To

M/s Parsvnath Developers Ltd.,
6th Floor, Arnuachal Building,
19, Barakhamba Road,
New Delhi-110001.

Memo No:-ZP-171-JD (B)-2008/ 12522 Dated: 29-12-08

Subject: Approval of service plan/estimates of the Residential Plotted Colony being developed by M/s Parsvnath Developers Ltd. on the land measuring 84.155 acres at Village Raipur and Kamaspur, Distt. Sonepat.

Reference your letter dated 13.9.2008 on the subject cited above.

The service plan/estimates for Residential Plotted Colony on the land measuring 84.155 acres in the revenue estate of Village Raipur & Kamaspur, Distt. Sonepat has been checked and corrected wherever necessary by the Chief Administrator, HUDA and are hereby approved subject to the following terms and conditions: -

i) The owner will have to pay the proportionate cost of External Development Charges for setting up of Residential Plotted Colony for the services like water supply, sewerage, storm water drainage, roads, bridges, community buildings, street lighting, horticulture etc. on gross acreage basis as and when determined by HUDA/Director Town and Country Planning, Haryana. These charges are modifiable and modified charges will be binding upon you.

ii) The category wise area shown on the plans and proposed density of population thereof has been treated to be correct for the purpose of estimation/services only. The overall density of sector should be maintained according to Draft Development Plan.

iii) All technical notes and comments incorporated in the estimates in two sheets will also apply. A copy of these is also appended as Annexure-"A".

iv) The owner will have to ensure that sewer/storm water laid by them will be connected with the proposed master services by gravity if it is not possible to connect the services by gravity, it will be the responsibility of the owner to make the pumping arrangement and maintenance thereof all the time.

v) For disposal of sewerage of the colony, the coloniser has proposed sewerage treatment plant in their colony. It is made clear that you will be sole responsible for disposal of sewage of the colony till such time the HUDA services are made available as per proposal of the town. All the link connection with the HUDA services shall be made by the owner at his own cost.

vi) It is made clear that you will be sole responsible for disposal of SWD of the colony as per proposal till such time HUDA services are made available. All the link connection with HUDA Services shall be made by the owner at his own cost. Necessary permission from concerned authorities will also be sought by the coloniser.

vii) The estimates do not include the provision of electrification of the colony However, it is clear that the supervision charges and O & M charges shall be paid by the you directly to the HVPN Department.

viii) It is made clear to the coloniser that there will be no pollution due to disposal of sewerage of the colony. The disposal of effluent should be in accordance to the standard norms fixed by Haryana State Pollution Control Board.

ix) You shall be sole responsible for the construction of various structures such as RCC under ground tank OHSR Treatment Plan etc according to the standard specification good quality and its workmanship. The structural responsibility and water tightness of all the structures will be your responsibility.

x) It is made clear to the coloniser that the detailed technical proposal/scheme shall be got approved from this office before execution of works.

xi) In case some additional structures are required to be constructed and decided by HUDA at a later stage, the same will be binding upon you.

xii) The services estimate as received has been checked by CA, HUDA with the consideration that layout plan appended in the estimate has been checked and approved by this office.

xiii) The owner shall be sole responsible for integrating the internal system i.e. sewerage and storm water drainage of proposed colony by gravity with the external system of Sonipat Town to be laid by HUDA/State Govt. the correctness of the level of the colony will be sole responsibility of the colonizer. Pumping if required will be done by the coloniser for all time to come.

xiv) You shall be fully responsible for making arrangement of disposal of sewerage and storm water drainage till such time these are made available by HUDA/State Govt. and all link connections with the external system shall be made by you at your own cost with the prior approval of the competent authority.

xv) You will not make the connection with the master services i.e. water supply, sewerage and storm water drainage without getting its approval from the competent authority.

xvi) This estimate does not include the cost of internal development services to be provided in the Residential Plotted Colony and their services estimates etc. will be got approved separately.

A copy of the approved service plan/estimates is enclosed herewith. You are requested to supply four additional copies of the approved service plan/estimates to the Engineer-in-Chief, HUDA, Panchkula under intimation to this office.

District Town Planner (HQ)
For: Director, Town and Country Planning,
Haryana, Chandigarh.

Endst. No: -ZP-171-JD (B)-2008/ Dated:

A copy is forwarded to the Chief Administrator, HUDA, Panchkula with reference to his letter No. 1259 dated 23.1.2008 for information and necessary action.

District Town Planner (HQ)
For: Director, Town & Country Planning,
Haryana, Chandigarh.

(9)

SET-2

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SERVICES PLAN & ESTIMATE
"PARSVNATH CITY"
SECTOR 8, SONEPAT
84.155 ACRES

PARSVNATH DEVELOPERS LTD

REGD. OFFICE 6TH FLOOR, ARUNACHAL BUILDING, 19 BARAKHAMBA ROAD, NEW DELHI 110001

PROJECT REPORT / ESTIMATES FOR PROVIDING INTERNAL SERVICES, e.g. WATER SUPPLY, SEWERAGE, S.W. DRAINAGE, ROAD ETC. IN RESPECT OF RESIDENTIAL COLONY NAMED PARSVNATH CITY MEASURING 84.115 ACRES SECTOR – 8, SONIPAT

INTRODUCTION

"Parsvnath City" is a Residential Colony proposed in Villages Raipur & Kumaspur, in Sector 8, Sonepat for development by M/s Parsvnath Developers Ltd. Licenses have already been granted for 84.115 acres vide Licenses No. 915 to 945 of 2006 dt. 8.5.2006. The demarcation and zoning plans were sanctioned on 20.3.2007. The details of the services are as follows:

1. **Water Supply:-**

i) **Source:-**

The present source of water supply is Tube wells, as the under ground water in the area is sweet and fit for human consumption. The water is available at a reasonable depth. The average yield of Tube-well with 60' – 80' strainer will be about 5000 Gallons per hour. The recharging of Under Ground Water table in this belt is stated to be good. The number of Tube wells required for the above area for present requirement has been worked out to 6 Nos. and the Tube wells will be bored in tune with growth of demand to avoid absolence of the Tube wells. The ultimate requirement of Tube wells includes provision of 10 % stand bye.

ii) **Design:**

The scheme has been designed for a population of 9612 persons. The rate of water supply per head per day has been assumed as 155.25 litres (135 + 15 % uncounted water supply) for domestic use. In addition to above, necessary provision for water for Schools, commercial area, parks etc. have been taken in to account for calculating the maximum number of Tube wells required.

iii) **Pumping Chamber and Pumping Machinery:**

Provision for adequate pumping chamber and pumping machinery have been made along with provision for stand-bye generator.

iv) **Over Head Service Reservoir:**

One RCC over head service reservoir of 500 KL capacity with staging height up to bottom slab stand provided in the scheme. 25 M

v) **Under Ground Storage**

Under Ground storage provision has been made for 1000 KL in three compartments near the OHSR, which caters for the present and a lot of

future requirement as well as fire fighting requirement. The water for domestic water compartment shall over flow from the fire compartment of 1000 KL so that the water in the fire compartment also remains fresh.

vi) **Boosting Station**

The boosting station is being planned near OHSR catering to the above requirement.

vii) **Distribution System**

The distribution system for this development area has been designed to supply @ 155.25 Litre/head/day with 2 ½ times the average rate of flow on Hazan William formula with C-100. Necessary provision of laying CI pipe Class 'LA' along with valves and specials has been made in the estimates. The minimum terminal head at any point in this system will be about 17.00 meters so that it can serve the 2 ½ stories construction envisaged in the plan. Minimum pipe diameters for distribution are kept as 100mm dia.

2. Sewerage:-

The sewer lines have been designed for 3 times average DWF relation to Water Supply demand and assuming that 75 % of the domestic water supply shall find its way into the proposed sewer. S.W. pipe sewers have been proposed/designed to run half full. The sewers have been designed on 2.50 ft. per second velocity i.e. self cleansing velocity. Necessary provisions for laying S.W. pipes, manholes etc. has been made in this estimates.

3. Storm Water Drainage:-

The storm water drain is being designed to carry 1/10" rain fall per hour. Also suitable provisions are contemplated in our scheme to ensure better recharging of Under Ground Water Table in the area. RCC Hume pipe drain with minimum 400mm dia is proposed in this area.

4. Roads:-

The road in the colony are being planned such that minimum width of road provided is 12 M carrier road leading to higher width of roads. The road shall be premixed 1" (25mm) bituminous layer over 4 ½" average (11cm) water bound macadam over 6" (15cm) thick strong soling over compacted earth.

5. **Street Lighting:-**

The provision has been made on lump sum basis.

6. **Horticulture:-**

The usual provision for road side plantation of trees with tree guards has been made for all roads. The parks will also be developed by providing lawns etc.

7. **Specifications:-**

The work will be carried out strictly in accordance with the PWD specification, latest addition applicable in Haryana State.

8. **Rates:-**

Estimates for providing services in this pocket have been prepared on the recent market rates.

9. **Cost:-**

The total cost of development works in this Project including various P.H. & B & R Services works out to Rs. ~~650.71~~ 2592.40 lacs. which includes 3% contingency and P.E. charges and ~~14~~ % Departmental charges ~~also.~~ price escalation, unforseen Admn. charges 9%.

The cost per gross acre for this phase works out to Rs. ~~7.73~~ 30.80 lacs./acre which covers the provision of services like water supply, sewerage, storm water drainage, roads, street lighting and plantations including plantations as well as future expansion whatsoever indicated.

RESIDETIAL COLONY SONEPAT AREA 84.155 ACRES

WATER SUPLY DESIGN CALCULATION

A) Requirement of Water

a) No. of Plots — 700 Nos.

Population @ 13.50 persons Per plot = 700 x 13.50 — 9450 persons

Daily requirement @ 155.25 (135 + 15 % uncounted W/s) Lit./Head/day
= 9450 x 155.25 — 1467.11 KL
Say ~~1550~~ 1500 KL (A)

b) Additional Requirement for Community/commercials

i) Commercial area 3.30 Acre @ 25 KL/day :- 3.30 x ~~1.75~~ x 25 — 82.50 KL

ii) Primary School 2 Nos. @ 50 KL/day — 100.00 KL

iii) Nursery School 2 Nos. @ 10 KL/day — 20.00 KL

iv) Taxi Stand 1 No @ 10 KL — ~~12.50~~ 10.00 KL

~~215.00~~ 212.50 KL (B) Say 215 KL

c) Area under U.D. use ~~1.817~~ 1.655 Acres @ 25 KL./acre/day — ~~46.00~~ 41.375 KL (C) Say 42 KL

d) Area under Nursing Home 2 Nos — 100.00 KL (D)

e) Area under parks 4.18 Acres @ 25 KL./acre/day — 105.00 KL (D)

f) Area under Roads
Assuming 10% of area under Roads
i.e. 84.155 x 10/100 = 8.42 Acres
Required @ 5 KL./acre/day = 8.42x5
= ~~8.42 Acres~~
= 42.10 KL
Say 42 KL (E)

Total requirement per day = A + B + C + D + E + F = (1500 KL + 215 KL + ~~50~~ 42 KL + 100 KL + ~~420~~ 105 KL + ~~105~~ 42)
= ~~2008.00~~ 2004 KL
Say 2000 KL

B) Tube wells:-

Assuming working Hours of Tube wells = 16 Hours

Assuming discharge/hour of each tube well = 22.70 KL/Hour

No. of Tube wells required = 2000 / 16 x 22.7 = 5.50 Nos.

Add 10 % Stand bye = 0.55 Nos.

6.05 Nos.

Say 6 Nos.

(30 % of 6 Nos.) 1.80 Nos.

Say 2 Nos.

It is proposed to provide 2 Nos. Tube wells to cater the present requirement.

C) Pumping Machinery for Tube wells:-

Gross working head = 15.00 M

Average fall in spring level = 3.05 M

Depression head = 6.10 M

Friction loss in main = 2.50 M

26.65 M

Say 30 M

$$BHP = \frac{22700 \times 30 \times 1}{60 \times 60 \times 75 \times 0.60} = 4.20 \text{ BHP} \quad \text{Say } 5 \text{ BHP}$$

D) Overhead Service Reservoir:-

Daily requirement for domestic use
= A + B + C
(1500 + 215 + 46) = 1831 KL

Say 2000 KL

Taking 6 hours storage = 2000 x 6 /24 = 500 KL

However, it is proposed to provide an OHSR of capacity 500 KL (1,00,000 gallons) which cater a lot of further expansion also.

E) **Underground Tank:-**

Water requirement for domestic use = 2000 KL/day

Capacity of underground tanks taking 8 hours storage
2000 x 8/24 = 667 KL

For Fire = 135 KL

802 KL

However, it is proposed to provide Under Ground Tank of capacity 1000 KL (2,20,000 gallons) which also includes 135 KL capacity for Fire fighting as well as lot of further expansion.

This tank will have three compartments, one for fire and the other two for domestic use. The water first enters the Fire compartment, then over flows to the domestic use compartment so that the water in the Fire compartment shall remain fresh.

F) **Boosting Station – Pumping Machinery:**

Daily requirement for Domestic use = 2000 KL

Assuming 8 hours running 2 pumps (with one stand bye)

Discharge/hour = 2000 / 2 x 8 = 125.0 KL/hour

Head of Pump

i) Suction lift = 4 M
ii) Friction loss in Main & specials = 4 M
iii) Clear Head = 35 M

43 M

$$\text{BHP of Motor} = \frac{125000 \times 43 \times 1}{60 \times 60 \times 75 \times 0.60} = 33.18 \text{ BHP}$$

Say 40 BHP

G) **Gen Set**

Pump 2 Nos.	40 HP	=	80 HP
Tube well		=	30 HP
Lighting		=	5 HP
			115 HP
or 115 x 0.746		=	85.79 KVA
		Say	90 KVA

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RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

FINAL ABSTRACT OF COST

1.	Sub Work No. 1	Water Supply	Rs.	~~219.72~~ lacs. (~~291.40~~)	423.00 lacs
2.	Sub Work No. II	Sewerage	Rs.	~~76.40~~ lacs. (~~181.40~~)	294.70 lacs
3.	Sub Work No. III	Storm Drainage	Rs.	82.02 lacs. (~~107.10~~)	215.16 lacs
4.	Sub Work No. IV	Road and Foot –path	Rs.	~~151.75~~ lacs. (~~306.45~~)	504.68 lacs
5.	Sub Work No. V	Street lighting	Rs.	~~49.39~~ lacs. (~~90.40~~)	90.40 lacs
6.	Sub Work No. VI	Horticulture	Rs.	~~71.43~~ lacs. (~~95.35~~)	93.66 lacs
7.	Sub work No. VII. Maintenance of Services for 10 yrs including resurfacing of roads after Ist 5 yrs and IInd ph i.e. 10 yrs of mfc. (as per HUDA norms)			(~~561.64~~)	970.79 lacs
			Rs.	~~650.71~~ lacs. (~~1633.89~~)	2592.39 lacs
	~~Cost/Gross Area (in lacs./Acre)~~		~~Rs.~~	~~7.73~~ lacs. (~~19.41~~)	say Rs 2592.4 lacs.

Estimate Corrected to Rs 1633.89 lacs

For Parasvnath Developers Ltd.

B. B. WADHWA
General Manager

Superintending Engineer,
HUDA Circle, Rohtak

Checked subject to comments in forwarding Letter No....1259......
Dated 23-1-08 and notes attached with the Estimate.

Executive Engineer
HUDA Division
Sonepat.

Executive Engineer (M)
for Chief Engineer
HUDA Panchkula
23.1.2008

Chief Engineer
Hr. Urban Dev. Authority
Panchkula
29.1.2008

Director
Town and Country Planning
Haryana, Chandigarh.

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RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

WATER SUPPLY ABSTRACT OF COST

Sub Head No. I	Head Works	Rs.	~~106.70~~ lacs.
Sub Head No. II	Pumping Machinery	Rs.	~~17.70~~ lacs.
Sub Head No. III	Distribution System	Rs.	~~62.73~~ lacs.
	Total	Rs.	~~187.13~~ lacs.
	Add 3 % contingencies & P.E. charges	Rs.	~~5.61~~ lacs.
		Rs.	~~192.74~~ lacs.
	Add 14 % Departmental Charges	Rs.	~~26.98~~ lacs.
		Rs.	~~219.72~~ lacs.

C.O. to Final Abstract of Cost

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Sub Work No. I — **Water Supply**

Sub Head No. 1 — Head works

1. Boring and installing 21" i/d tube-wells with reverse/direct rotary rig complete with pipe and strainer to depth of about 80 m complete.

   2 Nos. @ Rs. 4,00,000.00 each. — Rs. 8.00 lacs.

2. Construction of pumping chamber as per standard design of PWD/HUDA.
   Size 4.90 x 4.25 2 Nos. @ 1,25,000/each — Rs. 2.50 lacs.

3. Construction of boundary wall, gate around the tube-wells site and water works etc.

   Water works 1 No. @ 100000/each. — Rs. 1.00 lacs.

   Tube wells 2 Nos. @ 60000/each. — Rs. 1.20 lacs.

4. Provision of Footpaths hedges and lawns as required at tube well site.

   2 Nos. @ Rs. 0.50 lac each Tube well — Rs. 1.00 lacs.

   Water works site
   1 No. @ Rs. 1.00 lac each. — Rs. 1.00 lacs.

5. Construction of OHSR of following capacity including cost of stair case, inlet outlet, overflow, scour pipe and valves etc. complete in all respect of 500 KL
   100000 gallons capacity with 50 M staging height. — Rs. 50.00 lacs.

6. Constructing boosting chambers of suitable size along with under ground tank of capacity 3,00,000 gallons pumping machinery and generating set

etc. complete in all respect.

Details of Boosting Station 40'x15' @ Rs 1500/- per sft

i)	Construction of Boosting Chamber	Rs.	~~6.00~~ 9.00 lacs.
ii)	UGT 100000 litre (220000 gallon) capacity including 30,000 gallons for fire fighting in three compartments. 1000 KL @ Rs 2500/- P KL	Rs.	~~35.00~~ 25.00 lacs.
7.	Provision for carriage of materials and other unforseen items	Rs.	1.00 lacs.
	Total	Rs.	~~106.70~~ las. 108.70

8. Prov for staff qtrs for mtc.

1 No. 350 sft @ Rs 3.50 lacs each	Rs	3.50 lacs
1 no 440 sft @ Rs 4.40 lacs each	Rs	4.40 lacs
2 No 770 sft @ Rs 7.70 lacs each	Rs	15.40 lacs
	Rs	126.80 lacs

C.O. to Abstract of Cost Water Supply

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Sub Work No. I — **Water Supply**

Sub Head No. 2 — **Pumping Machinery**

1.	Providing and installing electricity driven or submersible pumping set capable of delivering about 45 KL water per hour against a total head of 30 M complete with motor and other accessories. 2 Nos. @ Rs. 1,25,000.00 each.	Rs. 2.30 lacs.
2.	Provision for diesel engine for stand bye arrangements for tube wells 1 No. @ Rs. 2,00,000.00 each.	Rs. 2.00 lacs.
3.	Provision for cheap pressure type chlorination plant complete. 2 Nos. @ Rs. 50,000.00 each.	Rs. 1.00 lacs.
4.	Provision for making foundations and erection of Pumping machinery 2 Nos. @ Rs. 25,000.00 each.	Rs. 0.50 lacs.
5.	Provision for pipes, valves and specials inside the pump chamber. 2 Nos. @ Rs. 40,000.00 each. (L.S.)	Rs. 0.80 lacs.
6.	Provision for electric services connection including electric fitting for tube wells chamber complete L.S. including cost of transformer	Rs. 0.60 lacs.
7.	Providing and installing centrifugal boosting pumping set, capable of delivering water at 43 M head complete in all respect. 2 Nos. @ Rs. 100000.00	Rs. 2.00 lacs.
7.	Provision for Gen. Set 90 KVA	Rs. 8.00 lacs.
9.	Provision for carriage of material and unforseen item L.S.	Rs. 0.50 lacs.
		Rs. 17.70 lacs.

C.O. to Abstract of Cost Water Supply

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Sub Work No. I — **Water Supply**

Sub Head No. 3 — Distribution system/ Rising Mains

1.	Providing, laying, jointing and testing UPVC/CI pipes including cost of excavation complete as per ISI marked.	
	100mm i/d 5745 M @ Rs. 625.00 per M	35,90,625.00
	150mm i/d 1160 M @ Rs. 810.00 per M	9,39,600.00
	200mm i/d 710 M @ Rs. 1100.00 per M	7,81,000.00
	250mm i/d 85 M @ Rs. 1535.00 per M	1,30,475.00
	300mm i/d 75 M @ Rs. 2050.00 per M	1,53,750.00
2.	Providing and fixing sluice valves including cost of brick masonry chamber complete in all respect.	
	100mm i/d 21 Nos. @ Rs. 5000.00/each.	1,05,000.00
	150mm i/d 7 Nos. @ Rs. 7000.00/each.	49,000.00
	200mm i/d 3 Nos. @ Rs. 9000.00/each.	27,000.00
	250mm i/d 1 No. @ Rs. 12800.00/each.	12,800.00
	300mm i/d 2Nos. @ Rs. 20000.00/each.	40,000.00
3.	Providing and fixing Air Valves and Scour valves including cost of brick masonry chamber complete.	
	8 Nos. @ Rs. 5000.00 each.	40,000.00
4.	Providing and fixing fire hydrants complete with masonry chambers.	
	15 Nos. @ Rs. 5000.00 each.	75,000.00
5.	Providing and fixing indicating plates for sluice valves air valves and fire hydrants.	
	57 Nos. @ Rs. 500.00 each.	28,500.00
6.	Provision for carriage of material L.S.	2,00,000.00

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7. Provision for cutting of roads and making good to be its original conditions L.S. ~~1,00,000.00~~ 200000.—

~~62,72,750.00~~ 6332750

~~Say 62.73 lacs.~~ 63.30 lacs

8) Prov. for rising main from T.W I & II to UGT.

150 mm i/d 555 mtr @ Rs 1350/- P.mtr Rs 749250/-

9) Prov. for rising main from HUDA line to UGT.

250 mm i/d 1000 mtr @ Rs 2500/- P.mtr Rs 2500000/-

10) Prov. for making connection with HUDA (LS) Rs 50000.—

Rs 12028250

say Rs 120.28 lacs

Sr. No	Name of Line	Daily demand	1.50 time daily demand	Length of mtr.	Dia in mm	Friction loss in Line	Velocity per sec.
1	HUDA to UGT	1815KL	2722.50 KLD	1000 mtr	250 mm	3.00 m	3.00 per 1000 mtr

C.O. to Abstract of Cost Water Supply

MATERIAL STATEMENT FOR RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Sr. No. as per design statement	Name of pipe line	Length of pipe line in Mtrs.				
		100mm	150mm	200mm	250mm	300mm
1	OHSR-A					15
2	A-B					60
3	B-C				85	
4	C-D			120		
5	D-E			170		
6	E-F			55		
7	F-G		150			
8	G-H	20	~~10~~			
9	H-J	35				
10	J-J'	199 ~~140~~				
11	B-K			55		
12	K-K'			75		
13	K'-L			75		
14	L-M		20			
15	M-N	80				
16	N-O	75				
17	O-O'	135				
18	C-P			75		

Sr. No. as per design statement	Name of pipe line	Length of pipe line in Mtrs.				
		100mm	150mm	200mm	250mm	300mm
19	P-Q			65		
20	Q-R			20		
21	R-R'		50			
22	R'-S		30			
23	S-T		70			
24	T-U		25			
25	U-V		40			
26	V-W	35				
27	W-X	35				
28	X-Y	35				
29	Y-Z	60				
30	A-A1	65				
31	A1-A2	150				
32	D-A1	70				
33	E-E1	20				
34	E1-E2	20				
35	E2-E3	115				
36	E1-E1/1	40				

Sr. No. as per design statement	Name of pipe line	Length of pipe line in Mtrs.				
		100mm	150mm	200mm	250mm	300mm
37	E2-F1	72 ~~70~~				
38	F-F1	20				
39	F1-F2	15				
40	F2-F3	155				
41	F3-F4	20				
42	F1-H1	150				
43	F2-F2/1	25				
44	F-F5	50				
45	F5-F6	40				
46	F6-F7	25				
47	F5-G1	130				
48	F6-G1	145				
49	G-G1	70				
50	H-H1	20				
51	H1-F3	50				
52	J-J1	35				
53	K-K1	60				
54	K'-K'/1	40				

Sr. No. as per design statement	Name of pipe line	Length of pipe line in Mtrs.				
		100mm	150mm	200mm	250mm	300mm
55	L-P	215				
56	L-L1	~~60~~	60			
57	L1-L2	135				
58	L2-L3	40				
59	L1-L1/1	150				
60	L2-O1	20				
61	M-M1		115			
62	M1-M2	80				
63	M2-M3	90				
64	M3-M4	35				
65	M4-M5	60				
66	M5-M6	25				
67	M6-M7	40				
68	M-M8	30				
69	M1-M1/1	90				
70	M1/1-M1/2	80				
71	M1/1-M3	80				
72	M2-R	80				

Sr. No. as per design statement	Name of pipe line	Length of pipe line in Mtrs.				
		100mm	150mm	200mm	250mm	300mm
73	M4-M4/1	25				
74	M4/1-M5/1	50				
75	M5-M5/1	25				
76	M6-M6/1	50				
77	N-N1	120				
78	O-O1	40				
79	O1-O2	40				
80	Q-Q1	120				
81	Q-Q2	85				
82	Q2-Q3	285 ~~150~~				
83	Q2-S2	50				
84	R-R1		95			
85	R1-R2	75				
86	R2-R3	65				
87	R3-R4	50				
88	R1-R1/1	50				
89	R1/1-U	50				
90	R2-W	120				

Sr. No. as per design statement	Name of pipe line	Length of pipe line in Mtrs.				
		100mm	150mm	200mm	250mm	300mm
91	R3-Y	135				
92	R'-R'/1	95				
93	S-S1	50				
94	S1-S2	20				
95	S2-S3	60				
96	S1-S1/1	25				
97	T-T1	85				
98	T1-T2	120				
99	T1-T1/1	70				
100	V-V1	200				
101	X-X1	180				
		5850m	655m	785m	80m	75m

Rising Main **150mm I/d**

T.W.1 to UGT 150 ϕ 275 + 2.60 = 535 mdr

T.W. 2 to UGT 150 ϕ 280

Total	5745	1160	710	85	75

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Sub Work No. II — **Sewerage**

1.	Providing, lowering, jointing, cutting salt glazed stone ware pipes and specials into trenches, including cost of excavation, bed concrete, cost of manholes etc. complete in all respects.		
	S.W. Pipe		
	i) 200mm i/d		
	Avg. depth upto 2.0 M		
	4761 M @ Rs. 600.00 per mtr.	Rs.	28,56,600.00
	Avg. depth 2.0 M to 4.0 M		
	1807 M @ Rs. 700.00 per mtr.	Rs.	12,64,900.00
	ii) 300mm i/d		
	Avg. depth 4 M to 6 M		
	237 M @ Rs. 1000.00 per Mtr.	Rs.	2,60,700.00
	iii) 400mm i/d		
	Avg. depth 4 M to 6 M		
	234 M @ Rs. 1200.00 per Mtr.	Rs.	2,80,800.00
	iv) 450mm i/d		
	Avg. depth 4 M to 6 M		
	495 M @ Rs. 1250.00 per Mtr.	Rs.	6,18,750.00
2.	Provision for providing oblique junction L.S.	Rs.	25,000.00
3.	Provision for temporary timbering etc. L.S.	Rs.	50,000.00
4.	Provision for providing and fixing vent shafts at suitable places as per P.H. requirements L.S.	Rs.	1,00,000.00

5.	Provision for STP for temporary disposal arrangement. LS 1.40 MLD @ Rs 60.00 lacs p MLD	Rs.	~~10,00,000.00~~ 8400000.—
6.	Provision for cutting of roads and carriage for materials etc. and other unforseen charges L.S.	Rs.	Rs 50000.— 50,000.00
7	Prov. for making connection with HUDA (L.S)		~~11800050.00~~
	Total	Rs.	65,06,750.00 192.02 lac ~~354601.00~~
	Add 3 % contingencies and P.E. charges	Rs.	~~1,95,203.00~~ 5.764
		Rs.	67,01,953.00 197.78 ~~12194652.00~~ ~~5965579.00~~
	Add ~~14 %~~ 49% departmental charges & price escalation, unforseen item and administrative charges	Rs.	~~9,38,273.00~~ 96.9
		Rs.	~~76,40,226.00~~ 294.69 ~~Say 76.40 lacs.~~ ~~18140231.00~~

Say Rs. ~~181.40~~ 294.70 lacs

C.O. to Final Abstract of Cost

(40)

Residential colony Sector - 8, Sonepat (Area 84.15 Acre)
Material Statement of Sewerage Scheme

Sr. No.	Name of Sewer line	Length in Mtr.	Depth		
			Upto 2 M	2 M to 4 M	4 M to 6 M
A)	**200mm I/d S.W. Pipe Sewer**				
1	A-B	90	90		
2	B1-B	30	30		
3	B-C	~~89~~ 90	89		
4	C1-C	20	20		
5	C-D	20	20		
6	D1-D2	150 ~~165~~	165		
7	D4-D2	40	40		
8	D2-D3	30	30		
9	D5-D3	55 ~~54~~	54		
10	D6-D3	62	62		
11	D3-D	165		165	
12	D-E	50		50	
13	E1-E	118	118		
14	E-F	25		25	
15	F1-F2	122	122		
16	F5-F2	25	25		

Sr. No.	Name of Sewer line	Length in Mtr.	Depth		
			Upto 2 M	2 M to 4 M	4 M to 6 M
17	F2-F3	45	45		
18	F6-F3	119	119		
19	F3-F4	40		40	
20	F7-F4	130	130		
21	F4-F	56		56	
22	F8-F	58	58		
23	F-G	157		157	
24	G1-G2	112	112		
25	G3-G2	35	35		
26	G2-G	70	70		
28	H1-H2	100	100		
29	H4-H2	60	60		
30	H2-H3	69	69		
31	H5-H3	103	103		
32	H3-H	65	65		
34	J1-J2	148	148		
35	J4-J2	248		248	
36	J2-J	270		270	

Sr. No.	Name of Sewer line	Length in Mtr.	Depth		
			Upto 2 M	2 M to 4 M	4 M to 6 M
37	J8-J9	51	51		
38	J9-J10	70	70		
39	J13-J10	42	42		
40	J10-J11	36	36		
41	J14-J15	71	71		
42	J16-J15	~~35~~ 37	35		
43	J15-J11	34	34		
44	J11-J12	~~69~~ 70	69		
45	J17-J12	123	123		
46	J12-J	80	80		
48	K1-K2	138	138		
49	K6-K2	172 ~~57~~	57		
50	K2-K3	75 ~~25~~	25		
51	K7-K3	122	122		
52	K3-K4	75		75	
53	K8-K4	29	29		
54	K4-K5	136		136	
55	K9-K5	84	84		

Sr. No.	Name of Sewer line	Length in Mtr.	Depth		
			Upto 2 M	2 M to 4 M	4 M to 6 M
56	K5-K	79		79	
57	K1-K11	90	90		
58	K13-K11	81	81		
59	K11-K12	48	48		
60	K14-K12	85	85		
61	K12-K	74	74		
63	L1-L	74	74		
65	M1-M2	61	61		
66	M5-M2	18	18		
67	M2-M3	43	43		
68	M6-M3	34	34		
69	M3-M4	28	28		
70	M7-M4	35	35		
71	M4-M	22	22		
73	N1-N	125	125		
75	Q-R	105	105		
76	R1-R	~~58~~ 56	58		
77	R-S	88		88	

Sr. No.	Name of Sewer line	Length in Mtr.	Depth		
			Upto 2 M	2 M to 4 M	4 M to 6 M
78	S1-S	32	32		
79	S-T	70		70	
80	T1-T	191	191		
81	T-U	34		34	
82	U1-U2	175		175	
83	U3-U2	~~108~~ 109	108		
84	U2-U	35	35		
85	U-O	139		139	
87	P1-P2	127	127		
88	P4-P2	24	24		
89	P2-P3	30	30		
90	P5-P3	136	136		
91	P3-P	52	52		
	Total	~~6568~~ 6767	~~4761~~ 4960	1807	0

B) **300mm I/d S.W. Pipe Sewer**

27	G-H	143			143
33	H-J	70			70
47	J-K	24			24
	Total	237	0	0	237

Sr. No.	Name of Sewer line	Length in Mtr.	Depth		
			Upto 2 M	2 M to 4 M	4 M to 6 M
C)	**400mm I/d S.W. Pipe Sewer**				
62	K-L	89			89
64	L-M	39			39
72	M-N	53			53
74	N-O	43			43
86	O-P	10			10
	Total	**234**	**0**	**0**	**234**
D)	**450mm I/d S.W. Pipe Sewer**				
92	P-STP	15			15
93	STP - HUDA Sewer	~~480~~ 365			~~480~~ 365
	Total	~~495~~ 380			~~495~~ 380

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Sub Work No. III — **S. W. Drainage**

1.	Providing, lowering, jointing, cutting RCC NP2 pipes and specials into trenches including cost of excavation, cost of manholes, ventilating chamber etc. complete in all respects.		
	400mm i/d		
	Avg. depth upto 2 M 5559 M @ Rs. 800.00 per RM	Rs.	44,47,200.00
	Av. Depth 2 M to 4 M 780 M @ Rs. 850.00 per RM	Rs.	6,63,000.00
	600mm i/d		
	Avg. depth 2 M to 4 M 484 M @ Rs. 1500.00 per M	Rs.	7,26,000.00
	800mm i/d		
	Avg. depth 2 M to 4 M 416 M @ Rs. 1800.00 per M	Rs.	7,48,800.00
2.	Provision for Road gullies L.S.	Rs.	2,00,000.00
3.	Provision for lighting, watching and temporary diversion of traffic L.S	Rs.	50,000.00
4.	Provision for cutting the roads and carriage of materials etc. and other unforseen items L.S.	Rs.	1,00,000.00
5.	Provision for connection with HUDA	Rs.	50,000.00
6.	Prov. for temporary disposal (L.S.) arrangement	Rs.	30,00,000
		Rs.	69,85,000.00
	Add 3 % contingencies & P.E. charges	Rs.	2,09,550.00
		Rs.	71,94,550.00
	Add 14 % P.W.D. charges	Rs.	10,07,237.00
		Rs.	82,01,787.00
		Say Rs. 82.02 lacs.	

C.O. to Final Abstract of Cost — Say Rs 215.16 Lacs

Residential Colony Sector - 8, Sonipat (84.155 Acre)

Material Statement of S.W. Drain

S. No.	Name of Drain	Length of drain in Mtr.	Depth	
			Upto 2 M	2 M to 4 M
1	2	3	4	5
A)	400mm I/d			
1	1-2	182	182	
2	3-2	27	27	
3	2-4	20	20	
4	8-9	151	151	
5	10-9	31	31	
6	9-11	46	46	
7	12-11	51	51	
8	11-4	150	150	
9	4-13	51		51
10	5-6	117	117	
11	7-6	40 ~~60~~	60	
12	6-13	20		20
13	13-23	24		24
14	16-17	99	99	

S. No.	Name of Drain	Length of drain in Mtr.	Depth	
			Upto 2 M	2 M to 4 M
1	2	3	4	5
15	15-17	30	30	
16	17-19	42	42	
17	18-19	112	112	
18	19-22	49	49	
19	20-21	86	86	
20	21-22	~~131~~ 150	131	
21	22-23	55	55	
22	14-23	65	65	
23	23-26	173		173
24	24-25	~~149~~ 150	149	
25	25-26	70	70	
26	26-32	121		121
27	27-29	117	117	
28	28-29	61	61	
29	29-31	153 ~~153~~	153	
30	30-31	99	99	

S. No.	Name of Drain	Length of drain in Mtr.	Depth	
			Upto 2 M	2 M to 4 M
1	2	3	4	5
31	31-32	86	86	
32	33-35	176	176	
33	34-35	154	154	
34	35-36	271		271
35	37-38	121	121	
36	40-41	60	60	
37	39-41	20	20	
38	41-43	20	20	
39	42-43	72	72	
40	43-44	28	28	
41	44-45	50	50	
42	45-46	100	100	
43	47-49	43	43	
44	48-49	37	37	
45	49-51	43	43	
46	50-51	138	138	

S. No.	Name of Drain	Length of drain in Mtr.	Depth	
			Upto 2 M	2 M to 4 M
1	2	3	4	5
47	51-53	75	75	
48	52-53	121	121	
49	53-55	75	75	
50	54-55	33	33	
51	55-58	120		120
52	56-57	70	70	
53	57-58	105	105	
54	59-61	41	41	
55	60-61	~~50~~ 57	50	
56	61-63	28	28	
57	62-63	29	29	
58	63-65	51	51	
59	64-65	44	44	
60	65-67	28	28	
61	66-67	42	42	
62	67-68	98	98	

S. No.	Name of Drain	Length of drain in Mtr.	Depth	
			Upto 2 M	2 M to 4 M
1	2	3	4	5
63	69-70	91	91	
64	71-72	70	70	
65	73-75	124	124	
66	74-75	71	71	
67	75-76	85	85	
68	77-79	37	37	
69	78-79	60 ~~59~~	59	
70	79-80	63	63	
71	81-82	203	203	
72	83-85	119	119	
73	84-85	64	64	
74	85-86	122	122	
75	88-90	70	70	
76	89-90	135	135	
77	87-90	20	20	
78	90-91	35	35	
	Total	**6339**	**5559**	**780**

S. No.	Name of Drain	Length of drain in Mtr.	Depth	
			Upto 2 M	2 M to 4 M
1	2	3	4	5
B)	600mm I/d			
1	32-36	73		73
2	36-38	64		64
3	38-46	82		82
4	46-72	24		24
5	58-68	78		78
6	68-70	70		70
7	70-72	93		93
	Total	484		484
C)	800mm I/d			
1	72-76	72		72
2	76-80	30		30
3	80-82	44		44
4	82-86	35		35
5	86-91	35		35
6	91-HUDA Drain	200		200
	Total	416		416

(27)

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

ESTIMATE OF ROAD UPTO PREMIX CARPET

Sub Work No. IV — Road upto premix carpet

Width of Road	Length of Road (in Mtrs.)	Metalled Width (Mtrs.)	Area in Sq. M.
A	B	C	B x C
12 M Wide	~~4726~~ 5320	5.50	~~25993.00~~ 29260 Sqm
18 M Wide	340	7.00	2380.00
24 M Wide	~~1185~~ 1295	14.00	~~16590.00~~ 18130 Sqm
			~~44963.00~~ 49770.-
		Add 5 % curves	~~2248.15~~ 2488.-
			~~47211.15~~ 52258
		Say	~~47250~~ Sq. M. 53000 Sqm

Abstract of Cost

1. Provision for leveling – earth filling / cutting as per site conditions. L.S. @ Rs. ~~50,000.00~~ 70000.00 acre. Area 84.155 Acres — Rs. ~~42,07,750.00~~ 5890850.00

2. a) Preparation of sub grade by excavating to an average depth upto 10" dressing of chamber and consolidation with road roller including making undulating etc.

   b) Supplying and stacking of stone ballast 3" to 4" gauge @ 50 CFT/100 sq. ft. or road surface.

   c) Laying stone ballast 6" thick and consolidating with road roller complete.

   d) Supplying and stacking of stone ballast 1 ½ to 2" gauge @ 33 cft.100 sq. ft. of road surface.

   e) Supplying and stacking of Moorum (Red Bajri) @ 6 ½ sft./100 sft. Of road surface.

8) (i) Prov & laying 250mm G.S.B with 50mm thick B.M on 18m wide road and 250mm G.S.B with 75mm thick BM on 24m wide road

f) Laying of wearing coat of 4 ½" and consolidation with binding material complete 31400 sq. m. @ Rs. 100.00 per sqm. Rs. 31,40,000.00

3. Provision of Kerb and Channel of concrete (1: 1 ½:3) M – 20 as per standard design.

12 M wide road = 4726 M
18 M & 24 M wide road 1525 M
6251 M

Add 5 % curves 312.55 M
6563.55 M
Say 6600 M

6600 M @ Rs. 250.00 per M Rs. 16,50,000.00

4. Provision of 1" thick premix carpet as per PWD specifications with mechanical pavers

47250 sq. m. @ Rs. 60.00 Rs. 28,35,000.00

5. Provision for cement concrete pavement along 18 M road with Pre-cast tiles of cement concrete 1: 1 ½:3

18 & 24 M M wide :-
1525 x 2.4 = 3660 sqm.
3660 sq. m. @ Rs. 250.00 per sqm. Rs. 9,15,000.00

6. Provision of guide maps Rs. 60,000.00

7. Provision for demarcation Burjees – L.S. Rs. 20,000.00

8. Provision for Traffic Lights – L.S. Rs. 20,000.00

9. Provision for carriage of material and unforseen items - L.S. Rs. 50,000.00

10. Provision for plot Indicator Board - L.S. Rs. 25,000.00

Total Rs. 12922750.00
Rs. 129.23 lacs.
Add 3 % contingencies Rs. 3.88 lacs.
Rs. 133.11 lacs.
Add 14 % Departmental charges, Rs. 18.64 lacs.
Rs. 151.75 lacs.

C.O. to Final Abstract of Cost

ROAD LENGTHS

S. No.	Road No.	Road Length in Meters			Remarks
		12 M Wide	18 M Wide	24 M Wide	
1	1	161			
2	2	32			
3	3	52			
4	4	141			
5	5	40			
6	6	25			
7	7			~~20~~ 90	
8	8			280	
9	9	120			
10	10	110			
11	11	100			
12	12	90			
13	13	28			
14	14	30			
15	15	135			
16	16	120			
17	17			115	
18	18	190			
19	19	100			
20	20	60			
21	21	200			
22	22	125			
23	23	60			
24	24	140			
25	25			80	
26	26			620	
27	27	140			
28	28	125			

29	29	32			
30	30	25			
31	31	15			
32	32	86			
33	33	22			
34	34	190			
35	35	125			
36	36		50		
37	37	26			
38	38	60			
39	39	120			
40	40	46			
41	41		290		
42	42	180			
43	43	120			
44	44	100			
45	45	90			
46	46	260			
47	47	200			
48	48	60			
49	49	195			
50	50	175			
51	51	30			
52	52	65			
53	53	65			
54	54	100			
55	55	15			
	Total	4726 M	340 M	1185 M	

56	56	32 m	—	—	
	57	155m	—	—	
	58	—	—	110	
	59	52	—	—	
	60	56	—	—	
	61			—	
	Service road	300	—		

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Estimate for Provision of Street Lighting

Sub Work No. V — Street Lighting

1.	Providing street lighting on roads as per standard specifications complete in all respect.	
	Area = 84.115 Acres 84.115 Acres @ Rs. 50,000.00 per Acres	Rs. 42,05,750.00
	Add 3 % Contingency Charges & P.E. Charges	Rs. 1,26,173.00
		Rs. 43,31,923.00
	Add 14 % Departmental charges	Rs. 6,06,469.00
		Rs. 49,38,392.00
		Say Rs. 49.39 lacs.

C.O. to Final Abstract of Cost

RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

Sub Work No. VI — Horticulture

1. Development of Lawn Area

   a) Trenching the ordinary soil upto depth of 60cm including removal and packing of serviceable material and disposing at a lead of 50 M and making up the trenched area to proper level by filling with earth mixed with manure 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 maintenance of lawns free from weeds and fit for moving in rows 7.50 cm in either direction including for hedges and grill and barred wire fencing around park and green belts (as per HUDA norms)

   Area 84.115 Acres @ 70000.00 — Rs. 58,88,050.00

2. Planting of trees with tree guards on roads at 40' intervals

   12 M wide Road 4726 x 1 = 4726 RM
   18 & 24 M wide Road 1525 x 2 = 3050 RM
   7776 RM

   Trees @ 12 M c/c 7776 / 12 = 648
   Say 650.00

   Cost of One Tree

Excavation	Rs.	10.00 each.
Manure	Rs.	20.00 each.
Tree Plants	Rs.	20.00 each.
Tree Guards		Rs. 250.00 each.
		Rs. 300.00 each.

   650 trees @ Rs. 300.00 each. — Rs. 1,95,000.00

	Rs.	60,83,050.00
	Rs.	60.83 lacs.
Add 3 % Contingency & P.E. Charges	Rs.	1.83 lacs.
	Rs.	62.66 lacs.
Add 14 % Departmental charges	Rs.	8.77 lacs.
	Rs.	71.43 lacs.

C.O. to Final Abstract of Cost

TERMINAL HEAD STATEMENT FOR RESIDENTIAL COLONY SONEPAT AREA 84.155 ACRES

S. No.	Name of pipe line	No. of Plots			Population @ 13.5 person/plot	Requirement in KL @ 155.25 ltrs. (135+15%) ltrs. Per head per day	Requirement from community building		Requirement in KL from parks		Total requirement in K.L. (7+9+11)	Total requirement in K.L. @ 2.5 times	Total discharge in gallons	Proposed size of pipe line in mm	Length of pipe line in M	Loss of Head in 1000 M	Total loss of Head mtrs.	Hydraulic level		Ground level at lower end	Terminal Head available	Remarks
		Self	Branch	Total			Self	Total	Area in Acres	Req. @ 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
1	OHSR-A	-	712	712	9612.00	1492.26	-	240.00	4.18	104.50	1836.76	4591.90	1011431	300	15	3.40	0.05	242.25	242.20	217.30	24.90	G.L. at OHSR = 217.25 M
2	A-B	7	682	689	9301.50	1444.06	-	240.00	4.08	102.00	1786.06	4465.15	983513	300	60	2.94	0.18	242.20	242.02	217.15	24.87	Height of OHSR = 25.00 M
3	B-C	6	534	540	7290.00	1131.77		12.50	2.78	69.50	1213.77	3034.43	668375	250	85	4.18	0.36	242.02	241.66	217.10	24.56	Hydraulic level
4	C-D	18	228	246	3321.00	515.59		12.50	1.03	25.75	553.84	1384.60	304978	200	120	2.51	0.30	241.66	241.36	217.35	24.01	at OHSR = 242.25 M
5	D-E	24	204	228	3078.00	477.86	-	12.50	1.03	25.75	516.11	1290.28	284201	200	170	2.18	0.37	241.36	240.99	217.40	23.59	
6	E-F		177	177	2389.50	370.97	-	12.50	0.88	22.00	405.47	1013.68	223276	200	55	1.43	0.07	240.99	240.92	217.40	23.52	
7	F-G	13	85	98	1323.00	205.40	-		0.29	7.25	212.65	531.63	117098	150	150	2.06	0.30	240.92	240.62	217.20	23.42	
8	G-H	2	71	73	985.50	153.00	-		0.24	6.00	159.00	397.50	87555	150	10	1.03	0.01	240.62	240.61	217.20	23.41	
9	H-J	-	58	58	783.00	121.56	-		0.24	6.00	127.56	318.90	70242	100	35	4.72	0.16	246.61	240.45	217.25	23.20	
10	J-J'	42		42	567.00	88.03	-		0.24	6.00	94.03	235.08	51779	100	140	3.39	0.47	240.45	239.98	217.06	22.92	
11	B-K	4	138	142	1917.00	297.61	-	227.50	1.30	32.50	557.61	1394.03	307054	200	55	2.51	0.13	242.02	241.89	217.15	24.74	
12	K-K'	5	126	131	1768.50	274.56	-	202.50	1.30	32.50	509.56	1273.90	280595	200	75	2.28	0.17	241.89	241.72	217.25	24.47	
13	K'-L	-	123	123	1660.50	257.79	-	202.50	1.21	30.25	490.54	1226.35	270121	200	75	2.05	0.15	241.72	241.57	217.15	24.42	
14	L-M		100	100	1350.00	209.59	1.00	120.00	1.16	29.00	358.59	896.48	197461	150	20	4.35	0.08	241.57	241.49	217.15	24.34	
15	M-N	-	24	24	324.00	50.30	-	60.00	0.37	9.25	119.55	298.88	65831	100	80	4.72	0.37	241.49	241.12	217.38	23.74	
16	N-O		12	12	162.00	25.15	-	60.00	0.22	5.50	90.65	226.63	49917	100	75	3.39	0.25	241.12	240.87	217.20	23.67	

S. No.	Name of pipe line	No. of Plots			Population @ 13.5 person/plot	Requirement in KL @ 155.25 ltrs. (135+15%) ltrs. Per head per day	Requirement from community building		Requirement in KL from parks		Total requirement in K.L. (7+9+11)	Total requirement in K.L. @ 2.5 times	Total discharge in gallons	Proposed size of pipe line in mm	Length of pipe line in M	Loss of Head in 1000 M	Total loss of Head mtrs.	Hydraulic level		Ground level at lower end	Terminal Head available	Remarks
		Self	Branch	Total			Self	Total	Area in Acres	Req. @ 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
17	O-O'	12		12	162.00	25.15	-		0.08	2.00	27.15	67.88	14950	100	135	0.62	0.08	240.87	240.79	217.30	23.49	
18	C-P	5	283	288	3888.00	603.61	-		1.75	43.75	647.36	1618.40	356476	200	75	3.43	0.25	241.66	241.41	217.00	24.41	
19	P-Q	-	283	283	3820.50	593.13	-		1.75	43.75	636.88	1592.20	350705	200	65	3.43	0.22	241.41	241.19	216.92	24.27	
20	Q-R		231	231	3118.50	484.15	-		1.35	33.75	517.90	1294.75	285187	200	20	2.18	0.04	241.19	241.15	216.92	24.23	
21	R-R'		152	152	2052.00	318.57	-		0.77	19.25	337.82	844.55	186024	150	50	4.35	0.21	241.15	240.94	216.80	24.14	
22	R'-S		137	137	1849.50	287.13	-		0.69	17.25	304.38	760.95	167610	150	30	3.71	0.11	240.94	240.83	216.80	24.03	
23	S-T	7	113	120	1620.00	251.51	-		0.64	16.00	267.51	668.78	147307	150	70	2.56	0.17	240.83	240.66	216.90	23.76	
24	T-U	1	68	69	931.50	144.62			0.26	6.50	151.12	377.80	83216	150	25	1.03	0.02	240.66	240.64	217.00	23.64	
25	U-V		68	68	918.00	142.52			0.21	5.25	147.77	369.43	81371	150	40	0.86	0.03	240.64	240.61	217.00	23.61	
26	V-W1		36	36	486.00	75.45			0.21	5.25	80.70	201.75	44438	100	35	2.23	0.07	240.61	240.54	217.00	23.54	
27	W-X		36	36	486.00	75.45			0.21	5.25	80.70	201.75	44438	100	35	2.23	0.07	240.54	240.47	217.00	23.47	
28	X-Y		4	4	54.00	8.38			0.1	2.50	10.88	27.20	5991	100	35	0.62	0.02	240.47	240.45	217.00	23.45	
29	Y-Z	4	-	4	54.00	8.38			0.1	2.50	10.88	27.20	5991	100	60	0.62	0.03	240.45	240.42	217.00	23.42	
30	A-A1	3	20	23	310.50	48.21			0.1	2.50	50.71	126.78	27924	100	65	0.94	0.06	242.20	242.14	217.30	24.84	
31	A1-A2	20	-	20	270.00	41.92			0.1	2.50	44.42	111.05	24460	100	150	0.94	0.09	242.14	242.05	217.45	24.60	
32	D-A1													100	70	0.62	0.04	241.36	241.32	217.30	24.02	connecting line
33	E-E1	1	26	27	364.50	56.59			0.05	1.25	57.84	144.60	31850	100	20	1.32	0.02	240.99	240.97	217.40	23.57	

S. No.	Name of pipe line	No. of Plots			Population @ 13.5 person/plot	Requirement in KL @ 155.25 ltrs. (135+15%) ltrs. Per head per day	Requirement from community building		Requirement in KL from parks		Total requirement in K.L. (7+9+11)	Total requirement in K.L. @ 2.5 times	Total discharge in gallons	Proposed size of pipe line in mm	Length of pipe line in M	Loss of Head in 1000 M	Total loss of Head mtrs.	Hydraulic level		Ground level at lower end	Terminal Head available	Remarks
		Self	Branch	Total			Self	Total	Area in Acres	Req. @ 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
34	E1-E2		21	21	283.50	44.01			0.05	1.25	45.26	113.15	24923	100	20	0.94	0.01	240.97	240.96	217.40	23.56	
35	E2-E3	21		21	283.50	44.01			0.05	1.25	45.26	113.15	24923	100	115	0.94	0.10	240.96	240.86	217.50	23.36	
36	E1/E1/1	5		5	67.50	10.48					10.48	26.20	5771	100	40	0.62	0.02	240.97	240.95	217.40	23.55	
37	E2-F1													100	70	0.62	0.04	240.96	240.92	217.40	23.52	connecting line
38	F-F1		46	46	621.00	96.41		12.50	0.15	3.75	112.66	281.65	62037	100	20	3.39	0.06	240.92	240.86	217.40	23.46	
39	F1-F2	2	31	33	445.50	69.16			0.15	3.75	72.91	182.28	40149	100	15	1.74	0.02	240.86	240.84	217.40	23.44	
40	F2-F3	22	2	24	324.00	50.30			0.15	3.75	54.05	135.13	29763	100	155	0.94	0.14	240.84	240.70	217.30	23.40	
41	F3-F4	2	-	2	27.00	4.19			0.04	1.00	5.19	12.98	2858	100	20	0.62	0.01	240.70	240.69	217.30	23.39	
42	F1-H1	13	-	13	175.50	27.25	12.50	12.50			39.75	99.38	21889	100	150	0.62	0.09	240.86	240.77	217.20	23.57	
43	F2-F2/1	7	-	7	94.50	14.67				0.00	14.67	36.68	8078	100	25	0.62	0.01	240.84	240.83	217.40	23.43	
44	F-F5	4	29	33	445.50	69.16			0.24	6.00	75.16	187.90	41388	100	50	1.74	0.08	240.92	240.84	217.30	23.54	
45	F5-F6	5	13	18	243.00	37.73			0.04	1.00	38.73	96.83	21327	100	40	0.62	0.02	240.84	240.82	217.30	23.52	
46	F6-F7	3	-	3	40.50	6.29			0.04	1.00	7.29	18.23	4014	100	25	0.62	0.01	240.82	240.81	217.30	23.51	
47	F5-G1	11	-	11	148.50	23.05			0.2	5.00	28.05	70.13	15446	100	130	0.62	0.08	240.84	240.76	217.17	23.59	
48	F6-G1	10		10	135.00	20.96					20.96	52.40	11542	100	145	0.62	0.08	240.82	240.74	217.17	23.57	
49	G-G1	12		12	162.00	25.15			0.05	1.25	26.40	66.00	14537	100	70	0.62	0.04	240.62	240.58	217.17	23.41	
50	H-H1		13	13	175.50	27.25					27.25	68.13	15006	100	20	0.62	0.01	246.61	246.60	217.20	29.40	

S. No.	Name of pipe line	No. of Plots			Population @ 13.5 person/plot	Requirement in KL @ 155.25 ltrs. (135+15%) ltrs. Per head per day	Requirement from commu-nity building		Requirement In KL from parks		Total requirement in K.L.	Total requirement in K.L. @ 2.5 times	Total discharge in gallons	Proposed size of pipe line in mm	Length of pipe line in M	Loss of Head In 1000 M	Total loss of Head mtrs.	Hydraulic level		Ground level at lower end	Terminal Head available	Remarks
		Self	Branch	Total			Self	Total	Area in Acres	Req. @ 25 KL per acre	(7+9+11)							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
51	H1-F3	13	-	13	175.50	27.25					27.25	68.13	15006	100	50	0.62	0.03	246.60	246.57	217.30	29.27	
52	J-J1	16		16	216.00	33.53					33.53	83.83	18464	100	35	0.62	0.02	240.45	240.43	217.25	23.18	
53	K-K1	7		7	94.50	14.67	50.00	50.00			64.67	161.68	35611	100	60	1.32	0.07	241.89	241.82	217.25	24.57	
54	K'-K'/1	3		3	40.50	6.29			0.09	2.25	8.54	21.35	4703	100	40	0.62	0.02	241.82	241.80	217.25	24.55	
55	L-P	14		14	189.00	29.34					29.34	73.35	16156	100	215	0.62	0.13	241.57	241.44	217.00	24.44	
56	L-L1		9	9	121.50	18.86		82.50			101.36	253.40	55815	100	60	2.23	0.13	141.57	241.44	217.38	24.06	
57	L1-L2							82.50			82.50	206.25	45430	100	135	2.23	0.30	241.44	241.14	217.30	23.84	
58	L2-L3						82.50	82.50			82.50	206.25	45430	100	40	2.23	0.08	241.14	241.06	217.30	23.76	
59	L1-L1/1	9	-	9	121.50	18.86					18.86	47.15	10385	100	150	0.62	0.09	241.44	241.35	217.30	24.05	
60	L2-O1													100	20	0.62	0.01	241.14	241.13	217.30	23.83	connecting line
61	M-M1	5	69	74	999.00	155.09		60.00	0.75	18.75	233.84	584.60	128766	150	115	2.06	0.23	241.49	241.26	217.00	24.26	
62	M1-M2		49	49	661.50	102.70			0.57	14.25	116.95	292.38	64400	100	80	4.72	0.37	241.26	240.89	217.00	23.89	
63	M2-M3	7	42	49	661.50	102.70			0.57	14.25	116.95	292.38	64400	100	90	4.72	0.42	240.89	240.47	217.10	23.37	
64	M3-M4	2	38	40	540.00	83.84			0.27	6.75	90.59	226.48	49884	100	35	3.39	0.11	240.47	240.36	217.15	23.21	
65	M4-M5	8	25	33	445.50	69.16			0.25	6.25	75.41	188.53	41525	100	60	1.74	0.10	240.36	240.26	217.15	23.11	
66	M5-M6	3	15	18	243.00	37.73			0.20	5.00	42.73	106.83	23530	100	25	3.39	0.08	240.26	240.18	217.15	23.03	
67	M6-M7	4		4	54.00	8.38			0.20	5.00	13.38	33.45	7368	100	40	0.62	0.02	240.18	240.16	217.15	23.01	

(B)

S. No.	Name of pipe line	No. of Plots			Population @ 13.5 person/plot	Requirement in KL @ 155.25 ltrs. (135+15%) ltrs. Per head per day	Requirement from commu-nity building		Requirement in KL from parks		Total requirement in K.L. (7+9+11)	Total requirement in K.L. @ 2.5 times	Total discharge in gallons	Proposed size of pipe line in mm	Length of pipe line in M	Loss of Head in 1000 M	Total loss of Head mtrs.	Hydraulic level		Ground level at lower end	Terminal Head available	Remarks
		Self	Branch	Total			Self	Total	Area in Acres	Req. @ 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
68	M-M8	2		2	27.00	4.19			0.04	1.00	5.19	12.98	2858	100	30	0.62	0.01	241.49	241.48	217.20	24.28	
69	M1-M1/1	13	7	20	270.00	41.92		60.00	0.11	2.75	104.67	261.68	57638	100	90	1.74	0.15	241.26	241.11	217.10	24.01	
70	M1/1-M1/2						50.00	50.00		0.00	50.00	125.00	27533	100	80	0.94	0.07	241.11	241.04	217.10	23.94	
71	M1/1-M3	7		7	94.50	14.67	10.00	10.00		0.00	24.67	61.68	13585	100	80	0.62	0.04	241.11	241.07	217.10	23.97	
72	M2-R													100	80	0.62	0.04	240.89	240.85	216.92	23.93	connecting line
73	M4-M4/1	5		5	67.50	10.48			0.02	0.50	10.98	27.45	6046	100	25	0.62	0.01	240.36	240.35	217.15	23.20	
74	M4/1-M5/1								0.02	0.50	0.50	1.25	275	100	50	0.62	0.03	240.35	240.32	217.15	23.17	
75	M5-M5/1	7		7	94.50	14.67			0.05	1.25	15.92	39.80	8767	100	25	0.62	0.01	240.26	240.25	217.15	23.10	
76	M6-M6/1	11		11	148.50	23.05					23.05	57.63	12693	100	50	0.62	0.03	240.18	240.15	217.20	22.95	
77	N-N1	12		12	162.00	25.15			0.05	1.25	26.40	66.00	14537	100	120	0.62	0.07	241.42	241.35	217.20	24.15	
78	O-O1							60.00	0.10	2.50	62.50	156.25	34416	100	40	1.32	0.05	240.87	240.82	217.30	23.52	
79	O1-O2						60.00	60.00			60.00	150.00	33040	100	40	1.32	0.05	240.82	240.77	217.30	23.47	
80	Q-Q1	22		22	297.00	46.11			0.18	4.50	50.61	126.53	27869	100	120	0.94	0.11	241.19	241.08	216.90	24.18	
81	Q-Q2		30	30	405.00	62.88			0.40	10.00	72.88	182.20	40132	100	85	1.74	0.14	241.19	241.05	216.80	24.25	
82	Q2-Q3	30		30	405.00	62.88			0.07	1.75	64.63	161.58	35589	100	150	1.32	0.19	241.05	240.86	217.00	23.86	
83	Q2-S2								0.05	1.25	1.25	3.13	688	100	50	0.62	0.03	241.05	241.02	217.00	24.02	
84	R-R1	16	63	79	1066.50	165.57			0.58	14.50	180.07	450.18	99157	150	95	1.21	0.11	241.15	241.04	217.00	24.04	

S. No.	Name of pipe line	No. of Plots			Population @ 13.5 person/plot	Requirement in KL @ 155.25 ltrs. (135+15%) ltrs. Per head per day	Requirement from commu-nity building		Requirement in KL from parks		Total requirement in K.L. (7+9+11)	Total requirement in K.L. @ 2.5 times	Total discharge in gallons	Proposed size of pipe line in mm	Length of pipe line in M	Loss of Head in 1000 M	Total loss of Head mtrs.	Hydraulic level		Ground level at lower end	Terminal Head available	Remarks
		Self	Branch	Total			Self	Total	Area in Acres	Req. @ 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
85	R1-R2	6	49	55	742.50	115.27			0.58	14.50	129.77	324.43	71459	100	75	4.72	0.35	241.34	240.99	217.05	23.94	
86	R2-R3	5	28	33	445.50	69.16			0.58	14.50	83.66	209.15	46068	100	65	2.23	0.14	240.99	240.85	217.10	23.75	
87	R3-R4	7		7	94.50	14.67			0.08	2.00	16.67	41.68	9180	100	50	0.62	0.03	240.85	240.82	217.10	23.72	
88	R1-R1/1	4	4	8	108.00	16.77			0.05	1.25	18.02	45.05	9923	100	50	0.62	0.03	241.34	241.31	216.80	24.51	
89	R1/1-U	4		4	54.00	8.38					8.38	20.95	4615	100	50	0.62	0.03	241.31	241.28	217.00	24.28	
90	R2-W	16		16	216.00	33.53					33.53	83.83	18464	100	120	0.62	0.07	240.99	240.92	217.00	23.92	
91	R3-Y	21		21	283.50	44.01					44.01	110.03	24235	100	135	0.94	0.12	240.85	240.73	217.00	23.73	
92	R'-R'/1	15		15	202.50	31.44					31.44	78.60	17313	100	95	0.62	0.05	240.94	240.89	216.80	24.09	
93	S-S1	3	14	17	229.50	35.63			0.05	1.25	36.88	92.20	20308	100	50	0.62	0.03	240.83	240.80	217.00	23.80	
94	S1-S2		12	12	162.00	25.15			0.05	1.25	26.40	66.00	14537	100	20	0.62	0.01	240.80	240.79	217.00	23.79	
95	S2-S3	12		12	162.00	25.15			0.05	1.25	26.40	66.00	14537	100	60	0.62	0.03	240.79	240.76	217.10	23.66	
96	S1-S1/1	2		2	27.00	4.19					4.19	10.48	2307	100	25	0.62	0.01	240.80	240.79	217.00	23.79	
97	T-T1	12	32	44	594.00	92.22			0.28	7.00	99.22	248.05	54637	100	85	3.39	0.28	240.66	240.38	217.00	23.38	
98	T1-T2	23		23	310.50	48.21			0.12	3.00	51.21	128.03	28199	100	120	0.94	0.11	240.38	240.27	217.00	23.27	
99	T1-T1/1	9		9	121.50	18.86			0.16	4.00	22.86	57.15	12588	100	70	0.62	0.04	240.38	240.34	217.00	23.34	
100	V-V1	32		32	432.00	67.07					67.07	167.68	36933	100	200	1.74	0.34	240.61	240.27	216.85	23.42	
101	X-X1	32		32	432.00	67.07			0.11	2.75	69.82	174.55	38447	100	180	1.74	0.31	240.47	240.16	217.00	23.16	

Residential colony Sector - 8, Sonepat (Area 84.15 Acre)

Design of sewerage scheme

Sr. No.	Name of Sewer line	No. of plots to be served			Population @ 13.5 persons per plot	Discharge @ 155.25 litre/H/day	Discharge of community building		Total discharge in KL	Peak discharge in cusec @ 75% of 3 times DWF	Proposed size of sewer line	Velocity in ft./sec.	Design discharge	Length in Mtr.	Gradient	Fall	Formation level		Invert level		Depth		Average depth
		Self	Branch	Total			Self	Total									Upper end	Lower end	Upper end	Lower end	Upper end	Lower end	
1	A-B	10	-	10	135	21			21	0.02	200	2.50	0.44	90	1/225	0.40	217.30	217.34	216.30	215.90	1.00	1.44	1.22
2	B1-B	5		5	68	11			11	0.01	200	2.50	0.44	30	1/225	0.13	217.35	217.35	216.35	216.22	1.00	1.13	1.07
3	B-C	9	15	24	324	50			50	0.05	200	2.50	0.44	89	1/225	0.40	217.35	217.40	215.90	215.50	1.45	1.90	1.68
4	C1-C	5		5	68	11			11	0.01	200	2.50	0.44	20	1/225	0.04	217.40	217.40	216.40	216.36	1.00	1.04	1.02
5	C-D	4	29	33	446	69			69	0.06	200	2.50	0.44	20	1/225	0.09	217.40	217.40	215.50	215.41	1.90	1.99	1.95
6	D1-D2	45		45	608	94			94	0.09	200	2.50	0.44	165	1/225	0.73	217.06	217.22	216.06	215.33	1.00	1.89	1.44
7	D4-D2	13		13	176	27			27	0.03	200	2.50	0.44	40	1/225	0.18	217.25	217.22	216.25	216.07	1.00	1.15	1.08
8	D2-D3		58	58	783	122			122	0.11	200	2.50	0.44	30	1/225	0.13	217.22	217.20	215.33	215.20	1.89	2.00	1.94
9	D5-D3	13		13	176	27			27	0.03	200	2.50	0.44	54	1/225	0.24	217.30	217.20	216.30	216.06	1.00	1.14	1.07
10	D6-D3	14		14	189	29			29	0.03	200	2.50	0.44	62	1/225	0.28	217.15	217.20	216.15	215.87	1.00	1.33	1.16
11	D3-D	13	85	98	1323	205			205	0.19	200	2.50	0.44	165	1/225	0.73	217.20	217.40	215.20	214.47	2.00	2.93	2.47
12	D-E		131	131	1769	275			275	0.25	200	2.50	0.44	50	1/225	0.22	217.40	217.40	214.47	214.25	2.93	3.15	3.04
13	E1-E	21		21	284	44			44	0.04	200	2.50	0.44	118	1/225	0.52	217.50	217.40	216.50	215.98	1.00	1.42	1.21
14	E-F		152	152	2052	319			319	0.29	200	2.50	0.44	25	1/225	0.11	217.40	217.40	214.25	214.14	3.15	3.26	3.21
15	F1-F2	10		10	135	21			21	0.02	200	2.50	0.44	122	1/225	0.54	217.15	217.30	216.15	215.61	1.00	1.69	1.35

Sr. No.	Name of Sewer line	No. of plots to be served			Population @ 13.5 persons per plot	Discharge @ 155.25 litre/H/day	Discharge of community building		Total discharge in KL	Peak discharge in cusec @ 75% of 3 times DWF	Proposed size of sewer line	Velocity in ft./sec.	Design discharge	Length in Mtr.	Gradient	Fall	Ground level		Invert level		Depth		Average depth
		Self	Branch	Total			Self	Total									Upper end	Lower end	Upper end	Lower end	Upper end	Lower end	
16	F5-F2	3		3	41	6			6	0.01	200	2.50	0.44	25	1/225	0.11	217.30	217.30	216.30	216.19	1.00	1.11	1.06
17	F2-F3	5	13	18	243	38			38	0.03	200	2.50	0.44	45	1/225	0.20	217.30	217.30	215.61	215.41	1.69	1.89	1.79
18	F6-F3	11		11	149	23			23	0.02	200	2.50	0.44	119	1/225	0.53	217.17	217.30	216.17	215.64	1.00	1.66	1.33
19	F3-F4	5	29	34	459	71			71	0.07	200	2.50	0.44	40	1/225	0.18	217.30	217.40	215.41	215.23	1.89	2.17	2.03
20	F7-F4	13		13	176	27			27	0.03	200	2.50	0.44	130	1/225	0.58	217.20	217.40	216.20	215.62	1.00	1.78	1.39
21	F4-F		47	47	635	99			99	0.09	200	2.50	0.44	56	1/225	0.25	217.40	217.40	215.23	214.98	2.17	2.42	2.30
22	F8-F	6		6	81	13			13	0.01	200	2.50	0.44	58	1/225	0.26	217.45	217.40	216.45	216.19	1.00	1.21	1.11
23	F-G	23	205	228	3078	478			478	0.04	200	2.50	0.44	157	1/225	0.70	217.40	217.35	214.14	213.44/ 213.39	3.26	3.91	3.59
24	G1-G2	11		11	149	23			23	0.02	200	2.50	0.44	112	1/225	0.50	217.38	217.36	216.38	215.88	1.00	1.48	1.24
25	G3-G2	8		8	108	17			17	0.02	200	2.50	0.44	35	1/225	0.16	217.36	217.36	216.36	216.20	1.00	1.16	1.08
26	G2-G		19	19	257	40			40	0.04	200	2.50	0.44	70	1/225	0.31	217.36	217.35	215.88	215.57	1.48	1.78	1.63
27	G-H	18	247	265	3578	555			555	0.50	300	2.50	0.98	143	1/385	0.37	217.35	217.10	213.39	213.02	3.96	4.08	4.02
28	H1-H2	7		7	95	15			15	0.01	200	2.50	0.44	100	1/225	0.44	217.26	217.15	216.06	215.62	1.20	1.53	1.36
29	H4-H2	7		7	95	15			15	0.01	200	2.50	0.44	60	1/225	0.27	217.25	217.15	216.25	215.98	1.00	1.17	1.09
30	H2-H3	5	14	19	257	40			40	0.04	200	2.50	0.44	69	1/225	0.31	217.15	217.15	215.62	215.31	1.53	1.84	1.69
31	H5-H3	10		10	135	21			21	0.02	200	2.50	0.44	103	1/225	0.46	217.30	217.15	216.30	215.84	1.00	1.31	1.16

Sr. No.	Name of Sewer line	No. of plots to be served			Population @ 13.5 persons per plot	Discharge @ 155.25 litre/H/day	Discharge of community building		Total discharge in KL	Peak discharge in cusec @ 75% of 3 times DWF	Proposed size of sewer line	Velocity in ft./sec.	Design discharge	Length in Mtr.	Gradient	Fall	Ground level		Invert level		Depth		Average depth
		Self	Branch	Total			Self	Total									Upper end	Lower end	Upper end	Lower end	Upper end	Lower end	
32	H3-H	5	29	34	459	71			71	0.07	200	2.50	0.44	65	1/225	0.29	217.15	217.10	215.31	215.02	1.84	2.08	1.96
33	H-J	4	299	303	4091	635			635	0.58	300	2.50	0.98	70	1/385	0.18	217.10	217.00	213.02	212.84	4.08	4.16	4.12
34	J1-J2	9		9	122	19			19	0.02	200	2.50	0.44	148	1/225	0.66	217.20	217.15	216.00	215.34	1.20	1.81	1.51
35	J4-J2			0	0	0	85	85	85	0.08	200	2.50	0.44	248	1/225	1.10	217.10	217.15	215.60	214.50	1.50	2.65	2.08
36	J2-J	14	9	23	311	48	85	85	133	0.12	200	2.50	0.44	270	1/225	1.20	217.15	217.00	214.50	213.30	2.65	3.70	3.18
37	J8-J9	9		9	122	19			19	0.02	200	2.50	0.44	51	1/225	0.23	217.00	216.90	216.00	215.77	1.00	1.13	1.07
38	J9-J10	10	9	19	257	40			40	0.04	200	2.50	0.44	70	1/225	0.31	216.90	216.85	215.77	215.46	1.13	1.39	1.26
39	J13-J10	9		9	122	19			19	0.02	200	2.50	0.44	42	1/225	0.19	217.10	216.85	216.10	215.85	1.00	1.00	1.00
40	J10-J11	2	28	30	405	63			63	0.06	200	2.50	0.44	36	1/225	0.16	216.85	216.80	215.46	215.78	1.39	1.02	1.21
41	J14-J15	8		8	108	17			17	0.02	200	2.50	0.44	71	1/225	0.32	217.10	216.80	216.10	215.78	1.00	1.02	1.01
42	J16-J15	4		4	54	8			8	0.01	200	2.50	0.44	35	1/225	0.16	216.85	216.80	215.85	215.69	1.00	1.11	1.06
43	J15-J11		12	12	162	25			25	0.02	200	2.50	0.44	34	1/225	0.15	216.80	216.80	215.69	215.54	1.11	1.26	1.19
44	J11-J12		42	42	567	88			88	0.08	200	2.50	0.44	69	1/225	0.31	216.80	216.92	215.30	214.99	1.50	1.93	1.71
45	J17-J12	20		20	270	42			42	0.04	200	2.50	0.44	123	1/225	0.55	217.00	216.92	215.80	215.25	1.20	1.67	1.43
46	J12-J		62	62	837	130			130	0.12	200	2.50	0.44	80	1/225	0.36	216.92	217.00	215.25	214.89	1.67	2.11	1.89
47	J-K		388	388	5238	813			813	0.83	300	2.50	0.98	24	1/385	0.06	217.00	217.00	212.84	212.78/ 212.73	4.16	4.22	4.19

Sr. No.	Name of Sewer line	No. of plots to be served			Population @ 13.5 persons per plot	Discharge @ 155.25 litre/H/day	Discharge of community building		Total discharge in KL	Peak discharge in cusec @ 75% of 3 times DWF	Proposed size of sewer line	Velocity in ft./sec.	Design discharge	Length in Mtr.	Gradient	Fall	Ground Level		Invert level		Depth		Average depth
		Self	Branch	Total			Self	Total									Upper end	Lower end	Upper end	Lower end	Upper end	Lower end	
48	K1-K2	12		12	162	25			25	0.02	200	2.50	0.44	138	1/225	0.61	217.30	217.30	216.10	215.49	1.20	1.81	1.51
49	K6-K2			0	0	0	60	60	60	0.05	200	2.50	0.44	57	1/225	0.25	217.30	217.30	216.10	215.85	1.20	1.45	1.33
50	K2-K3		12	12	162	25	60	60	85	0.08	200	2.50	0.44	25	1/225	0.33	217.30	217.20	215.49	215.16	1.81	2.04	1.93
51	K7-K3	12		12	162	25			25	0.03	200	2.50	0.44	122	1/225	0.54	217.20	217.20	216.20	215.46	1.00	1.74	1.37
52	K3-K4		24	24	324	50	60	60	110	0.10	200	2.50	0.44	75	1/225	0.33	217.20	217.15	215.16	214.83	2.04	2.32	2.18
53	K8-K4	2		2	27	4			4	0.01	200	2.50	0.44	29	1/225	0.13	217.20	217.15	216.00	215.87	1.20	1.28	1.24
54	K4-K5	6	26	32	432	67	60	60	127	0.12	200	2.50	0.44	136	1/225	0.60	217.15	217.00	214.83	214.23	2.32	2.77	2.55
55	K9-K5	13		13	176	27			27	0.03	200	2.50	0.44	84	1/225	0.37	217.10	217.00	216.10	215.73	1.00	1.27	1.14
56	K5-K		45	45	608	94	60	60	154	0.14	200	2.50	0.44	79	1/225	0.35	217.00	217.00	214.23	213.88	2.77	3.12	2.95
57	K1-K11	5		5	68	11			11	0.01	200	2.50	0.44	90	1/225	0.40	216.85	216.80	215.85	215.45	1.00	1.35	1.18
58	K13-K11	15		15	203	32			32	0.03	200	2.50	0.44	81	1/225	0.36	216.90	216.80	215.90	215.54	1.00	1.26	1.13
59	K11-K12		20	20	270	42			42	0.04	200	2.50	0.44	48	1/225	0.21	216.80	216.92	215.45	215.24	1.35	1.68	1.52
60	K14-K12	17		17	230	36			36	0.03	200	2.50	0.44	85	1/225	0.38	217.00	216.92	216.00	215.62	1.00	1.30	1.15
61	K12-K		37	37	500	78			78	0.07	200	2.50	0.44	74	1/225	0.33	216.92	217.00	215.24	214.91	1.68	2.09	1.88
62	K-L	7	470	477	6440	1000	145	145	1145	1.05	400	2.50	1.74	89	1/225	0.16	217.00	217.10	212.73	212.57	4.27	4.53	4.40
63	L1-L	7		7	95	15	60	60	75	0.07	200	2.50	0.44	74	1/225	0.33	217.10	217.10	216.10	215.77	1.00	1.33	1.16

Sr. No.	Name of Sewer line	No. of plots to be served			Population @ 13.5 persons per plot	Discharge @ 155.25 litre/H/day	Discharge of community building		Total discharge in KL	Peak discharge in cusec @ 75% of 3 times DWF	Proposed size of sewer line	Velocity in ft./sec.	Design discharge	Length in Mtr.	Gradient	Fall	Ground Level		Invert level		Depth		Average depth
		Self	Branch	Total			Self	Total									Upper end	Lower end	Upper end	Lower end	Upper end	Lower end	
64	L-M	2	484	486	6561	1019	205	205	1224	1.12	400	2.50	1.74	39	1/225	0.07	217.10	217.10	212.57	212.50	4.53	4.60	4.57
65	M1-M2	11		11	149	23			23	0.02	200	2.50	0.44	61	1/225	0.27	217.20	217.20	216.20	215.93	1.00	1.27	1.13
66	M5-M2	3		3	41	6			6	0.01	200	2.50	0.44	18	1/225	0.08	217.20	217.15	216.20	216.12	1.00	1.03	1.02
67	M2-M3	5	14	19	257	40			40	0.04	200	2.50	0.44	43	1/225	0.19	217.15	217.15	216.12	215.74	1.03	1.41	1.22
68	M6-M3	7		7	95	15			15	0.01	200	2.50	0.44	34	1/225	0.15	217.10	217.15	216.10	215.95	1.00	1.20	1.10
69	M3-M4	3	26	29	392	61			61	0.06	200	2.50	0.44	28	1/225	0.12	217.15	217.15	215.74	215.32	1.41	1.83	1.62
70	M7-M4	7		7	95	15			15	0.01	200	2.50	0.44	35	1/225	0.16	217.15	217.15	216.15	215.99	1.00	1.16	1.08
71	M4-M	2	36	38	513	80			80	0.07	200	2.50	0.44	22	1/225	0.10	217.15	217.10	215.32	215.22	1.83	1.88	1.86
72	M-N		524	524	7074	1098	205	205	1303	1.20	400	2.50	1.74	53	1/225	0.09	217.10	217.00	212.50	212.41	4.60	4.59	4.60
73	N1-N	9		9	122	19			19	0.02	200	2.50	0.44	125	1/225	0.56	216.90	217.00	215.90	215.34	1.00	1.66	1.33
74	N-O	3	533	536	7236	1123	205	205	1328	1.22	400	2.50	1.74	43	1/225	0.08	217.00	217.00	212.41	212.33	4.59	4.67	4.63
75	Q-R	22		22	297	46			46	0.04	200	2.50	0.44	105	1/225	0.47	217.00	217.00	216.00	215.00	1.00	2.00	1.50
76	R1-R	9		9	122	19			19	0.02	200	2.50	0.44	58	1/225	0.26	217.00	217.00	216.00	215.74	1.00	1.26	1.13
77	R-S	13	31	44	594	92			92	0.08	200	2.50	0.44	88	1/225	0.39	217.00	216.68	215.00	214.61	2.00	2.07	2.04
78	S1-S	6		6	81	13			13	0.01	200	2.50	0.44	32	1/225	0.14	216.80	216.68	215.80	215.66	1.00	1.02	1.01
79	S-T	2	50	52	702	109			109	0.10	200	2.50	0.44	70	1/225	0.31	216.68	217.00	214.61	214.30	2.07	2.70	2.38

Sr. No.	Name of Sewer line	No. of plots to be served			Population @ 13.5 persons per plot	Discharge @ 155.25 litre/H/day	Discharge of community building		Total discharge in KL	Peak discharge in cusec @ 75% of 3 times DWF	Proposed size of sewer line	Velocity in ft./sec.	Design discharge	Length in Mtr.	Gradient	Fall	From level		Invert level		Depth		Average depth
		Self	Branch	Total			Self	Total									Upper end	Lower end	Upper end	Lower end	Upper end	Lower end	
80	T1-T	32		32	432	67			67	0.06	200	2.50	0.44	191	1/225	0.85	216.85	217.00	215.85	215.00	1.00	2.00	1.50
81	T-U		84	84	1134	176			176	0.11	200	2.50	0.44	34	1/225	0.15	217.00	217.00	214.30	214.15	2.70	2.85	2.77
82	U1-U2	30		30	405	63			63	0.06	200	2.50	0.44	175	1/225	0.78	217.00	217.00	214.30	214.15	2.70	2.85	2.77
83	U3-U2	11		11	149	23			23	0.02	200	2.50	0.44	108	1/225	0.48	217.00	217.00	216.00	215.22	1.00	1.78	1.39
84	U2-U		41	41	554	86			86	0.08	200	2.50	0.44	35	1/225	0.16	217.00	217.00	215.22	215.06	1.78	1.94	1.86
85	U-O	16	125	141	1904	296			296	0.27	200	2.50	0.44	139	1/225	0.62	217.00	217.05	215.06	214.44	1.94	2.61	2.28
86	O-P	2	677	679	9167	1423	205	205	1628	1.50	400	2.50	1.74	10	1/225	0.02	217.00	217.10	212.33	212.31/ 212.28	4.67	4.79	4.73
87	P1-P2	15		15	203	32			32	0.03	200	2.50	0.44	127	1/225	0.56	217.10	217.10	216.10	215.54	1.00	1.56	1.28
88	P4-P2	5		5	68	11			11	0.01	200	2.50	0.44	24	1/225	0.11	217.10	217.10	216.10	215.99	1.00	1.11	1.05
89	P2-P3	2	20	22	297	46			46	0.04	200	2.50	0.44	30	1/225	0.13	217.00	217.00	215.54	215.41	1.46	1.59	1.53
90	P5-P3	7		7	95	15			15	0.01	200	2.50	0.44	136	1/225	0.60	217.00	217.00	216.00	215.40	1.00	1.60	1.30
91	P3-P	4	29	33	446	69			69	0.06	200	2.50	0.44	52	1/225	0.23	217.00	217.10	215.40	215.17	1.60	1.93	1.77
92	P-STP		712	712	9612	1492	205	205	1697	1.56	450	2.50	2.22	15	1/660	0.02	217.10	217.10	212.28	212.26	4.82	4.84	4.83
93	STP to HUDA		712	712	9612	1492	205	205	1697	1.56	450	2.50	2.22	480	1/660	0.73	217.10	216.85	212.26	211.53	4.84	5.32	5.08

Residential Colony Sector - 8, Sonipat (84.155 Acre)

Design of Storm Water Drain

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Formation Level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1-2	1.50		1.50	0.15	400	2.50	3.48	182	1/570	0.32	217.30	217.40	216.20	215.80	1.10	1.60	1.35
2	3-2	0.20		0.20	0.02	400	2.50	3.48	27	1/570	0.05	217.42	217.40	216.22	216.17	1.20	1.23	1.22
3	2-4	0.10	1.70	1.80	0.18	400	2.50	3.48	20	1/570	0.04	217.40	217.40	215.80	215.76	1.60	1.64	1.62
4	8-9	2.02		2.02	0.20	400	2.50	3.48	151	1/570	0.27	217.06	217.22	215.86	215.59	1.20	1.63	1.41
5	10-9	0.31		0.31	0.03	400	2.50	3.48	31	1/570	0.06	217.26	217.22	216.06	216.00	1.20	1.22	1.21
6	9-11	0.20	2.33	2.53	0.25	400	2.50	3.48	46	1/570	0.08	217.22	217.20	215.59	215.51	1.63	1.69	1.66
7	12-11	0.32		0.32	0.03	400	2.50	3.48	51	1/570	0.09	217.30	217.20	216.10	216.01	1.20	1.19	1.20
8	11-4	1.28	2.85	4.13	0.41	400	2.50	3.48	150	1/570	0.26	217.20	217.40	215.51	215.25	1.69	2.15	1.92
9	4-13	0.30	5.93	6.23	0.62	400	2.50	3.48	51	1/570	0.09	217.40	217.40	215.25	215.16	2.15	2.24	2.20
10	5-6	2.14		2.14	0.21	400	2.50	3.48	117	1/570	0.21	217.50	217.40	216.30	216.09	1.20	1.31	1.26
11	7-6	0.15		0.15	0.02	400	2.50	3.48	60	1/570	0.11	217.42	217.40	216.22	216.11	1.20	1.29	1.24

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Ground level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
12	6-13	0.10	2.29	2.39	0.24	400	2.50	3.48	20	1/570	0.04	217.40	217.40	215.25	215.21	2.15	2.19	2.17
13	13-23		8.62	8.62	0.86	400	2.50	3.48	24	1/570	0.04	217.40	217.40	215.21	215.17	2.19	2.23	2.21
14	16-17	1.21		1.21	0.12	400	2.50	3.48	99	1/570	0.17	217.15	217.30	215.95	215.78	1.20	1.52	1.36
15	15-17	0.50		0.50	0.05	400	2.50	3.48	30	1/570	0.05	217.30	217.30	216.10	216.05	1.20	1.25	1.23
16	17-19	0.50	1.71	2.21	0.22	400	2.50	3.48	42	1/570	0.07	217.30	217.30	215.78	215.71	1.52	1.59	1.56
17	18-19	1.25		1.25	0.13	400	2.50	3.48	112	1/570	0.20	217.15	217.30	215.95	215.75	1.20	1.55	1.38
18	19-22	0.50	3.46	3.96	0.40	400	2.50	3.48	49	1/570	0.09	217.30	217.40	215.71	215.62	1.59	1.78	1.69
19	20-21	1.80		1.80	0.18	400	2.50	3.48	86	1/570	0.16	217.15	217.20	215.95	215.79	1.20	1.41	1.31
20	21-22	1.28	1.80	3.08	0.31	400	2.50	3.48	131	1/570	0.23	217.20	217.40	215.79	215.56	1.41	1.84	1.63
21	22-23	0.20	7.04	7.24	0.72	400	2.50	3.48	55	1/570	0.10	217.40	217.40	215.56	215.55/215.35	1.84	1.85	1.85
22	14-23	0.60		0.60	0.06	400	2.50	3.48	65	1/570	0.11	217.42	217.40	216.22	216.11	1.20	1.29	1.24

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Ground Level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
23	23-26	3.28	7.84	11.12	1.11	400	2.50	3.48	173	1/570	0.30	217.40	217.35	215.35	215.05	2.05	2.30	2.18
24	24-25	1.90		1.90	0.19	400	2.50	3.48	149	1/570	0.26	217.40	217.30	216.20	215.95	1.20	1.35	1.28
25	25-26	0.50	1.90	2.40	0.24	400	2.50	3.48	70	1/570	0.12	217.30	217.35	215.94	215.82	1.36	1.53	1.45
26	26-32	2.50	13.52	16.02	1.60	400	2.50	3.48	121	1/570	0.21	217.35	217.10	215.05	214.84	2.30	2.26	2.28
27	27-29	1.40		1.40	0.14	400	2.50	3.48	117	1/570	0.21	217.20	217.15	216.00	215.79	1.20	1.36	1.28
28	28-29	1.00		1.00	0.10	400	2.50	3.48	61	1/570	0.11	217.25	217.15	216.05	215.94	1.20	1.21	1.21
29	29-31	0.60	2.40	3.00	0.30	400	2.50	3.48	153	1/570	0.27	217.15	217.30	215.79	215.57	1.36	1.73	1.55
30	30-31	1.71		1.71	0.17	400	2.50	3.48	99	1/570	0.17	217.30	217.30	216.10	215.93	1.20	1.37	1.29
31	31-32	0.80	4.71	5.51	0.55	400	2.50	3.48	86	1/570	0.15	217.30	217.10	215.57	215.42	1.73	1.68	1.71
32	32-36	0.71	21.53	22.24	2.22	600	2.50	7.88	73	1/970	0.08	217.10	217.00	214.84	214.76/214.71	2.26	2.24	2.25
33	33-35	4.25		4.25	0.43	400	2.50	3.48	176	1/570	0.31	217.60	217.15	215.50	215.19	1.50	1.96	1.73

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Form. Level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
34	34-35	2.85		2.85	0.29	400	2.50	3.48	154	1/570	0.27	217.30	217.15	216.10	215.83	1.20	1.32	1.26
35	35-36	2.41	7.10	9.51	0.95	400	2.50	3.48	271	1/570	0.48	217.15	217.00	215.19	214.71	1.96	2.29	2.13
36	36-38	0.30	31.75	32.05	3.21	600	2.50	7.88	64	1/970	0.07	217.00	216.92	214.71	214.64	2.29	2.28	2.29
37	37-38	2.14		2.14	0.21	400	2.50	3.48	121	1/570	0.22	217.00	216.92	215.80	215.72	1.20	1.20	1.20
38	38-46	0.35	34.19	34.54	3.45	600	2.50	7.88	82	1/970	0.09	216.92	216.85	214.64	214.55	2.28	2.30	2.29
39	40-41	0.34		0.34	0.03	400	2.50	3.48	60	1/570	0.11	217.10	216.85	215.90	215.65	1.20	1.20	1.20
40	39-41	0.15		0.15	0.02	400	2.50	3.48	20	1/570	0.04	216.85	216.85	215.85	215.81	1.00	1.04	1.02
41	41-43	0.20	0.49	0.69	0.07	400	2.50	3.48	20	1/570	0.04	216.84	216.85	215.65	215.61	1.19	1.24	1.21
42	42-43	0.64		0.64	0.06	400	2.50	3.48	72	1/570	0.13	217.10	216.85	215.90	215.65	1.20	1.20	1.20
43	43-46	0.20	1.33	1.53	0.15	400	2.50	3.48	28	1/570	0.05	216.85	216.85	215.61	215.56	1.24	1.29	1.26
44	44-45	1.00		1.00	0.10	400	2.50	3.48	50	1/570	0.09	217.00	217.00	215.80	215.71	1.20	1.29	1.24

(5)

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Form. Level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
45	45-46	1.21	1.00	2.21	0.22	400	2.50	3.48	100	1/570	0.18	217.00	216.85	215.71	215.53/214.55	1.29	1.32	1.30
46	46-72		38.28	38.28	3.83	600	2.50	7.80	24	1/970	0.02	216.85	216.80	214.55	214.53/214.3[illegible]	2.30	2.27	2.29
47	47-49	0.50		0.50	0.05	400	2.50	3.48	43	1/570	0.08	217.00	217.00	215.80	215.72	1.20	1.28	1.24
48	48-49	0.26		0.26	0.03	400	2.50	3.48	37	1/570	0.07	217.00	217.00	215.80	215.73	1.20	1.27	1.24
49	49-51	0.20	0.76	0.96	0.10	400	2.50	3.48	43	1/570	0.08	217.00	217.20	215.72	215.64	1.28	1.56	1.42
50	50-51	2.28		2.28	0.23	400	2.50	3.48	138	1/570	0.24	217.30	217.20	216.10	215.86	1.20	1.34	1.27
51	51-53	0.30	3.24	3.54	0.35	400	2.50	3.48	75	1/570	0.13	217.20	217.15	215.42	215.29	1.78	1.86	1.82
52	52-53	2.28		2.28	0.23	400	2.50	3.48	121	1/570	0.21	217.20	217.15	216.00	215.79	1.20	1.36	1.28
53	53-55	0.30	5.82	6.12	0.61	400	2.50	3.48	75	1/570	0.13	217.15	217.15	215.29	215.16	1.86	1.99	1.93
54	54-55	0.32		0.32	0.03	400	2.50	3.48	33	1/570	0.06	217.20	217.15	216.00	215.94	1.20	1.21	1.21
55	55-58	0.32	6.44	6.76	0.68	400	2.50	3.48	120	1/570	0.21	217.15	217.05	215.16	214.95/214.75	1.99	2.10	2.05

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Ground level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
56	56-57	2.00		2.00	0.20	400	2.50	3.48	70	1/570	0.12	217.12	217.10	215.92	215.80	1.20	1.30	1.25
57	57-58	1.64	2.00	3.64	0.36	400	2.50	3.48	105	1/570	0.18	217.10	217.05	215.80	215.62	1.30	1.43	1.36
58	58-68	0.30	10.40	10.70	1.07	600	2.50	7.88	78	1/970	0.08	217.05	217.00	214.75	214.67	2.30	2.33	2.32
59	59-61	0.36		0.36	0.04	400	2.50	3.48	41	1/570	0.07	217.15	217.15	215.95	215.88	1.20	1.27	1.24
60	60-61	0.75		0.75	0.08	400	2.50	3.48	50	1/570	0.09	217.20	217.15	215.95	215.86	1.25	1.29	1.27
61	61-63	0.28	1.11	1.39	0.14	400	2.50	3.48	28	1/570	0.05	217.15	217.15	215.86	215.81	1.29	1.34	1.32
62	62-63	0.20		0.20	0.02	400	2.50	3.48	29	1/570	0.05	217.15	217.15	215.95	215.90	1.20	1.25	1.23
63	63-65	0.57	1.59	2.16	0.22	400	2.50	3.48	51	1/570	0.09	217.15	217.10	215.81	215.72	1.34	1.38	1.36
64	64-65	0.45		0.45	0.05	400	2.50	3.48	44	1/570	0.08	217.10	217.10	215.95	215.77	1.15	1.33	1.24
65	65-67	0.20	2.61	2.81	0.28	400	2.50	3.48	28	1/570	0.05	217.10	217.10	215.72	215.67	1.38	1.43	1.41
66	66-67	0.50		0.50	0.05	400	2.50	3.48	42	1/570	0.07	217.10	217.10	215.90	215.83	1.20	1.27	1.23

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Ground Level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
67	67-68	1.65	3.31	4.96	0.50	400	2.50	3.48	98	1/570	0.17	217.10	217.00	215.67	215.50/215.30	1.43	1.50	1.47
68	68-70	0.30	15.66	15.96	1.60	600	2.50	7.88	70	1/970	0.07	217.00	216.92	214.67	214.60	2.33	2.32	2.33
69	69-70	1.43		1.43	0.14	400	2.50	3.48	91	1/570	0.16	217.00	216.92	215.80	215.64	1.20	1.28	1.24
70	70-72	0.40	17.39	17.79	1.78	600	2.50	7.88	93	1/970	0.10	216.92	216.80	214.60	214.50/214.30	2.32	2.30	2.31
71	71-72	0.64		0.64	0.06	400	2.50	3.48	70	1/570	0.12	216.85	216.80	215.65	215.53	1.20	1.27	1.24
72	72-76	0.70	57.70	58.40	5.84	800	2.50	14.82	72	1/1500	0.05	216.80	217.10	214.30	214.25	2.50	2.85	2.68
73	73-75	3.50		3.50	0.35	400	2.50	3.48	124	1/570	0.22	217.10	216.90	215.90	215.68	1.20	1.22	1.21
74	74-75	1.05		1.05	0.11	400	2.50	3.48	71	1/570	0.12	217.10	216.90	215.90	215.70	1.20	1.20	1.20
75	75-76	1.30	4.55	5.85	0.59	400	2.50	3.48	85	1/570	0.15	217.10	217.10	215.68	215.53/.	1.42	1.57	1.49
76	76-80	0.14	64.25	64.39	6.44	800	2.50	14.82	30	1/1500	0.02	217.10	217.10	214.25	214.23	2.85	2.87	2.86
77	77-79	0.45		0.45	0.05	400	2.50	3.48	37	1/570	0.07	217.10	217.05	215.90	215.83	1.20	1.22	1.21

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Ground Level		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
78	78-79	1.07		1.07	0.11	400	2.50	3.48	59	1/570	0.10	217.05	217.05	215.85	215.75	1.20	1.30	1.25
79	79-80	0.85	1.52	2.37	0.24	400	2.50	3.48	63	1/570	0.11	217.05	217.10	215.75	215.64	1.30	1.46	1.38
80	80-82	0.21	66.76	66.97	6.70	800	2.50	14.82	44	1/1500	0.03	217.10	217.00	214.23	214.20	2.87	2.80	2.84
81	81-82	4.00		4.00	0.40	400	2.50	3.48	203	1/570	0.36	216.85	217.00	215.65	215.29	1.20	1.71	1.46
82	82-86	0.14	70.97	71.11	7.11	800	2.50	14.82	35	1/1500	0.02	217.00	217.10	214.20	214.18	2.80	2.92	2.86
83	83-85	2.80		2.80	0.28	400	2.50	3.48	119	1/570	0.21	217.10	217.10	215.90	215.69	1.20	1.41	1.30
84	84-85	0.70		0.70	0.07	400	2.50	3.48	64	1/570	0.11	217.05	217.10	215.85	215.74	1.20	1.36	1.28
85	85-86	3.00	3.50	6.50	0.65	400	2.50	3.48	122	1/570	0.21	217.10	217.10	215.69	215.48/214.18	1.41	1.62	1.52
86	86-91	0.20	77.61	77.81	7.78	800	2.50	14.82	35	1/1500	0.02	217.10	216.80	214.18	214.16	2.92	2.64	2.78
87	88-90	0.80		0.80	0.08	400	2.50	3.48	70	1/570	0.12	217.10	217.10	215.90	215.78	1.20	1.32	1.26
88	89-90	2.50		2.50	0.25	400	2.50	3.48	135	1/570	0.24	217.00	217.10	215.80	215.56	1.20	1.54	1.37

S. No.	Name of Drain	Area to be served (in Acres)			Discharge in cusecs @ 1/10" Rain fall	Proposed Size of Drain in mm	Design Velocity in ft. per second	Design Discharge in cusec	Length of drain in Mtr.	Gradient	Fall	Formlevel		Invert level		Depth		Average Depth
		Self	Branch	Total								Upper End	Lower End	Upper End	Lower End	Upper End	Lower End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
89	87-90	0.20		0.20	0.02	400	2.50	3.48	20	1/570	0.04	217.10	217.10	216.10	216.06	1.00	1.04	1.02
90	90-91	0.20	3.50	3.70	0.37	400	2.50	3.48	35	1/570	0.06	217.10	217.10	215.56	215.50/214.15	1.54	1.60	1.57
91	91-HUDA Drain	2.64	81.52	84.16	8.42	800	2.50	14.82	200	1/1500	0.13	217.10	216.85	214.16	214.03	2.94	2.82	2.88