3	L6	45	211.56	211.57	1 in 3000	12	5.50	0.13	0.425	209.47	209.49	209.47	209.49	209.48	211.13	211.15	211.14	1.659	895.59
119	L6	L7	35	211.57	211.58	1 in 3000	12	5.50	0.10	0.425	209.49	209.67	209.66	209.66	209.62	211.15	211.16	211.15	1.532	643.37
120	L7	L8	20	211.58	211.59	1 in 3000	12	5.50	0.06	0.425	209.66	209.68	209.64	209.71	209.67	211.16	211.16	211.16	1.488	357.24
121	L7	L9	155	211.58	211.63	1 in 3000	12	5.50	0.46	0.425	209.71	209.75	209.86	209.85	209.79	211.16	211.21	211.18	1.391	2587.26
122	L6	A9	40	211.57	211.43		12	5.50	0.12	0.425	209.49	209.64	209.63	209.64	209.60	211.15	211.00	211.08	1.475	708.00