SERVICE PLAN AND ESTIMATES

FOR
PROVIDING INTERNAL DEVELOPMENT WORKS

LICENSE REF. NO. 81 OF 2021 DATED 08.10.2021

IN AREA MEASURING 39.43125 ACRES RESIDENTIAL PLOTTED COLONY (DDJAY POLICY 2016) IN SECTOR-89A, GURUGRAM (HARYANA) BELONGING TO:

M/s. Radhika Heights Ltd.,
M/s Nirmala Buildwell Pvt. Ltd.,
M/s. Radicura Infra Ltd.,
M/s Cabana Construction Pvt. Ltd.,
M/s. Sunanda Infra Ltd., and
M/s. Bestech India Pvt Ltd.
In collaboration with M/s BESTECH INDIA PVT. LTD.

SURVEY ENGINEERING CONSULTANTS PVT. LTD. NOIDA

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ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN PROPOSED 39.43125 ACRES PROJECT TO BE DEVELOPED BY BESTECH INDIA PVT. LTD. UNDER "DDJAY POLICY-2016" OF HARYANA GOVT. IN SECTOR-89A, GURUGRAM (HARYANA)

REPORT

Gurgaon town of Haryana State is situated on Delhi - Jaipur National Highway No.8 at a distance of 30 kms for Delhi. Being in the national capital Region, the town has fast developing tendency and potential. Further, it has also started sharing the growing Industrial load of Delhi. In order to relieve the growing pressure of population in National Capital of Delhi, Haryana Urban Development Authority has already developed residential sector which are inhabited to an extent. Further to the increasing demand HUDA has planned to develop new sectors at outskirt of Gurgaon town.

The Govt. of Haryana notified a policy dated 8.2.2016 named as 'Affordable Plotted Housing Policy for Low and Medium Potential Towns' known as "Deen Dayal Jan Awas Yojana" under the provisions of Section 9A of the Haryana Development and Regulation of Urban Areas Act, 1975. Under this policy, a license (ref. no. 81 of 2021 dated 08.10.2021) as under has been issued by the Director Town & Country Planning Deptt. Haryana to M/s Bestech India Pvt. Ltd. for development of an area of 39.43125 Acres in Sector-89A, Gurugram.

This service estimate has been prepared for execution of "Internal Development Works" in the area covered under this license.

1. WATER SUPPLY:
   i. SOURCE & WATERWORKS:

It shall be noted that as per Haryana Building Code 2017 and EIA norms, fresh potable water shall not be used for non-potable applications like horticulture and industrial cooling and instead only recycled sewage treatment water shall be used for these non potable applications. National Green Tribunal vide its order no. As per NGT order dated April 30, 2019, following STP effluent norms will need to be followed (as applicable for Class 1 cities):

pH	: 5.5 -9
BOD	: 20 mg/l
TSS	: 30 mg/l
COD	: 100 mg/l
Total Nitrogen	: 15 mg/l
Total phosphorous	: 1 mg/l
Faecal coliforms	: 230 MPN (desirable), 100 MPN (permissible)

It is hence proposed to adopt DUAL PLUMBING for water supply distribution in the development by providing two separate cold water lines in the colony- one for potable water (drinking and domestic use) to be used in residential plots and another for non-potable recycled STP water to be used for flushing, horticulture/garden irrigation and street cleaning purposes. Accordingly sewage treatment plant with tertiary treatment is being planned in the project.

It has been proposed a water works with an UGT for one day's capacity of daily demand and supply the water to individual plots through hydro-pneumatic pressure boosting systems in accordance with CPHEEO Manual on Water Supply and National Building Code of India 2016 Part 9 'Plumbing Services' Section 1 Water Supply. No overhead tank water tanks are being proposed. Provisions have been made in the estimates for separate water pressure boosting sets for potable and non-potable water supply.

ii. DESIGN:

The project under DeenDayal Jan Awas Yojna 2016 are for Affordable high density plotted housing, with FAR of 2 and maximum density of 400 persons per acre. The per capita water demand is such case with full flushing system shall vary between 100 to 135 lit/head/day only in accordance with CPHEEO Manual on Water Supply [Table 2.1] as well as Clause 4.1.1 of NBC2016 Part 9 'Plumbing Services' Section 1 'Water Supply'.

The water demand accordingly for RESIDENTIAL POPULATION in service estimates and detailed design is hence being considered as 135 lit/head/day out of which 45 lit/head/day is taken for flushing and 90 lit/head/day for domestic water use. Allowance of 15% is being made for Unaccounted for Water (UFW) in accordance with CPHEEO Manual on Water Supply [Table 2.1 Note (ii)]

Since for plotted residential development [HBC norms], the building heights are restricted to below 16.5 m, the minimum residual water pressure at ferrule point is being considered as 2.2 bar or 22 m and the same shall be suitable for filling up the water tanks installed over the staircase mumty at staging of upto 18.6 m above the street level with water distribution line running minimum 600 mm (0.6 m) below the ground level. CPHEEO Water Supply Manual Clause 2.2.8.3 (e) mentions minimum 17 m residual pressure for 3 storied buildings. Since there is no codal requirement to provide an elevated water tank for water supply through gravity in a township, we propose to install an on-line hydropneumatic based boosting system for water supply distribution with one day's demand underground storage tank.

The fire fighting demand storage is normally recommended for communities having population of over 50,000 and accordingly no provision for static fire water storage tank is being made in the project. However, for better safety, external fire hydrants are being proposed connected to domestic water distribution line and the potable water supply stream shall be designed for 2 hose streams of 600 lpm operating simultaneously [LIGHT HAZARD] or 1200 lpm coincidental draft on water supply distribution line.

It is proposed to install separate pipelines for potable (municipal water) and non-potable (recycled STP water) in the entire development so that dual plumbing can be implemented in residential, commercial and community buildings. The same shall also eliminate any fresh water use in horticulture and street cleaning.

The pipe lines for distribution network have been designed with Hazen William formula with valve of "C" as 145 in accordance with CPHEEO Manual on Water supply and Treatment 1999 Table 6.1 'Hazen-William

Coefficient' [Non-metallic HDPE Pipe IS:4984 PE100 proposed for potable water supply and uPVC IS:4985 Class 3 (6 kg/sqcm) for non-potable water supply] . Peak factor of 3 has been taken in to consideration as per CPHEEO Manual on Water Supply and Treatment 1999 Clause 10.3.1 [Population less than 50,000].

iii. PUMPING EQUIPMENT:

No elevated/overhead water tanks are proposed as part of main water supply distribution. For pumping water from UGT provision for hydro-pneumatic pumping sets (two working & one standby pump) has been made-separate pumps for potable non-potable water supply proposed. Provision for DG set of required capacity has also been made.

II. SEWERAGE SCHEME:

The sewer lines have been designed running half-full for sewer lines as all the lines are of less than 400 mm dia and @ three times average DWF in relation to water supply demand. It has been assumed that about 80% of the water supply shall find its way into the proposed sewers. Sewer lines shall be laid to a gradient so that minimum self-cleansing velocity is maintained. Necessary provision for laying underground sewerage pipes, construction of manholes and vent shafts etc. has been made in the estimate.

The design statement for sewerage system has been prepared and attached with the estimate. Manning's formula has been used for the design of sewerage system.

In keeping with the policy of the Govt. provision has also been made for required capacity STP. The treated effluent from STP will be used in flushing, horticulture and street cleaning. However, surplus treated effluent will be discharged in to HSVP Sewerage System.

Provision for PVC/HDPE pipe lines for distribution of treated sewage effluent (non-potable water) within the colony has been made in the estimate

III. STORM WATER DRAINAGE:

R.C.C pipes have been proposed to carry the storm water in to the trunk mains of HSVP with provision made for RWH structures. The intensity of rainfall has been taken as ¾" per hour. A minimum size of 250 mm in the internal 9 m wide streets and 400 mm on 24 m wide street has been made with pipes running 3/4th full has been proposed. Manning's formula has been used for the design of storm water system.

IV. ROADS:

Roads have been proposed all around the area and the estimate has been prepared as per prevailing specifications by HSVP.

V. STREET LIGHTING:

Provision for street light has been made on all the roads and other such places wherever required.

VI. HORTICULTURE:

Estimates and details of plantation, landscaping, signages etc., has been included.

VII. SPECIFICATIONS:

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

Rates:

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

Cost:

The total cost of the estimate, including cost of all services works out to be Rupees 2,765.12 lakhs including 3% contingencies @ 49% departmental charges, including price escalation, unforeseen & administrative charges.

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN PROPOSED 39.43125 ACRES PROJECT TO BE DEVELOPED BY BESTECH INDIA PVT. LTD. UNDER "DDJAY POLICY-2016" OF HARYANA GOVT. IN SECTOR-89A, GURUGRAM (HARYANA)

DESIGN CALCULATION

WATER SUPPLY:

I. AREA & POPULATION:

1	Area Under License	=39.43125	Acres
2	Residential population:		
	Area under plots	= 22.212	Acres
	Total No. of Residential Plots	= 661	Nos.
	Residential Population @ 18 Pers/Plot	= 11898	Persons
3	Commercial Area	= 1.577	Acres
4	Common Facilities Areas	= 3.943	Acres
5	Area under Parks & Greens	= 2.980	Acres
6	Area under Roads	= 8.71925	Acres

II. DAILY WATER REQUIREMENT:

	Area Description	Population (persons)	Water Requirement (LPD)			
			POTABLE (Domestic @90 LPCD)	NON-POTABLE (Flushing @45 LPCD)	TOTAL (Domestic + Flushing)	
1	Residential plots	11,898	10,70,820	5,35,410	16,06,230	A
	Add for 15% UFW		1,60,623	80,312	2,40,935	
	Sub-total 1		12,31,443	6,15,722	18,47,165	
2	Commercial Areas @ 32kl/Acre	1.577 Acre	@2/3rd 33,643	1/3rd- 16,821	50,464	B
3	Common Facilities Areas @ 25 kL/Acre	3.943 Acres	65,717	32,858	98,575	C
	Sub-total 2 (A+B+C)		13,30,803	6,65,401	19,96,204	
4	Area under Parks @ 25kL/Acre	2.980 Acres		74,500	74,500	D
5	Area under Roads @ 5kL/Acre	8.71925 Acres		43,596	43,596	E
	TOTAL WATER DEMAND (Plots)		= 18,47,165 LPD			F
	(from A)		= 1847 KLD			
	TOTAL WATER DEMAND (Commercial & common facility area)		= 1,49,039 LPD			G
	(from B&C)		= 149 KLD			
	TOTAL POTABLE WATER DEMAND		= 13,30,803 LPD			

	(Domestic use)				
	TOTAL NON-POTABLE WATER DEMAND (Flushing, Irrigation & Street Cleaning) from M.D&E)		= 6,65,401+74,500 + 43,596 = 7,83,497 LPD		II
	Grand Total Water Demand		= 21,14,300 LPD		J
	except Irrigation & Flushing		= 2114 KLD, SAY 2.1 MLD		

III. STP CAPACITY & WATER BALANCE CALCULAITONS

STP Calculations

1	Total Water Demand (from F&G)	= 19,96,204
2	Flow to Sewer @80% (STP influent load)	= 15,96,963
3	Add 20% extra for STP capacity as per EIA norms	= 3,19,393
	STP capacity (lpd)	= 19,16,355

SAY 2 MLD

Water balance calculation sheet (LPD)

1	Total water demand in the project	=	21,14,300
2	Potable (Domestic) water demand	=	13,30,803
3	Non-Potable (Flushing) water demand	=	6,65,401
4	Irrigation and street washing water demand	=	1,18,096
5	Influent load to STP	=	15,96,963
6	Recovery from STP @95%	=	15,17,115
7	Reuse of STP water in non-potable demand	=	7,83,497
8	Excess treated effluent flow to municipal sewer	=	7,33,618
9	Net fresh water demand after reusing STP recycled water for all non potable applications	=	13,30,803

IV. WATER WORKS:

1. UNDERGROUND WATER TANK(s):

1.1. Domestic (potable water)

Total daily water Demand = 13,30,803 KLD

Required capacity of UGT (One day's requirement). = 1330.8 kL

ADD: For Fire Demand = NIL

Total Required Capacity of UGT = 1330.2 kL

Say 1340 kL

Hence, Provided Domestic UGT of capacity 1340 kL to cater to the colony. Two domestic water tanks of capacities 670 kL each hence proposed for ease of maintenance and cleaning.

1.2. Flushing, Irrigation and Street washing use

Total daily water Demand = 784 KLD

Required capacity of ~~UGT~~ STP (One day's requirement) = ~~784~~ 830 kl

~~Total Required Capacity of UGT~~ = ~~790~~ kl

~~Hence, Provided Recycled STP UGT of capacity 790 kl. to cater to the colony. 2 Tanks of 395 kL each hence proposed for ease of maintenance and cleaning.~~

It shall be noted that excess treated effluent water from STP shall be connected to public sewer.

2. BOOSTING MACHINERY:

2.1. DOMESTIC WATER DISTRIBUTION

Total daily water demand = ~~1340~~ 1480 KLD

No. of pumping hours per day = 8 hrs.

Average flow rate = 185 = ~~167.50~~ kL/hr 51.38 LPS = 2 Nos

Fire flow requirement 3083 = ~~4,200~~ LPM, or ~~72 kL/hr~~ which is more than average flow rate 26.00 LPS Each

Design flow rate [selected] = 167.50 kL/hr or 2,792 LPM, SAY 3000 LPM

It is proposed to provide 3 pumps (2 working and 1 standby) each of ~~1500 LPM~~ 26.00 LPS with pressure tank and pressure switch, as a Hydropneumatic pumping set for potable water supply to the entire colony which shall keep the underground pipe lines under charge with automatic start/stop of the pumps with provision for a variable frequency drive (VFD) for maintaining constant pressure with variable flow through-out the circuit.

GROSS WORKING HEAD

Suction lift = 3.0 m (self-priming pump proposed)

Residual Head at the remotest plot = ~~30~~ 42.00 m

Frictional loss in main & specials @ ~~3000~~ 3083 lpm = ~~35~~ 45 m ~~{@0.010132 m/m in pipelines (200 mm OD) 0.026924 m/m (150 mm OD) plus add for 50% extra in fittings and appurtenances}~~

Total working head required = ~~59~~ 45 m

Gross working head provided = ~~60~~ 45 m

CALCULATION FOR FRICTIONAL HEAD

As per Hazen and William's formula for flow of water under pressure:

$$Q = 3.1 \times (10^{-3}) \times C \times (D^{2.63}) \times (S^{0.54})$$

Where Q= discharge in kilo liters/day
C= Hazen and William Coefficient. 140 for Plastic pipes
D= diameter of the pipe in mm

S = slope of hydraulic gradient (metre per metre)

BGP of each motor = 1500 x 60/ (60x75x0.6)
= 33.33 or SAY 35 HP

Working electrical load for 2 pumps working = 2 x 35 = 70 HP

2.2. NON-POTABLE (FLUSHING, IRRIGATION & STREET WASHING) WATER DISTRIBUTION

Total daily water demand	= 284 kLD
No of pumping hours per day	= 6 hrs
Average flow rate	= 98 kL/hr, SAY 100 kL/hr or 1670 LPM
Design flow rate [selected]	= 1670 LPM

It is proposed to provide 3 pumps (2 working and 1 standby) each of 835 LPM with pressure tank and pressure switch, as a Hydropneumatic pumping set for NON-POTABLE water supply to the entire colony which shall keep the underground pipe lines under charge with automatic start/stop of the pumps with provision for a pressure tank with pressure switch for maintaining constant pressure through-out the circuit.

GROSS WORKING HEAD

Suction lift	= 3.0 m (self-priming pump proposed)
Residual Head at the remotest garden hydrant	= 22.0 m
Frictional loss in main & specials @870 lpm	= 22 m (@0.000199 m/m in pipelines (90 mm OD) & 0.000483 m/m (75 mm OD) plus add for 50% extra in fittings and appurtenances
Total working head required	= 44 m
Gross working head provided	**= 50 m**

CALCULATION FOR FRICTIONAL HEAD

As per Hazen and William's formula for flow of water under pressure:

$$Q = 3.1 \times (10^{-3}) \times C \times (D^{2.63}) \times (S^{0.54})$$

Where Q= discharge in kilo liters/day
C= Hazen and William Coefficient, 110 for steel (welded joints) pipes
D= diameter of the pipe in mm
S= slope of hydraulic gradient (metre per metre)

BGP of each motor = 835 x 50 / (60 x 75 x 0.6)

= 15.46 or SAY 16 HP

Working electrical load for 2 pumps working = 2 x 16 = 32 HP

VII. EMERGENCY DG SETS:

S.No.	Description of installation	Unit	Quantity	H.P.	Total H.P.
1	Domestic water distribution Hydropneumatic pumps	Each	2	35	70
2	Flushing water distribution Hydropneumatic pumps	Each	2	16	32
3	Sewage treatment and recycling Plant i/c excess treated effluent	Set	1	150	150
	TOTAL PUMPS HP	=			252
	TOTAL KW	=			188
	Lighting load (kW) in utility areas only	=			10
	TOTAL LOAD (kW)	=			198
	KVA Rating	=			247.5
	DG Set loading@85%	=			291.18. SAY 300 KVA

Provide a DG set of 300 KVA capacity for power back-up.

ESTIMATE FOR PROVIDING INTERNAL DEVELOPMENT WORKS IN PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA-2016 IN SECTOR-89A, GURUGRAM (HARYANA) ON LAND MEASURING 39.43125 ACRES BEING DEVELOPED BY BESTECH INDIA PVT. LTD.

FINAL ABSTRACT OF COST

S.NO.	NAME OF WORK	DESCRIPTION	COST (Rs. In lakhs)
1	SUBWORK I	WATER SUPPLY	~~405.55~~ 503.91
2	SUBWORK II	SEWERAGE	~~591.25~~ 1073.13
3	SUBWORK III	STORMWATER DRAINAGE	~~298.22~~ 469.11
4	SUBWORK IV	ROAD WORK	~~508.72~~ 645.29
5	SUBWORK V	STREET LIGHTING	33.45
6	SUBWORK VI	HORTICULTURE	~~13.70~~ 16.33
7	SUBWORK VII	MAINTENANCE CHARGES OF SERVICES & RESURFACING OF ROADS AFTER 5 YRS & 10 YRS	914.23
	GRAND TOTAL (lakhs of Rupees)		~~2765.12~~ 3655.45
	TOTAL SITE AREA (Acres)		39.43125
	COST PER ACRE (lakhs of Rupees)		~~70.13~~ 92.70

Director General
Town & Country Planning
Haryana, Chandigarh

Executive Engineer-I
W/S Division, GMDA
Gurugram

Executive Engineer-III
Drainage Division, GMDA,
Gurugram

Executive Engineer-V
Sew. Division No. II
GMDA, Gurugram

Executive Engineer-I (EDC)
Gurugram Metropolitan Development Authority
Gurugram

Chief Engineer,

RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA-2016 IN SECTOR-89A, GURUGRAM (HARYANA)
ON LAND MEASURING 39.43125 ACRES BEING DEVELOPED
BY BESTECH INDIA PVT. LTD.

SUBWORK NO. I : WATER SUPPLY

SUBHEAD NO. 1 : HEAD WORKS

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)
1	Construction of Pump Chamber of suitable size to accommodate machinery of Boosting Station, Electrical Panel and Standby DG set	Lumpsum	1	500,000	5
2	Construction of FootPath, lawns etc. as required at site, boundary walll and gate around water work site	Lumpsum	1	100,000	1
3	Construction of RCC UGT of 1340 KL (for potable water), complete in all respects, including cost of pipes etc	KL	1340	~~3,500~~ 6000	~~46.9~~ 80.40
4	Construction of RCC UGT of 790 KL (for non-potable/STP recycled water), complete in all respects, including cost of pipes etc	KL	790	~~3,500~~ 6000	~~27.65~~ 47.40
5	Provision for carriage of material and other unforeseen items	Lumpsum	1	50,000	0.5
6	Provision for staff quarters for maintenance staff	Lumpsum	1	750,000	7.5
	Subtotal c/f to Abstract of Cost of Sub Work No. 1				~~AA.99~~ 141.80

SUBWORK NO. I : WATER SUPPLY

SUBHEAD NO. 2 : PUMPING MACHINERY

1	Providing and fixing variable speed drive hydropneumatic domestic water supply pumping set connected to RCC UGT complete with pressure vessel : 2 working and 1 standby pump set (each pump 1500 lpm@60 m head, Maximum flow 3000 lpm) -for potable water supply	L.S.	1	~~1,000,000~~ 1,200,000	10
2	Providing and fixing fixed speed irrigation water supply pumping set connected to RCC UGT complete with pressure vessel :1 working and 1 standby pump set (Each pump 835 lpm@50 m head, Maximum flow 1670 lpm) -for recycled-flushing, garden,irrigation water supply only	L.S.	1	425,000	4.25
3	Provision for automatic type chlorination plant complete in all respects	Each	1	100,000	1
4	Provision for pipes, valves and specials inside the pump chamber for booster pumps	Lumpsum	1	150,000	1.5

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)
5	Provison for electric service connection and electric fittings in the boosting chamber including cost of transformer	Lumpsum	1	250,000	2.5
6	Provision for DG Set: Capacity Rating 300 KVA	Lumpsum	1	1,500,000	15
7	Provision for carriage of material and other unforeseen items	Lumpsum	1	100,000	1
	Subtotal c/f to Abstract of Cost of Sub Work No. 1				35.25

SUBWORK NO. I : WATER SUPPLY

SUBHEAD NO. 3 : DISTRIBUTION SYSTEM/RISING MAINS

1	Providing, laying, jointing, testing, & commisioning HDPE, IS:4984 PE100 PN 6 pipes including cost of excavation, refilling etc. complete in all respects:				
	i) 110 mm OD	RM	885	1,250	11.0625
	ii) 150 mm OD	RM	4520	1,800	81.36
	iii) 200 mm OD	RM	1260	2,600	32.76
2	Providing and fixing of D/F Sluice Valves including cost of brick masonry chamber complete in all respects.	RM	260	3260	8.48
	a) 100 mm dia	Each	10	12,000	1.2
	b) 150 mm dia	Each	38	15,000	5.7
	c) 200 mm dia	Each	2	21,000	0.42
3	Providing and fixing of Air Valves & Scour Valves inlcuding cost of brick masonry chamber complete in all respects.	Set	1	10,000	0.1
4	Providing and fixing of Fire Hydrants including cost of brick masonry chamber complete in all respects.	Set	14	10,000	1.4
5	Providing and fixing indicating plates for Sluice Valves and Air valves and fire hydrants etc.	Nos	65	1,000	0.65
6	Provision for carriage of material and other unforeseen items	Lumpsum	1	100,000	1
7	Provision for cutting of roads and making good to its original condition	Lumpsum	1	150,000	1.5
8	Provision for Rising Main from HUDA water supply main line to UGT, 150 mm i/d	RM	200	1,650	3.3
	Subtotal c/f to Abstract of Cost of Sub Work No. 1				140.4525

SUBWORK NO. I : WATER SUPPLY ASBTRACT OF COST

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)

S.NO.	NAME OF WORK		AMOUNT (Rs. In lakhs)
1	SUBHEAD NO. 1 : HEAD WORKS		~~88.55~~ 141.80
2	SUBHEAD NO. 2 : PUMPING MACHINERY		~~35.25~~ 40.25
3	SUBHEAD NO. 3 : DISTRIBUTION SYSTEM/RISING MAINS		~~140.4525~~ 146.30
		Sub total	~~264.25~~ 328.3
	ADD: 3% contingencies and PE charges	3% contingencies and PE charges	~~7.93~~ 9.85
		Sub total	~~272.18~~ 338.21
	ADD: 49% Departmental charges including price escalation, unforeseen and adminstrative chages		~~133.37~~ 165.71
	Total c/f to Final Abstract of Cost		~~405.55~~ 503.91

SUBWORK NO.I I : SEWERAGE

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)
1	Providing, lowering, jointing and cutting DWC PE pipes (IS:16098-2, SN-4) pipes in to trenches including cost of excavation, bed concrete, including const. of manholes and vent shafts etc. complete as per std. sections.				
	a) Size 200 mm OD, Depth 0-2 m BGL	RM	2585	~~1500~~ 2270	~~38.775~~ 58.68
	b) Size ~~250~~ 300 mm OD, Depth 0-3 m BGL	RM	~~768~~ 644	~~2000~~ 2700	~~15.36~~ 17.39
	c) Size ~~300~~ 400 mm OD, Depth 0-3 m BGL	RM	~~5~~ 129	~~2800~~ 5000	~~0.14~~ 6.45
2	Provision for providing oblique junctions or lamp holes for house connections	Lumpsum	1	500000	5
3	Provision for timbering etc	Lumpsum	1	200000	2
4	Provision for providing and fixing vent shafts at suitable places as per HUDA requirements	Lumpsum	1	150000	1.5
5	Provision for Const. of STP for additional area under this estimate: 2000 KLD Capacity, including cost of pumping. The STP Tech. based on SBR/MBBR with Parameter D.I. (i)(JC BOD <10, COD <50,	KLD	2000	~~12500~~ 25000/- Per KLD	~~250~~ 500.00
6	Provision for laying of ~~PVC~~ Rising Mains/Distribution System from STPs for flushing/ horticulture requirements & disposal of surplus effluent to HUDA Sewers				
a.	Treated Effluent Rising Mains from STPs to HUDA Sewer-cum Treated Effluent Distribution Main Line: From STP to HUDA Sewer: Size: ~~110~~ 300 mm diameter D.I. PIPE	RM	425	~~1575~~ 2475/-	~~6.69375~~ 10.52
b.	Treated Effluent Distribution Lines (~~uPVC IS:4985 Class III 6 kg/sqcm~~):				
	i) Size : 100 mm ~~OD~~ D.I. Pipe	RM	1445	~~1100~~ 1475	~~15.895~~ 21.31
	ii) Size 100 mm ~~OD~~ D.I. pipe	RM	4260	~~900~~ 1475	~~38.34~~ 62.84
	i) Size : 63 mm OD uPVC pipe	RM	1140	750	8.55

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)
7	Provision for carriage of material and other unforseen items	Lumpsum	1	100000	1
8	Provision for cutting of roads and making good to its original condition	Lumpsum	1	100000	1
9	Provision for connection with ~~HSVPS~~ GMDA line	Lumpsum	1	~~100000~~ 300000	~~1~~ 3
				Sub total	~~385.25~~ 699.24
	ADD: 3% contingencies and PE charges	3% contingencies and PF charges			~~11.56~~ 20.98
				Sub total	~~396.81~~ 720.22
	ADD: 49% Departmental charges including price escalation, unforeseen and adminstrative chages				~~194.44~~ 352.91
	Total c/f to Final Abstract of Cost				~~591.25~~ 1073.13 Lac
	SUBWORK NO. III : STORM WATER DRAINAGE				
1	Providing, lowering, jointing and cutting RCC NP3/DWC pipes into trenches including cost of excavation, manholes, vent shafts etc. complete as per standard sections				
	a) ~~350~~ 400 mm dia , depth 0.2 m BGL	RM	2886	~~2000~~ 2950	~~57.72~~ 85.14
	b) 450 mm dia, depth 0.2 m BGL	RM	704	~~2500~~ 3200	~~17.6~~ 22.53
2	Provision for Road Gullies with ~~250~~ 400 mm dia pipe connection	L.S.	1	500000	~~5~~ 5
3	Provision for temporary diversion of traffic	L.S.	1	150000	1.5
4	Provision for cutting of roads and making good to its original condition and carriage of materials and other unforseen charges	L.S.	1	200000	~~2~~ 2
5	Provision for construction of Rain Water Harvesting Pits(along with de-silting chambers at entry) in greens along roads	L.S.	39	~~250000~~ 450000	~~97.5~~ 175.50
6	Provision for overflow stormwater connection with ~~HUDA~~ GMDA Storm water Drain	L.S.	1	~~200000~~ 300000	~~2~~ 3
7	Provision for timbering and shoring	L.S.	1	100000	1
8	Provision for temporary disposal arrangement till ~~HUDA~~ GMDA services are provided	L.S.	1	1000000	~~10~~ 10
				Sub total	~~194.32~~ 305.67
	ADD: 3% contingencies and PE charges	3% contingencies and PE charges			~~5.83~~ 9.17
				Sub total	~~200.15~~ 314.84
	ADD: 49% Departmental charges including price escalation, unforeseen and adminstrative chages				~~98.07~~ 154.27
	Total c/f to Final Abstract of Cost				~~298.22~~ 469.11 Lacs.

SUBWORK NO. IV : ROAD WORK

Details of Roads

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)

Width of road in m	Length of road in m	Gross area of road in sqm	Metalled width in m	Metalled area in sqm
9	2725	24525	5.5	14987.5
12	695	8340	7.5	5212.5
Subtotal	3420	32865		20200
Add for curves@10%				2020
Total area of roads				22220

1	Provision for leveling, earth filling/cutting as per site conditions, including compaction of earth to required DBD etc. complete: Gross (Newly Licensed) Area 39.43125 Acres of the Colony under this estimate =	Acre	8.719	~~150000~~ 1750	~~13.08~~ 15.26
2. a)	Preparation of sub grade by excavating to an average depth of 10", dressing to camber and consolidation with road roller including making good undultations etc.	Sqm	22220	~~1200~~ 150	~~266.64~~ 333.30
2.b)	Supplying, stacking, and laying of Granular Sub Base (GSB) Grade-I as per MoRTH Specifications; 0.20 M thick *				
2.c)	Supplying and stacking of stone ballast 3"-4" gauge @ 50 cft/100 sft of road surface 250 mm thick GSB				
2.d)	Wet Mix Macadam@50mm thick, Surface dressing.				
2.e)	~~25mm thick M.S.S. with paver, complete in all respects~~ 50mm thick B.M. & 30mm Thick B.C.				
3	Provision of Kerb and channel of concrete 1:1 1/2:3 (m 20) as per the standard design	RM	4526.5	600	27.159

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
9	2725	1	2725
12	695	2	1390
Subtotal	3420		4115
Add for curves@10%			411.5
Total length of kerb and channel in m			4526.5

4	Provision for cement concrete pavement along 24 m wide roads with precast tiles of 1:1.5:3 concrete	Sqm	3475	600	20.85

Width of road in m	Length of road in m	No. of sides where 2.5 m wide pavement has to be provided	Total area of pavement

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)
	24	695	2	3475	
5	Provision for Guide map	L.S.	1	25000	0.25
6	Provision for demarcation burjees	L.S.	1	100000	1
7	Provision for plot indicator boards	L.S.	1	50000	0.5
8	Provision for carriage of material & unforseen items	L.S.	1	200000	2
9	Provision for fixing traffic light control on main roads	L.S.	1	100000	1
10	Provision for C.C. pavement in commercial area i.e. 50% of the area	Sqm	3191.65	600	~~19.149891~~ 19.15
				Sub total	~~331.48~~ 420.47
	ADD: 3% contingencies and PE charges			3% contingencies and PE charges	~~9.94~~ 12.61
				Sub total	~~341.42~~ 433.08
	ADD: 49% Departmental charges including price escalation, unforeseen and adminstrative chages				~~167.30~~ 212.21
	Total c/f to Final Abstract of Cost				~~508.72~~ 645.29
	SUBWORK NO. V : STREET LIGHTING				
1	Providing street lighting on roads as per standard specifications of HSVP in all respects with CFL	Acre	8.719	250000	21.798125
				Sub total	21.80
	ADD: 3% contingencies and PE charges			3% contingencies and PF charges	0.65
				Sub total	22.45
	ADD: 49% Departmental charges including price escalation, unforeseen and adminstrative chages				11.00
	Total c/f to Final Abstract of Cost				33.45 Lacs.
	SUBWORK NO. VI : HORTICULTURE				
	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	Acre	2.98	150000	4.47
	b) Rough dressing of tenched area				

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. in lakhs)
	c) Grassing with "doob grass" including watering and maintainance of lawns free from weeds and tot for mowing in rows 7.5 cm in either direction including for hedges and grill and barbed wire fencing around park and green belt (as per HSVP norms)				
2	Planting of trees with tree guards on roads at 40' (12 m c/c) interval	Each	343	~~1300~~ 1800	~~4.459~~ 6.17

	Width of road in m	Length of road in m	No. of sides where tress are to be planned	Total length of road in m for tree plantation
	9	2725	1	2725
	12	695	2	1390
	Subtotal	3420		4115
	Spacing of tree			12 m c/c
	Number of trees to be planted			343

Cost of one tree		
Item	Unit	Cost (Rs.)
Excavation	Each	60
Manure	Each	90
Tree plants	Each	150
Tree guards	Each	1000
Total cost for one tree		1300

	Sub total		~~8.93~~ 10.64
ADD: 3% contingencies and PE charges	3% contingencies and PE charges		~~0.27~~ 0.32
	Sub total		~~9.20~~
ADD: 49% Departmental charges including price escalation, unforeseen and adminstrative chages			~~4.51~~ 5.37
Total c/f to Final Abstract of Cost			~~13.70~~ 16.33

SUBWORK NO. VII : MAINTENANCE CHARGES AND SURFACING OF ROADS

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 HSVP norms after completion GMDA	Acre	39.431	750000	295.73
2	Provision for resurfacing of roads after 1st 5 years of maintainance by providing 50 mm thick BM, &20mm thick Mix Seal Surface Type-A.	Sqm	22220	600	133.32
3	Provision for resurfacing of roads after 10 years of maintainance by providing 25mm thick premix carpet with seal coat Type-B.	Sqm	22220	750	166.65

S.No.	DESCRIPTION	Unit	Quantity	Rate (Rs.)	Amount (Rs. In lakhs)
				Sub total	595.70
	ADD: 3% contingencies and PE charges			3% contingencies and PE charges	17.87
				Sub total	613.58
	ADD: 49% Departmental charges including price escalation, unforeseen and administrative chages				300.65
	Total c/f to Final Abstract of Cost				914.23

PLOT-03, SECTOR-89A,GURUGRAM

DESIGN CALCULATION FOR DOMESTIC WATER SYSTEM

S. NO.	Reference line		Number of plot			Popul. (Total No of Persons)	Total Requirement	Total Water Requirement	DIA.	Velocity	Length of Line	(S) Slope of pipe	Head Loss for line Length	Fitting Loss @ 10% of pipe length	Total Head Loss	CUMMULATIVE
	FROM	TO	SELF	PREVIOUS	TOTAL		(In LPD)	(In LPM)	(In mm)	m/sec	(In mtrs.)	(In m/m)	(In mtrs.)	(In mtrs.)	(In mtrs.)	
1	UGT	D1	0	661	661	8924	1385373	3848	200	1.5	3	0.000	0.0008	0.0001	0.02	14.234
2	D1	D2	0	661	661	8924	1385373	3848	200	1.5	5	0.000	0.0013	0.0001	0.03	14.217
3	D2	D3	12	649	661	8924	1385373	3848	200	1.5	86	0.000	0.0226	0.0023	0.50	14.188
4	D3	D4	0	649	649	8762	1360223	3778	200	1.5	42	0.000	0.0110	0.0011	0.24	13.690
5	D4	D5	16	633	649	8762	1360223	3778	150	1.5	112	0.000	0.0412	0.0041	0.91	13.447
6	D5	D6	0	633	633	8546	1326689	3685	150	1.5	8	0.000	0.0029	0.0003	0.06	12.541
7	D6	D7	16	617	633	8546	1326689	3685	150	1.5	112	0.000	0.0412	0.0041	0.91	12.476
8	D4	D7	0	617	617	8330	1293155	3592	200	1.5	8	0.000	0.0021	0.0002	0.05	11.569
9	D7	D8	0	617	617	8330	1293155	3592	200	1.5	41	0.000	0.0108	0.0011	0.24	11.523
10	D8	D9	8	609	617	8330	1293155	3592	150	1.5	56	0.000	0.0206	0.0021	0.45	11.286
11	D9	D10	0	609	609	8222	1276383	3546	150	1.5	8	0.000	0.0029	0.0003	0.06	10.832
12	D10	D11	8	601	609	8222	1276383	3546	150	1.5	56	0.000	0.0206	0.0021	0.45	10.768
13	D8	D11	0	601	601	8114	1259621	3499	200	1.5	8	0.000	0.0021	0.0002	0.05	10.314
14	D11	D12	5	596	601	8114	1259621	3499	200	1.5	74	0.000	0.0195	0.0019	0.43	10.268
15	D12	D13	0	596	596	3046	1249142	3470	150	1.5	42	0.000	0.0155	0.0015	0.34	9.840
16	D13	D13A	5	591	596	3046	1249142	3470	110	1.5	33	0.001	0.0174	0.0017	0.38	9.500
17	D13	D14	0	591	591	7979	1238662	3441	150	1.5	8	0.000	0.0029	0.0003	0.06	9.116
18	D14	D14A	5	586	591	7979	1238662	3441	110	1.5	33	0.001	0.0174	0.0017	0.38	9.052

19	D13A	D14A	0	586	586	7911	1228183	3412	110	1.5	8	0.001	0.0042	0.0004	0.09	8.668
20	D14	D15	0	586	586	7911	1228183	3412	150	1.5	41	0.000	0.0151	0.0015	0.33	8.575
21	D15	D15A	5	581	586	7911	1228183	3412	110	1.5	32	0.001	0.0169	0.0017	0.37	8.243
22	D15A	D16A	0	581	581	7844	1217703	3383	110	1.5	8	0.001	0.0042	0.0004	0.09	7.871
23	D16	D16A	5	576	581	7844	1217703	3383	110	1.5	32	0.001	0.0169	0.0017	0.37	7.778
24	D15	D16	0	576	576	7776	1207224	3353	150	1.5	8	0.000	0.0029	0.0003	0.06	7.406
25	D16	D17	0	576	576	7776	1207224	3353	150	1.5	21	0.000	0.0077	0.0008	0.17	7.341
26	D17	D18	0	576	576	7776	1207224	3353	150	1.5	8	0.000	0.0029	0.0003	0.06	7.171
27	D18	D19	15	561	576	7776	1207224	3353	150	1.5	120	0.000	0.0442	0.0044	0.97	7.107
28	D19	D20	0	561	561	7574	1175786	3266	200	1.5	38	0.000	0.0100	0.0010	0.22	6.135
29	D20	D21	15	546	561	7574	1175786	3266	150	1.5	127	0.000	0.0467	0.0047	1.03	5.915
30	D21	D22	0	546	546	7371	1144348	3179	150	1.5	8	0.000	0.0029	0.0003	0.06	4.887
31	D22	D23	18	528	546	7371	1144348	3179	150	1.5	127	0.000	0.0467	0.0047	1.03	4.823
32	D23	D24	0	528	528	7128	1106622	3074	200	1.5	38	0.000	0.0100	0.0010	0.22	3.795
33	D24	D25	18	510	528	7128	1106622	3074	150	1.5	127	0.000	0.0467	0.0047	1.03	3.575
34	D25	D26	0	510	510	6885	1068896	2969	150	1.5	8	0.000	0.0029	0.0003	0.06	2.547
35	D26	D27	18	492	510	6885	1068896	2969	150	1.5	127	0.000	0.0467	0.0047	1.03	2.482
36	D27	D28	0	492	492	6642	1031171	2864	200	1.5	40	0.000	0.0105	0.0011	0.23	1.454
37	D28	D29	18	474	492	6642	1031171	2,864	150	1.5	151	0.0004	0.0556	0.0056	1.22	1.222
38	D29	D29A	4	470	474	6399	993445	2760	110	1.5	31	0.001	0.0164	0.0016	0.36	22.533
39	D29A	D30	4	466	470	6345	985061	2736	110	1.5	40	0.001	0.0211	0.0021	0.46	22.172
40	D29	D30	0	466	466	6291	976678	2713	150	1.5	8	0.000	0.0029	0.0003	0.06	21.707
41	D30	D31	0	466	466	6291	976678	2713	150	1.5	24	0.000	0.0088	0.0009	0.19	21.643
42	D31	D32	0	466	466	6291	976678	2713	150	1.5	8	0.000	0.0029	0.0003	0.06	21.448

43	D32	D33	17	449	466	6291	976678	2713	150	1.5	126	0.000	0.0464	0.0046	1.02	21.384
44	D33A	D33B	17	432	449	6062	941048	2614	110	1.5	119	0.001	0.0629	0.0063	1.38	20.364
45	D33B	D33	0	432	432	5832	905418	2515	110	1.5	42	0.001	0.0222	0.0022	0.49	18.980
46	D33	D34	0	432	432	5832	905418	2515	150	1.5	57	0.000	0.0210	0.0021	0.46	18.492
47	D34	D35	0	432	432	5832	905418	2515	200	1.5	91	0.000	0.0239	0.0024	0.53	18.031
48	D35	D36	0	432	432	5832	905418	2515	150	1.5	57	0.000	0.0210	0.0021	0.46	17.504
49	D36A	D36B	17	415	432	5832	905418	2515	110	1.5	57	0.001	0.0301	0.0030	0.66	17.043
50	D36B	D36	0	415	415	5603	869788	2416	110	1.5	42	0.001	0.0222	0.0022	0.49	16.380
51	D36	D37	17	398	415	5603	869788	2416	150	1.5	120	0.000	0.0442	0.0044	0.97	15.892
52	D37	D38	0	398	398	5373	834158	2317	150	1.5	8	0.000	0.0029	0.0003	0.06	14.921
53	D38	D39	24	374	398	5373	834158	2317	150	1.5	177	0.000	0.0651	0.0065	1.43	14.856
54	D39	D40	0	374	374	5049	783857	2177	200	1.5	42	0.000	0.0110	0.0011	0.24	13.423
55	D40	D41	24	350	374	5049	783857	2177	150	1.5	174	0.000	0.0640	0.0064	1.41	13.180
56	D41	D42	0	350	350	4725	733556	2038	150	1.5	8	0.000	0.0029	0.0003	0.06	11.772
57	D42	D43	24	326	350	4725	733556	2038	150	1.5	174	0.000	0.0640	0.0064	1.41	11.707
58	D43	D44	0	326	326	4401	683255	1898	200	1.5	42	0.000	0.0110	0.0011	0.24	10.298
59	D44	D45	24	302	326	4401	683255	1898	150	1.5	172	0.000	0.0633	0.0063	1.39	10.055
60	D45	D46	0	302	302	4077	632954	1758	150	1.5	8	0.000	0.0029	0.0003	0.06	8.663
61	D46	D47	21	281	302	4077	632954	1758	150	1.5	172	0.000	0.0633	0.0063	1.39	8.598
62	D47	D48	0	281	281	3794	588941	1636	200	1.5	42	0.000	0.0110	0.0011	0.24	7.206
63	D48	D49	21	260	281	3794	588941	1636	150	1.5	169	0.000	0.0622	0.0062	1.37	6.963
64	D49	D50	0	260	260	3510	544928	1514	150	1.5	8	0.000	0.0029	0.0003	0.06	5.595
65	D50	D51	24	236	260	3510	544928	1514	150	1.5	169	0.000	0.0622	0.0062	1.37	5.530
66	D51	D52	0	236	236	3186	494627	1374	200	1.5	20	0.000	0.0053	0.0005	0.12	4.162

67	D52	D53	0	236	236	3.86	494627	1374	200	1.5	8	0.000	0.0021	0.0002	0.05	4.046
68	D53	D54	0	236	236	3.86	494627	1374	200	1.5	20	0.000	0.0053	0.0005	0.12	4.000
69	D54	D55	6	230	236	3.86	494627	1374	150	1.5	45	0.000	0.0166	0.0017	0.36	1.036
70	D55	D56	0	230	230	3.05	482051	1339	150	1.5	8	0.000	0.0029	0.0003	0.06	0.672
71	D56	D57	6	224	230	3.05	482051	1339	150	1.5	45	0.000	0.0166	0.0017	0.36	0.607
72	D57	D58	0	224	224	3024	469475	1,304	200	1.5	42	0.0003	0.0110	0.0011	0.24	0.243
73	D58	D59	15	209	224	3024	469475	1304	150	1.5	106	0.000	0.0390	0.0039	0.86	18.578
74	D59	D60	0	209	209	2822	438018	1217	150	1.5	8	0.000	0.0029	0.0003	0.06	17.720
75	D60	D61	15	194	209	2822	438018	1217	150	1.5	106	0.000	0.0390	0.0039	0.86	17.655
76	D61	D62	0	194	194	2619	406510	1129	200	1.5	42	0.000	0.0110	0.0011	0.24	16.797
77	D62	D63	14	180	194	2619	406510	1129	150	1.5	99	0.000	0.0364	0.0036	0.80	16.554
78	D63	D64	0	180	180	2430	377238	1048.	150	1.5	8	0.000	0.0029	0.0003	0.06	15.752
79	D64	D65	0	180	180	2430	377238	1048	150	1.5	21	0.000	0.0077	0.0008	0.17	15.688
80	D65	D65A	7	173	180	2430	377238	1048	110	1.5	48	0.001	0.0254	0.0025	0.56	15.518
81	D65A	D66A	0	173	173	2336	362586	1007	110	1.5	8	0.001	0.0042	0.0004	0.09	14.960
82	D65	D66	0	173	173	2336	362586	1007	150	1.5	8	0.000	0.0029	0.0003	0.06	14.867
83	D66	D66A	7	166	173	2336	362586	1007	110	1.5	48	0.001	0.0254	0.0025	0.56	14.802
84	D66	D67	6	160	166	2241	347915	966	150	1.5	71	0.000	0.0261	0.0026	0.57	14.244
85	D67	D68	0	160	160	2150	335340	932	200	1.5	42	0.000	0.0110	0.0011	0.24	13.669
86	D68	D69	6	154	160	2150	335340	932	150	1.5	42	0.000	0.0155	0.0015	0.34	13.426
87	D69	D70	0	154	154	2079	322765	897	150	1.5	8	0.000	0.0029	0.0003	0.06	13.086
88	D70	D71	6	148	154	2079	322765	897	150	1.5	42	0.000	0.0155	0.0015	0.34	13.021
89	D71	D72	0	148	148	1938	310190	862	200	1.5	42	0.000	0.0110	0.0011	0.24	12.681
90	D72	D73	6	142	148	1938	310190	862	150	1.5	44	0.000	0.0162	0.0016	0.36	12.438

91	D73	D74	0	142	142	1917	297614	827	150	1.5	8	0.000	0.0029	0.0003	0.06	12.082
92	D74	D75	6	136	142	1917	297614	827	150	1.5	44	0.000	0.0162	0.0016	0.36	12.017
93	D75	D76	0	136	136	1836	285039	792	200	1.5	42	0.000	0.0110	0.0011	0.24	11.661
94	D76	D77	17	119	136	1836	285039	792	150	1.5	137	0.000	0.0504	0.0050	1.11	11.418
95	D77A	D77	12	107	119	1607	249409	693	110	1.5	85	0.001	0.0449	0.0045	0.99	10.309
96	D77	D78	0	107	107	1445	224259	623	150	1.5	18	0.000	0.0066	0.0007	0.15	9.321
97	D78	D79	0	107	107	1445	224259	623	150	1.5	8	0.000	0.0029	0.0003	0.06	9.175
98	D79	D79A	0	107	107	1445	224259	623	110	1.5	37	0.001	0.0195	0.0020	0.43	9.111
99	D79A	D80A	0	107	107	1445	224259	623	110	1.5	8	0.001	0.0042	0.0004	0.09	8.681
100	D80A	D80	5	102	107	1445	224259	623	110	1.5	37	0.001	0.0195	0.0020	0.43	8.588
101	D79	D80	0	102	102	1377	213779	594	150	1.5	8	0.000	0.0029	0.0003	0.06	8.158
102	D80	D81	0	102	102	1377	213779	594	150	1.5	42	0.000	0.0155	0.0015	0.34	8.093
103	D81	D81A	5	97	102	1377	213779	594	110	1.5	37	0.001	0.0195	0.0020	0.43	7.753
104	D81	D82	13	84	97	1310	203300	565	150	1.5	106	0.000	0.0390	0.0039	0.86	7.323
105	D82	D83	0	84	84	1134	176054	489	200	1.5	40	0.000	0.0105	0.0011	0.23	6.465
106	D83	D84	13	71	84	1134	176054	489	150	1.5	96	0.000	0.0353	0.0035	0.78	6.233
107	D84	D85	0	71	71	959	148807	413	150	1.5	8	0.000	0.0029	0.0003	0.06	5.456
108	D85	D86	13	58	71	959	148807	413	150	1.5	96	0.000	0.0353	0.0035	0.78	5.391
109	D86	D87	0	58	58	783	121561	338	200	1.5	38	0.000	0.0100	0.0010	0.22	4.614
110	D87	D88	13	45	58	783	121561	338	150	1.5	93	0.000	0.0342	0.0034	0.75	4.394
111	D88	D89	0	45	45	608	94314	262	150	1.5	8	0.000	0.0029	0.0003	0.06	3.642
112	D89	D90	12	33	45	608	94314	262	150	1.5	93	0.000	0.0342	0.0034	0.75	3.577
113	D90	D91	0	33	33	446	69164	192	200	1.5	38	0.000	0.0100	0.0010	0.22	2.824
114	D91	D92	12	21	33	446	69164	192	150	1.5	85	0.000	0.0313	0.0031	0.69	2.604

115	D92	D93	0	21	21	284	44013	122	150	1.5	8	0.000	0.0029	0.0003	0.06	1.916
116	D93	D94	12	9	21	284	44013	122	150	1.5	85	0.000	0.0313	0.0031	0.69	1.851
117	D94	D95	0	9	9	122	18863	52	200	1.5	180	0.000	0.0473	0.0047	1.04	1.163
118	D95	D96	0	9	9	122	18863	52	200	1.5	11	0.000	0.0029	0.0003	0.06	0.122
119	D96A	D96B	0	9	9	122	18863	52	110	1.5	44	0.001	0.0232	0.0023	0.51	#REF!
120	D96B	D96C	0	9	9	122	18863	52	110	1.5	26	0.001	0.0137	0.0014	0.30	0.302
121	D96C	D96	0	9	9	122	18863	52	110	1.5	29	0.001	0.0153	0.0015	0.34	0.337
122	D96	D97	9	0	9	122	18863	52	200	1.5	84	0.000	0.0221	0.0022	0.49	0.486
123	D97	D2	0	0	0	0	0	0	200	1.5	10	0.000	0.0026	0.0003	0.06	0.058

PLOT-03, SECTOR-89A,GURUGRAM

DESIGN CALCULATION FOR FLUSHING WATER SYSTEM

S. NO.	Reference line		Number of plot			Popul (Total No of Persons)	Total Requirement	Total Water Requirement	DIA.	Velocity	Length of Line	(S) Slope of pipe	Head Loss for line Length	Fitting Loss @ 10% of pipe length	Total Head Loss	CUMMULATIVE
	FROM	TO	SELF	PREVIOUS	TOTAL		(In LPD)	(In LPM)	(In mm)	m/sec	(In mtrs.)	(In m/m)	(In mtrs.)	(In mtrs.)	(In mtrs.)	
1	STP	F1	0	661	661	8924	1385573	3848	110	1.5	3	0.001	0.0016	0.0002	0.03	25.928
2	F1	F2	0	661	661	8924	1385573	3848	110	1.5	8	0.001	0.0042	0.0004	0.09	25.893
3	F16	F17	12	649	661	8924	1385573	3848	80	1.5	86	0.001	0.0659	0.0066	1.45	25.800
4	F13	F16	0	649	649	8762	1360023	3778	110	1.5	42	0.001	0.0222	0.0022	0.49	24.351
5	F13	F15	16	633	649	8762	1360023	3778	80	1.5	112	0.001	0.0858	0.0086	1.89	23.863
6	F15	F14	0	633	633	8546	1326589	3685	80	1.5	8	0.001	0.0061	0.0006	0.13	21.975
7	F14	F12	16	617	633	8546	1326589	3685	80	1.5	112	0.001	0.0858	0.0086	1.89	21.840
8	F12	F13	0	617	617	8330	1293155	3592	110	1.5	8	0.001	0.0042	0.0004	0.09	19.953
9	F11	F12	0	617	617	8330	1293155	3592	110	1.5	41	0.001	0.0217	0.0022	0.48	19.860
10	F10	F11	8	609	617	8330	1293155	3592	80	1.5	56	0.001	0.0429	0.0043	0.94	19.383
11	F9	F10	0	609	609	8222	1276288	3546	80	1.5	8	0.001	0.0061	0.0006	0.13	18.439
12	F8	F9	8	601	609	8222	1276288	3546	80	1.5	56	0.001	0.0429	0.0043	0.94	18.304
13	F8	F11	0	601	601	8114	1259521	3499	110	1.5	8	0.001	0.0042	0.0004	0.09	17.360
14	F7	F8	5	596	601	8114	1259521	3499	110	1.5	74	0.001	0.0391	0.0039	0.86	17.267
15	F6	F7	0	596	596	8046	1249142	3470	110	1.5	42	0.001	0.0222	0.0022	0.49	16.407
16	F6	F6A	5	591	596	8046	1249142	3470	63	1.5	33	0.001	0.0334	0.0033	0.73	15.919
17	F5	F6	0	591	591	7979	1238762	3441	110	1.5	8	0.001	0.0042	0.0004	0.09	15.184
18	F5	F5A	5	586	591	7979	1238762	3441	63	1.5	33	0.001	0.0334	0.0033	0.73	15.091
19	F5A	F6A	0	586	586	7911	1228183	3412	63	1.5	8	0.001	0.0081	0.0008	0.18	14.356
20	F4	F5	0	586	586	7911	1228183	3412	110	1.5	41	0.001	0.0217	0.0022	0.48	14.178
21	F4	F4A	5	581	586	7911	1228183	3412	63	1.5	32	0.001	0.0324	0.0032	0.71	13.701
22	F3A	F4A	0	581	581	7844	1217803	3383	63	1.5	8	0.001	0.0081	0.0008	0.18	12.989
23	F3	F3A	5	576	581	7844	1217803	3383	63	1.5	32	0.001	0.0324	0.0032	0.71	12.811
24	F3	F4	0	576	576	7776	1207224	3353	110	1.5	8	0.001	0.0042	0.0004	0.09	12.098
25	F2	F3	0	576	576	7776	1207224	3353	110	1.5	21	0.001	0.0111	0.0011	0.24	12.005
26	F1	F19	15	561	576	7776	1207224	3353	110	1.5	120	0.001	0.0634	0.0063	1.39	11.761
27	F19	F20	0	561	561	7574	1175736	3266	110	1.5	38	0.001	0.0201	0.0020	0.44	10.366

28	F20	F21	15	546	561	7574	1175186	3266	80	1.5	127	0.001	0.0973	0.0097	2.14	9.924
29	F21	F22	0	546	546	7372	1144348	3179	80	1.5	8	0.001	0.0061	0.0006	0.13	7.784
30	F22	F23	18	528	546	7371	1144348	3179	80	1.5	127	0.001	0.0973	0.0097	2.14	7.649
31	F20	F23	0	528	528	7128	1106E22	3074	110	1.5	8	0.001	0.0042	0.0004	0.09	5.508
32	F23	F24	0	528	528	7128	1106E22	3074	110	1.5	38	0.001	0.0201	0.0020	0.44	5.415
33	F24	F25	18	510	528	7128	1106E22	3074	80	1.5	127	0.001	0.0973	0.0097	2.14	4.974
34	F25	F26	0	510	510	6885	1068806	2969	80	1.5	8	0.001	0.0061	0.0006	0.13	2.833
35	F26	F27	18	492	510	6885	1068806	2969	80	1.5	127	0.001	0.0973	0.0097	2.14	2.698
36	F24	F27	0	492	492	6642	1031171	2864	110	1.5	8	0.001	0.0042	0.0004	0.09	0.558
37	F27	F28	0	492	492	6642	1031171	2,864	110	1.5	40	0.0005	0.0211	0.0021	0.46	0.465
38	F28	F29	18	474	492	6642	1031171	2864	80	1.5	151	0.001	0.1157	0.0116	2.54	39.869
39	F29	F29A	4	470	474	5399	993485	2760	63	1.5	31	0.001	0.0314	0.0031	0.69	37.324
40	F29A	F30A	0	470	470	5345	9850E1	2736	63	1.5	8	0.001	0.0081	0.0008	0.18	36.634
41	F30	F30A	4	466	470	5345	9850E1	2736	63	1.5	31	0.001	0.0314	0.0031	0.69	36.456
42	F29	F30	0	466	466	6291	976675	2713	80	1.5	8	0.001	0.0061	0.0006	0.13	35.765
43	F30	F31	0	466	466	6291	976675	2713	80	1.5	24	0.001	0.0184	0.0018	0.40	35.630
44	F31	F32	0	466	466	6291	976675	2713	80	1.5	8	0.001	0.0061	0.0006	0.13	35.226
45	F32	F33	17	449	466	6291	976673	2713	80	1.5	126	0.001	0.0965	0.0097	2.12	35.091
46	F33A	F33B	17	432	449	6062	941043	2614	63	1.5	119	0.001	0.1205	0.0120	2.65	32.967
47	F33B	F33	0	432	432	5832	905413	2515	63	1.5	42	0.001	0.0425	0.0043	0.94	30.317
48	F33	F34	0	432	432	5832	905413	2515	80	1.5	57	0.001	0.0437	0.0044	0.96	29.382
49	F34	F35	0	432	432	5832	905413	2515	110	1.5	91	0.001	0.0481	0.0048	1.06	28.421
50	F35	F36	0	432	432	5832	905413	2515	80	1.5	57	0.001	0.0437	0.0044	0.96	27.362
51	F36A	F36B	17	415	432	5832	905413	2515	63	1.5	119	0.001	0.1205	0.0120	2.65	26.403
52	F36B	F36	0	415	415	5603	869788	2416	63	1.5	42	0.001	0.0425	0.0043	0.94	23.752
53	F36	F37	17	398	415	5603	869788	2416	80	1.5	120	0.001	0.0919	0.0092	2.02	22.817
54	F37	F38	0	398	398	5373	834158	2317	80	1.5	8	0.001	0.0061	0.0006	0.13	20.794
55	F38	F39	24	374	398	5373	834158	2317	80	1.5	177	0.001	0.1356	0.0136	2.98	20.660
56	F35	F39	0	374	374	5049	783857	2177	110	1.5	8	0.001	0.0042	0.0004	0.09	17.676
57	F39	F40	0	374	374	5049	783857	2177	110	1.5	42	0.001	0.0222	0.0022	0.49	17.583
58	F40	F41	24	350	374	5049	783857	2177	80	1.5	174	0.001	0.1333	0.0133	2.93	17.095
59	F41	F42	0	350	350	4725	733556	2038	80	1.5	8	0.001	0.0061	0.0006	0.13	14.163
60	F42	F43	24	326	350	4725	733556	2038	80	1.5	174	0.001	0.1333	0.0133	2.93	14.028
61	F40	F43	0	326	326	4401	683255	1898	110	1.5	8	0.001	0.0042	0.0004	0.09	11.095
62	F43	F44	0	326	326	4401	683255	1898	110	1.5	42	0.001	0.0222	0.0022	0.49	11.002
63	F44	F45	24	302	326	4401	683255	1398	80	1.5	172	0.001	0.1318	0.0132	2.90	10.514
64	F45	F46	0	302	302	4077	632954	1758	80	1.5	8	0.001	0.0061	0.0006	0.13	7.615

65	F46	F47	21	281	302	4077	632954	1758	80	1.5	172	0.001	0.1318	0.0132	2.90	7.480
66	F44	F47	0	281	281	3794	588941	1636	110	1.5	8	0.001	0.0042	0.0004	0.09	4.581
67	F47	F48	0	281	281	3794	588941	1636	110	1.5	42	0.001	0.0222	0.0022	0.49	4.488
68	F48	F49	21	260	281	3794	588941	1636	80	1.5	169	0.001	0.1295	0.0129	2.85	4.000
69	F49	F50	0	260	260	3510	544928	1514	80	1.5	8	0.001	0.0061	0.0006	0.13	3.309
70	F50	F51	24	236	260	3510	544928	1514	80	1.5	169	0.001	0.1295	0.0129	2.85	3.174
71	F48	F51	0	236	236	3186	494627	1374	110	1.5	8	0.001	0.0042	0.0004	0.09	0.325
72	F51	F52	0	236	236	3186	494627	1,374	110	1.5	20	0.0005	0.0106	0.0011	0.23	0.232
73	F52	F53	0	236	236	3136	494627	1374	110	1.5	8	0.001	0.0042	0.0004	0.09	43.618
74	F53	F54	0	236	236	3136	494627	1374	110	1.5	20	0.001	0.0106	0.0011	0.23	43.525
75	F54	F55	6	230	236	3136	494627	1374	63	1.5	45	0.001	0.0456	0.0046	1.00	43.293
76	F55	F56	0	230	230	3105	482051	1339	63	1.5	8	0.001	0.0081	0.0008	0.18	42.291
77	F56	F57	6	224	230	3105	482051	1339	63	1.5	45	0.001	0.0456	0.0046	1.00	42.112
78	F54	F57	0	224	224	3024	469476	1304	110	1.5	8	0.001	0.0042	0.0004	0.09	41.110
79	F57	F58	0	224	224	3024	469476	1304	110	1.5	42	0.001	0.0222	0.0022	0.49	41.017
80	F58	F59	15	209	224	3024	469476	1304	80	1.5	106	0.001	0.0812	0.0081	1.79	40.529
81	F59	F60	0	209	209	2822	438038	1217	80	1.5	8	0.001	0.0061	0.0006	0.13	38.742
82	F60	F61	15	194	209	2822	438038	1217	80	1.5	106	0.001	0.0812	0.0081	1.79	38.608
83	F58	F61	0	194	194	2619	406600	1129	110	1.5	8	0.001	0.0042	0.0004	0.09	36.821
84	F61	F62	0	194	194	2619	406600	1129	110	1.5	42	0.001	0.0222	0.0022	0.49	36.728
85	F62	F63	14	180	194	2619	406600	1129	80	1.5	99	0.001	0.0758	0.0076	1.67	36.240
86	F63	F64	0	180	180	2430	377258	1048	80	1.5	8	0.001	0.0061	0.0006	0.13	34.571
87	F64	F65	0	180	180	2430	377258	1048	80	1.5	21	0.001	0.0161	0.0015	0.35	34.436
88	F65	F65A	7	173	180	2430	377258	1048	63	1.5	48	0.001	0.0486	0.0049	1.07	34.083
89	F65A	F66A	0	173	173	2336	362586	1007	63	1.5	8	0.001	0.0081	0.0008	0.18	33.013
90	F65	F66	0	173	173	2336	362586	1007	80	1.5	8	0.001	0.0061	0.0006	0.13	32.835
91	F66	F66A	7	166	173	2336	362586	1007	63	1.5	48	0.001	0.0486	0.0049	1.07	32.700
92	F66	F67	6	160	166	2242	347915	966	80	1.5	71	0.001	0.0544	0.0054	1.20	31.631
93	F62	F67	0	160	160	2160	335340	932	110	1.5	8	0.001	0.0042	0.0004	0.09	30.435
94	F67	F68	0	160	160	2160	335340	932	110	1.5	42	0.001	0.0222	0.0022	0.49	30.342
95	F68	F69	6	154	160	2160	335340	932	80	1.5	42	0.001	0.0322	0.0032	0.71	29.854
96	F69	F70	0	154	154	2079	322765	897	80	1.5	8	0.001	0.0061	0.0006	0.13	29.146
97	F70	F71	6	148	154	2079	322765	897	80	1.5	42	0.001	0.0322	0.0032	0.71	29.011
98	F68	F71	0	148	148	1998	310190	862	110	1.5	8	0.001	0.0042	0.0004	0.09	28.303
99	F71	F72	0	148	148	1998	310190	862	110	1.5	42	0.001	0.0222	0.0022	0.49	28.210
100	F72	F73	6	142	148	1998	310190	862	63	1.5	44	0.001	0.0445	0.0045	0.98	27.722
101	F73	F74	0	142	142	1917	297614	827	63	1.5	8	0.001	0.0081	0.0008	0.18	26.742

102	F74	F75	6	136	142	1917	297614	827	63	1.5	44	0.001	0.0445	0.0045	0.98	26.564	
103	F72	F75	0	136	136	1836	285035	792	110	1.5	8	0.001	0.0042	0.0004	0.09	25.584	
104	F75	F76	0	136	136	1836	285039	792	110	1.5	42	0.001	0.0222	0.0022	0.49	25.491	
105	F76	F77	17	119	136	1836	285039	792	80	1.5	137	0.001	0.1050	0.0105	2.31	25.003	
106	F77A	F77	12	107	119	1607	249409	693	63	1.5	85	0.001	0.0860	0.0086	1.89	22.694	
107	F77	F78	0	107	107	1445	224259	623	80	1.5	18	0.001	0.0138	0.0014	0.30	20.800	
108	F78	F79	0	107	107	1445	224259	623	80	1.5	8	0.001	0.0061	0.0006	0.13	20.497	
109	F79	F79A	0	107	107	1445	224259	623	63	1.5	37	0.001	0.0375	0.0037	0.82	20.362	
110	F79A	F80A	0	107	107	1445	224259	623	63	1.5	8	0.001	0.0081	0.0008	0.18	19.538	
111	F80A	F80	5	102	107	1445	224259	623	63	1.5	37	0.001	0.0375	0.0037	0.82	19.360	
112	F79	F80	0	102	102	1377	213779	594	80	1.5	8	0.001	0.0061	0.0006	0.13	18.536	
113	F80	F81	0	102	102	1377	213779	594	80	1.5	42	0.001	0.0322	0.0032	0.71	18.401	
114	F81	F81A	5	97	102	1377	213779	594	63	1.5	37	0.001	0.0375	0.0037	0.82	17.693	
115	F81	F82	13	84	97	1313	203303	565	80	1.5	106	0.001	0.0812	0.0081	1.79	16.869	
116	F76	F82	0	84	84	1134	176054	489	110	1.5	8	0.001	0.0042	0.0004	0.09	15.083	
117	F82	F83	0	84	84	1134	176054	489	110	1.5	40	0.001	0.0211	0.0021	0.46	14.990	
118	F83	F84	13	71	84	1134	176054	489	80	1.5	96	0.001	0.0735	0.0074	1.62	14.525	
119	F84	F85	0	0	0	0	0	0	80	1.5	8	0.001	0.0061	0.0006	0.13	#REF!	
120	F85	F86	13	58	71	959	148807	413	80	1.5	96	0.001	0.0735	0.0074	1.62	12.957	
121	F83	F86	0	0	0	0	0	0	110	1.5	8	0.001	0.0042	0.0004	0.09	11.297	
122	F86	F87	0	0	0	0	0	0	110	1.5	38	0.001	0.0201	0.0020	0.44	10.079	
123	F87	F88	13	45	58	783	121562	338	80	1.5	93	0.001	0.0712	0.0071	1.57	12.907	
124	F88	F89	0	0	0	0	0	0	80	1.5	8	0.001	0.0061	0.0006	0.13	11.339	
125	F89	F90	12	33	45	608	94314	262	80	1.5	93	0.001	0.0712	0.0071	1.57	11.205	
126	F87	F90	0	0	0	0	0	0	110	1.5	8	0.001	0.0042	0.0004	0.09	9.637	
127	F90	F91	0	0	0	0	0	0	110	1.5	38	0.001	0.0201	0.0020	0.44	9.544	
128	F91	F92	12	21	33	446	69164	192	80	1.5	85	0.001	0.0651	0.0065	1.43	9.102	
129	F92	F93	0	0	0	0	0	0	80	1.5	8	0.001	0.0061	0.0006	0.13	7.670	
130	F93	F94	12	9	21	284	44013	122	80	1.5	85	0.001	0.0651	0.0065	1.43	7.535	
131	F91	F94	0	0	0	0	0	0	110	1.5	8	0.001	0.0042	0.0004	0.09	6.102	
132	F94	F95	0	0	0	0	0	0	110	1.5	180	0.001	0.0951	0.0095	2.09	6.009	
133	F95	F190	0	0	0	0	0	0	110	1.5	11	0.001	0.0058	0.0006	0.13	3.917	
134	F19A	F19B	0	0	0	0	0	0	63	1.5	44	0.001	0.0445	0.0045	0.98	3.789	
135	F19B	F19C	0	0	0	0	0	0	63	1.5	26	0.001	0.0263	0.0026	0.58	2.809	
136	F19C	F19D	0	0	0	0	0	0	63	1.5	29	0.001	0.0294	0.0029	0.65	2.230	
137	F18	F19D	9	0	9	122	18863	52	80	1.5	84	0.001	0.0644	0.0064	1.42	1.584	
138	F18	F17	0	0	0	0	0	0	80	1.5	10	0.001	0.0077	0.0008	0.17	0.169	

PLOT-03, SECTOR-89A,GURUGRAM
MATERIAL STATEMENT FOR FLUSHING WATER SYSTEM

S. NO	Reference line		DIA.	Length of Line
	FROM	TO	(In mm)	(In mtrs.)
1	STP	F1	~~110~~ HDPE	3
2	F1	F2	~~110~~ HDPE	8
3	F16	F17	~~80~~ HDPE	86
4	F13	F16	~~110~~ HDPE	42
5	F13	F15	~~80~~ HDPE	112
6	F15	F14	~~80~~ HDPE	8
7	F14	F12	~~80~~ HDPE	112
8	F12	F13	~~110~~ HDPE	8
9	F11	F12	~~110~~ HDPE	41
10	F10	F11	~~80~~ HDPE	56
11	F9	F10	~~80~~ HDPE	8
12	F8	F9	~~80~~ HDPE	56
13	F8	F11	~~110~~ HDPE	8
14	F7	F8	~~110~~ HDPE	74
15	F6	F7	~~110~~ HDPE	42
16	F6	F6A	63	33
17	F5	F6	~~110~~ HDPE	8
18	F5	F5A	63	33
19	F5A	F6A	63	8
20	F4	F5	~~110~~ HDPE	41
21	F4	F4A	63	32
22	F3A	F4A	63	8
23	F3	F3A	63	32
24	F3	F4	~~110~~ HDPE	8
25	F2	F3	~~110~~ HDPE	21
26	F1	F19	~~110~~ HDPE	120
27	F19	F20	~~110~~ HDPE	38

28	F20	F21	~~80~~ 100	127
29	F21	F22	~~80~~ 100	8
30	F22	F23	~~80~~ 100	127
31	F20	F23	~~110~~ 100	8
32	F23	F24	~~110~~ 100	38
33	F24	F25	~~80~~ 100	127
34	F25	F26	~~80~~ 100	8
35	F26	F27	~~80~~ 100	127
36	F24	F27	~~110~~ 100	8
37	F27	F28	~~110~~ 100	40
38	F28	F29	~~80~~ 100	151
39	F29	F29A	63	31
40	F29A	F30A	63	8
41	F30	F30A	63	31
42	F29	F30	~~80~~ 100	8
43	F30	F31	~~80~~ 100	24
44	F31	F32	~~80~~ 100	8
45	F32	F33	~~80~~ 100	126
46	F33A	F33B	63	119
47	F33B	F33	63	42
48	F33	F34	~~80~~ 100	57
49	F34	F35	~~110~~ 100	91
50	F35	F36	~~80~~ 100	57
51	F36A	F36B	63	119
52	F36B	F36	63	42
53	F36	F37	~~80~~ 100	120
54	F37	F38	~~80~~ 100	8
55	F38	F39	~~80~~ 100	177
56	F35	F39	~~110~~ 100	8
57	F39	F40	~~110~~ 100	42
58	F40	F41	~~80~~ 100	174
59	F41	F42	~~80~~ 100	8
60	F42	F43	~~80~~ 100	174
61	F40	F43	~~110~~ 100	8

62	F43	F44	~~110~~ 100	42
63	F44	F45	~~80~~ 100	172
64	F45	F46	~~80~~ 100	8
65	F46	F47	~~80~~ 100	172
66	F4[illegible]	F47	~~110~~ 100	8
67	F47	F48	~~110~~ 100	42
68	F48	F49	~~80~~ 100	169
69	F49	F50	~~80~~ 100	8
70	F50	F51	~~80~~ 100	169
71	F4[illegible]	F51	~~110~~ 100	8
72	F51	F52	~~110~~ 100	20
73	F52	F53	~~110~~ 100	8
74	F53	F54	~~110~~ 100	20
75	F54	F55	~~63~~ 63	45
76	F55	F56	63	8
77	F56	F57	63	45
78	F54	F57	~~110~~ 100	8
79	F57	F58	~~110~~ 100	42
80	F58	F59	~~80~~ 100	106
81	F59	F60	~~80~~ 100	8
82	F60	F61	~~80~~ 100	106
83	F58	F61	~~110~~ 100	8
84	F61	F62	~~110~~ 100	42
85	F62	F63	~~80~~ 100	99
86	F63	F64	~~80~~ 100	8
87	F64	F65	~~80~~ 100	21
88	F65	F65A	63	48
89	F65A	F66A	63	8
90	F65	F66	~~80~~ 100	8
91	F66	F66A	63	48
92	F66	F67	~~80~~ 100	71
93	F62	F67	~~110~~ 100	8
94	F67	F68	~~110~~ 100	42
95	F68	F69	~~80~~ 100	42

96	F69	F70	~~80~~ /w	8
97	F70	F71	~~80~~ /w	42
98	F68	F71	~~110~~ /w	8
99	F71	F72	~~110~~ /w	42
100	F72	F73	63	44
101	F73	F74	63	8
102	F74	F75	63	44
103	F72	F75	~~110~~ /w	8
104	F75	F76	~~110~~ /w	42
105	F76	F77	~~80~~ /w	137
106	F77A	F77	63	85
107	F77	F78	~~80~~ /w	18
108	F78	F79	~~80~~ /w	8
109	F79	F79A	63	37
110	F79A	F80A	63	8
111	F80A	F80	63	37
112	F79	F80	~~80~~ /w	8
113	F80	F81	~~80~~ /w	42
114	F81	F81A	63	37
115	F81	F82	~~80~~ /w	106
116	F76	F82	~~110~~ /w	8
117	F82	F83	~~110~~ /w	40
118	F83	F84	~~80~~ /w	96
119	F84	F85	~~80~~ /w	8
120	F85	F86	~~80~~ /w	96
121	F83	F86	~~110~~ /w	8
122	F86	F87	~~110~~ /w	38
123	F87	F88	~~80~~ /w	93
124	F88	F89	~~80~~ /w	8
125	F89	F90	~~80~~ /w	93
126	F87	F90	~~110~~ /w	8
127	F90	F91	~~110~~ /w	38
128	F91	F92	~~80~~ /w	85
129	F92	F93	~~80~~ /w	8

130	F93	F94	~~80~~ 100	85
131	F91	F94	~~110~~ 100	8
132	F94	F95	~~110~~ 100	180
133	F95	F19D	~~110~~ 100	11
134	F19A	F19B	63	44
135	F19B	F19C	63	26
136	F19C	F19D	63	29
137	F18	F19D	~~80~~ 100	84
138	F18	F17	~~80~~ 100	10

DESIGN OF SEWERAGE SYSTEM FOR Plot 01, SECTOR-89A,GURUGRAM

S.No	Sewerage Line No. From	Sewerage Line No. To	Length (m)	Design of Sewerage System: Plots Self	Plots Pres	Plots Total	Other	Population	Sewage flow @ 80% LPCD	Peak Flow (lpd)	Peak Flow (lps)	Pipe Size (mm)	Slope (1 in)	"C" Value	Velocity (m/s)	Capacity of pipe (lps)	Fall (m)	Ground Level (m) Start	Ground Level (m) End	Invert Level (m) Start	Invert Level (m) End	q/Q	v/V	Actual velocity (v/d)	d/D	Deflection Start	Deflection End
1	MH-1A	MH-1	168.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.347	227.50	227.50	226.300	225.553	0.000	0.280	0.230	0.050		
2	MH-1B	MH-1	46.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.204	227.50	227.50	226.300	226.096	0.010	0.300	0.247	0.070		
3	MH-1	MH-2	49.0	51	6	57		966	130430	265977.5	3.074	~~250~~ 300	300	0.011	0.83	20.296	0.163	227.50	227.50	225.553	225.390	0.080	0.610	0.504	0.260		
4	MH-2A	MH-2	170.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.756	227.50	227.50	226.300	225.544	0.000	0.280	0.230	0.050		
5	MH-2B	MH-2	109.0	4	0	4		54	7452	18633	0.216	200	225	0.011	0.82	12.926	0.484	227.50	227.50	226.300	225.816	0.010	0.300	0.247	0.070		
6	MH-2	MH-3	49.0	69	63	132		1822	245986	614700	7.116	~~250~~ 300	300	0.011	0.83	20.296	0.163	227.50	227.50	225.390	225.227	0.180	0.760	0.628	0.280		
7	MH-3A	MH-3	169.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.751	227.50	227.50	226.300	225.549	0.000	0.280	0.230	0.050		
8	MH-3C	MH-3D	15.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.067	227.50	227.50	226.300	226.233	0.000	0.280	0.230	0.050		
9	MH-3B	MH-3D	49.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.218	227.50	227.50	226.300	226.082	0.010	0.300	0.247	0.070		
10	MH-3D	MH-3	80.0	12	6	18		248	33534	83834	0.970	200	225	0.011	0.82	12.926	0.356	227.50	227.50	226.082	225.726	0.040	0.510	0.420	0.150		
11	MH-3	MH-4	49.0	62	152	214		2953	398682	996705	11.536	~~250~~ 300	300	0.011	0.83	20.296	0.163	227.50	227.50	225.549	225.386	0.280	0.860	0.711	0.370		
12	MH-4A	MH-4	170.0	3	0	3		41	5589	13972.5	0.162	200	225	0.011	0.82	12.926	0.756	227.50	227.50	226.300	225.544	0.010	0.300	0.247	0.070		
13	MH-4B	MH-4	46.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.204	227.50	227.50	226.300	226.096	0.010	0.300	0.247	0.070		
14	MH-4	MH-5	49.0	46	221	267		3684	497421	1243552.5	14.393	~~250~~ 300	300	0.011	0.83	20.296	0.163	227.50	227.50	225.544	225.381	0.350	0.920	0.760	0.410		
15	MH-5B	MH-5	46.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.204	227.50	227.50	226.300	226.096	0.010	0.300	0.247	0.070		
16	MH-5	MH-6	46.0	8	271	279		4016	542169	1355422.5	15.688	~~250~~ 300	300	0.011	0.83	20.296	0.153	227.50	227.50	225.381	225.228	0.390	0.870	0.716	0.500		
17	MH-6A	MH-6E	163.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.724	227.50	227.50	226.300	225.576	0.010	0.300	0.247	0.070		
18	MH-6B	MH-6D	14.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.062	227.50	227.50	226.300	226.238	0.000	0.280	0.230	0.050		
19	MH-6C	MH-6D	30.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.133	227.50	227.50	226.300	226.167	0.010	0.300	0.247	0.070		
20	MH-6D	MH-6E	100.0	6	6	12		162	22356	55890	0.647	200	225	0.011	0.82	12.926	0.444	227.50	227.50	226.167	225.722	0.030	0.460	0.378	0.130		
21	MH-6F	MH-6	56.0	54	16	70		966	130410	326025	3.773	200	225	0.011	0.82	12.926	0.249	227.50	227.50	225.576	225.327	0.150	0.730	0.600	0.270		
22	MH-6F	MH-6H	49.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.218	227.50	227.50	226.300	226.082	0.000	0.280	0.230	0.050		
23	MH-6G	MH-6H	79.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.351	227.50	227.50	226.300	225.949	0.000	0.280	0.230	0.050		
24	MH-6H	MH-6J	31.0	13	4	17		235	31671	79177.5	0.916	200	225	0.011	0.82	12.926	0.138	227.50	227.50	225.949	225.811	0.040	0.550	0.420	0.150		
25	MH-6I	MH-6J	37.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.164	227.50	227.50	226.300	226.136	0.000	0.280	0.230	0.050		
26	MH-6J	MH-6	114.0	6	19	25		338	46575	116437.5	1.348	200	225	0.011	0.82	12.926	0.507	227.50	227.50	225.811	225.304	0.050	0.530	0.436	0.160		
29	MH-6	MH-7	47.0	34	374	408	Community Site	5808	784164	1960410	22.688	~~250~~ 300	300	0.011	0.83	20.296	0.157	227.50	227.50	225.228	225.071	0.560	0.900	0.744	0.560		
27	MH-7A	MH-7	121.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.538	227.50	227.50	226.300	225.762	0.010	0.300	0.247	0.070		
28	MH-7B	MH-7	100.0	2	0	2		27	3726	9315	0.108	200	225	0.011	0.82	12.926	0.444	227.50	227.50	226.300	225.856	0.000	0.280	0.230	0.050		
30	MH-7	MH-8	49.0	56	414	470		6486	875610	2189025	25.336	~~250~~ 300	300	0.011	0.83	20.296	0.163	227.500	227.500	225.071	224.908	0.620	0.900	0.744	0.500		
31	MH-8A	MH-8	121.0	3	0	3		41	5589	13972.5	0.162	200	225	0.011	0.82	12.926	0.538	227.50	227.50	226.300	225.762	0.010	0.300	0.247	0.070		
32	MH-8B	MH-8	100.0	1	0	1		14	1863	4657.5	0.054	200	225	0.011	0.82	12.926	0.444	227.50	227.50	226.300	225.856	0.000	0.280	0.230	0.050		
33	MH-8	MH-12	45.0	54	474	528		7464	1007664	2519160	29.157	~~250~~ 300	300	0.011	0.83	20.296	0.150	227.500	227.500	224.908	224.758	0.720	0.870	0.719	0.400		
34	MH-12B	MH-12	88.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.391	227.50	227.50	226.300	225.909	0.010	0.300	0.247	0.070		
35	MH-9A	MH-9	79.0	2	0	2		27	27726	69315	0.802	200	225	0.011	0.82	12.926	0.351	227.500	227.550	226.300	225.949	0.030	0.870	0.718	0.400		
36	MH-9B	MH-9	82.0	0	0	0	COMMERCIAL	0	24000	60000	0.694	200	225	0.011	0.82	12.926	0.364	227.500	227.550	226.300	225.936	0.030	0.870	0.718	0.400		
37	MH-9	MH-10	49.0	19	2	21		284	39122	97807.5	1.132	~~250~~ 300	300	0.011	0.83	20.296	0.163	227.500	227.50	225.936	225.773	0.030	0.905	0.744	0.450		
38	MH-10A	MH-10	107.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.476	227.50	227.50	226.300	225.824	0.010	0.300	0.247	0.070		
39	MH-10	MH-11	49.0	28	25	53		731	98739	246847.5	2.857	~~250~~ 300	300	0.011	0.83	20.296	0.163	227.500	227.50	225.772	225.609	0.070	0.800	0.661	0.600		
40	MH-11A	MH-11	51.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.227	227.50	227.50	226.300	226.073	0.010	0.300	0.247	0.070		
41	MH-11	MH-12	81.0	12	57	69	COMMERCIAL	952	128547	321367.5	3.720	~~250~~ 300	300	0.011	0.83	20.296	0.270	227.50	227.50	225.609	225.339	0.090	0.870	0.715	0.450		
42	MH-12	MH-13	51.0	25	601	626	COMMERCIAL	8816	1190238	2975595	34.440	~~250~~ 300	300	0.011	0.83	20.296	0.170	227.50	227.50	224.758	224.588	0.850	0.930	0.766	0.502		
43	MH-13A	MH-13	34.0	3	0	3		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.151	227.50	227.50	226.300	226.149	0.010	0.300	0.247	0.070		
44	MH-13	MH-14	42.0	14	630	644		8887	1199772	2999430	34.716	~~250~~ 300	300	0.011	0.83	20.296	0.140	227.500	227.50	224.588	224.448	0.860	0.900	0.744	0.500		
45	MH-14A	MH-14	34.0	4	0	4		54	7452	18630	0.216	200	225	0.011	0.82	12.926	0.151	227.50	227.50	226.300	226.149	0.010	0.300	0.247	0.070		
46	MH-14	MH-15	31.0	10	648	658		9080	1225854	3064635	35.470	~~250~~ 300	300	0.011	0.83	20.296	0.103	227.500	227.50	224.448	224.345	0.870	0.905	0.744	0.500		
47	MH-15	STP	5.0	3	658	661		9299	1255443	3138607.5	36.326	~~300~~ 400	350	0.011	0.86	16.556	0.014	227.500	227.50	224.344	224.330	0.590	0.900	0.778	0.500		

SUB PLOT-03, SECTOR-89A,GURUGRAM

MATERIAL STATEMENT FOR DOMESTIC WATER SYSTEM

S. NO.	Reference line		DIA.	Length of Line
	FROM	TO	(In mm)	(In mtrs.)
1	UGT	D1	200	3
2	D1	D2	200	5
3	D2	D3	200	86
4	D3	D4	200	42
5	D4	D5	150	112
6	D5	D6	150	8
7	D6	D7	150	112
8	D4	D7	200	8
9	D7	D8	200	41
10	D8	D9	150	56
11	D9	D10	150	8
12	D10	D11	150	56
13	D3	D11	200	8
14	D11	D12	200	74
15	D12	D13	150	42
16	D13	D13A	110	33
17	D13	D14	150	8
18	D14	D14A	110	33
19	D13A	D14A	110	8
20	D14	D15	150	41
21	D15	D15A	110	32
22	D15A	D16A	110	8
23	D16	D16A	110	32
24	D15	D16	150	8
25	D16	D17	150	21
26	D17	D18	150	8
27	D18	D19	150	120
28	D19	D20	200	38
29	D20	D21	150	127
30	D21	D22	150	8
31	D22	D23	150	127
32	D23	D24	200	38
33	D24	D25	150	127

34	D25	D26	150	8
35	D26	D27	150	127
36	D27	D28	200	40
37	D28	D29	150	151
38	D29	D29A	110	31
39	D29A	D30	110	40
40	D29	D30	150	8
41	D30	D31	150	24
42	D31	D32	150	8
43	D32	D33	150	126
44	D33A	D33B	110	119
45	D33B	D33	110	42
46	D33	D34	150	57
47	D34	D35	200	91
48	D35	D36	150	57
49	D36A	D36B	110	57
50	D36B	D36	110	42
51	D36	D37	150	120
52	D37	D38	150	8
53	D38	D39	150	177
54	D39	D40	200	42
55	D40	D41	150	174
56	D41	D42	150	8
57	D42	D43	150	174
58	D43	D44	200	42
59	D44	D45	150	172
60	D45	D46	150	8
61	D46	D47	150	172
62	D47	D48	200	42
63	D48	D49	150	169
64	D49	D50	150	8
65	D50	D51	150	169
66	D51	D52	200	20
67	D52	D53	200	8
68	D53	D54	200	20
69	D54	D55	150	45
70	D55	D56	150	8
71	D56	D57	150	45
72	D57	D58	200	42

73	D58	D59	150	106
74	D59	D60	150	8
75	D60	D61	150	106
76	D61	D62	200	42
77	D62	D63	150	99
78	D63	D64	150	8
79	D64	D65	150	21
80	D65	D65A	110	48
81	D65A	D66A	110	8
82	D65	D66	150	8
83	D66	D66A	110	48
84	D66	D67	150	71
85	D67	D68	200	42
86	D68	D69	150	42
87	D69	D70	150	8
88	D70	D71	150	42
89	D71	D72	200	42
90	D72	D73	150	44
91	D73	D74	150	8
92	D74	D75	150	44
93	D75	D76	200	42
94	D76	D77	150	137
95	D77A	D77	110	85
96	D77	D78	150	18
97	D78	D79	150	8
98	D79	D79A	110	37
99	D79A	D80A	110	8
100	D80A	D80	110	37
101	D79	D80	150	8
102	D80	D81	150	42
103	D81	D81A	110	37
104	D81	D82	150	106
105	D82	D83	200	40
106	D83	D84	150	96
107	D84	D85	150	8
108	D85	D86	150	96
109	D86	D87	200	38
110	D87	D88	150	93
111	D88	D89	150	8

112	D89	D90	150	93
113	D90	D91	200	38
114	D91	D92	150	85
115	D92	D93	150	8
116	D93	D94	150	85
117	D94	D95	200	180
118	D95	D96	200	11
119	D96A	D96B	110	44
120	D96B	D96C	110	26
121	D96C	D96	110	29
122	D96	D97	200	84
123	D97	D2	200	10

DESIGN CALCULATION OF STORM WATER DRAINAGE SYSTEM FOR Sub-Plot-03, BESTECH SECTOR-89A, GURUGRAM

S.NO.	NAME OF THE LINE		AREA TO BE SERVED IN ACRES			DISCHARGE @ 1/4" RAIN FALL	FINAL DISCHARGE	SIZE OF PIPE DRAIN (N.A. -B)		"C" VALUE	VELOCITY	DISCHARGE CAPACITY OF PIPE	LENGTH OF PIPE		SLOPE	FALL IN METERS		GROUND LEVEL		INVERT LEVEL	
			SELF	PREVIOUS	TOTAL	@ 25MM/HR												Start	End	Start	End
						(In M³/sec)	(In LPS)	In mm	In inch		(In m/sec)	(In LPS)	(In mtrs. for 350)	(In mtrs. for 450)	(In mtrs.)	As per pipe slope for 350 (in mtrs.)	As per pipe slope for 450 (in mtrs.)	(In mtrs.)	(In mtrs.)	(In mtrs.)	(In mtrs.)
1	SMH-1	SMH-2	0.09	0.000	0.091	0.0007	0.60	450	45	0.013	0.75	119.46	--	25.0	570	--	0.044	227.500	227.500	[illegible]	[illegible]
2	SMH-2A	SMH-2	0.19	0.000	0.387	0.0017	1.31	~~350~~	--	0.013	0.74	70.78	37.0	--	425	--	0.052	227.500	227.500	[illegible]	[illegible]
3	SMH-2	RWH-20	0.37	0.291	0.654	0.0046	4.59	--	45	0.013	0.75	119.46	--	12.0	570	--	0.023	227.500	227.500	[illegible]	[illegible]
4	RWH-20	SMH-3A	0.00	0.654	0.654	0.0046	4.59	--	45	0.013	0.75	119.46	--	3	570	--	0.005	227.500	227.500	[illegible]	[illegible]
5	SMH-3A	RWH-19	0.15	0.654	0.799	0.0056	5.62	--	45	0.013	0.75	119.46	--	3	570	--	0.005	227.500	227.500	[illegible]	[illegible]
6	RWH-19	SMH-3B	0.00	0.799	0.799	0.0056	5.62	--	45	0.013	0.75	119.46	--	3	570	--	0.005	227.500	227.500	[illegible]	[illegible]
7	SMH-3B	SMH-3	0.16	0.799	0.957	0.0067	6.73	--	45	0.013	0.75	119.46	--	12	570	--	0.021	227.500	227.500	[illegible]	[illegible]
8	SMH-3	SMH-4	0.00	0.957	0.957	0.0067	6.73	--	45	0.013	0.75	119.46	--	30	570	--	0.053	227.500	227.500	[illegible]	[illegible]
9	RWH-13	SMH-4A	0.00	0.000	0.000	0.0000	0.00	~~350~~ 400	--	0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
10	SMH-4A	SMH-4B	0.28	0.000	0.276	0.0019	1.98	~~350~~ 400	--	0.013	0.74	70.78	126.0	--	425	--	0.296	227.500	227.500	[illegible]	[illegible]
11	SMH-4B	RWH-14	1.40	0.276	1.678	0.0118	1.79	~~350~~ 400	--	0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
12	RWH-14	SMH-4C	0.00	1.678	1.678	0.0118	1.79	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
13	SMH-4C	RWH-15	0.07	1.678	1.743	0.0122	2.25	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
14	RWH-15	SMH-4D	0.00	1.743	1.743	0.0122	2.25	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
15	SMH-4D	SMH-4E	0.14	1.743	1.884	0.0132	3.24	~~350~~ 400		0.013	0.74	70.78	14.0	--	425	--	0.033	227.500	227.500	[illegible]	[illegible]
16	SMH-4E	RWH-16	0.12	1.884	2.000	0.0141	4.05	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
17	RWH-16	SMH-4F	0.00	2.000	2.000	0.0141	4.05	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
18	SMH-4F	RWH-17	0.07	2.000	2.072	0.0146	4.55	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
19	RWH-17	SMH-4G	0.00	2.072	2.072	0.0146	4.55	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
20	SMH-4G	SMH-4	0.10	2.072	2.171	0.0152	5.25	~~350~~ 400		0.013	0.74	70.78	11.0	--	425	--	0.026	227.500	227.500	[illegible]	[illegible]
21	RWH-18	SMH-4H	0.00	0.000	0.000	0.0000	1.00	~~350~~ 400		0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
22	SMH-4H	SMH-4	0.22	0.000	0.217	0.0015	1.53	~~350~~ 400		0.013	0.74	70.78	36.0	--	425	--	0.083	227.500	227.500	[illegible]	[illegible]
23	SMH-4	SMH-5	9.41	3.516	3.782	0.0266	26.56	--	45	0.013	0.75	119.46	--	49.0	570	--	0.085	227.500	227.500	[illegible]	[illegible]
24	RWH-9	SMH-5A	0.00	0.000	0.000	0.0000	1.00	~~350~~ 400		0.013	0.74	70.78	8	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
25	RWH-10	SMH-5A	0.00	0.000	0.000	0.0000	1.00	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
26	SMH-5A	SMH-5	0.24	0.000	0.243	0.0017	1.71	~~350~~ 400		0.013	0.74	70.78	182.0	--	425	--	0.428	227.500	227.500	[illegible]	[illegible]
27	RWH-12	SMH-5C	0.00	0.000	0.000	0.0000	1.00	~~350~~ 400		0.013	0.74	70.78	2.9	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
28	SMH-5C	SMH-5B	0.13	0.000	0.132	0.0009	1.93	~~350~~ 400		0.013	0.74	70.78	23.0	--	425	--	0.054	227.500	227.500	[illegible]	[illegible]
29	SMH-5D	SMH-5B	0.26	0.000	0.336	0.0024	2.36	~~350~~ 400		0.013	0.74	70.78	43.0	--	425	--	0.101	227.500	227.500	[illegible]	[illegible]
30	RWH-11	SMH-5	0.00	0.000	0.000	0.0000	3.00	~~350~~ 400		0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
31	SMH-5B	SMH-5	0.55	0.468	1.020	0.0072	7.16	~~350~~ 400		0.013	0.74	70.78	72.0	--	425	--	0.169	227.500	227.500	[illegible]	[illegible]
32	SMH-5	SMH-6	2.60	1.020	3.623	0.0254	25.45	--	450	0.013	0.75	119.46	--	49	570	--	0.086	227.500	227.500	[illegible]	[illegible]
33	SMH-6A	SMH-6B	0.28	0.000	0.284	0.0020	1.98	~~350~~ 400		0.013	0.74	70.78	84.0	--	425	--	0.198	227.500	227.500	[illegible]	[illegible]
34	SMH-6B	RWH-5	0.90	0.284	1.188	0.0083	8.35	~~350~~ 400		0.013	0.74	70.78	9.0	--	425	--	0.021	227.500	227.500	[illegible]	[illegible]
35	RWH-5	SMH-6C	0.00	1.188	1.188	0.0083	8.35	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
36	SMH-6C	RWH-6	0.09	[illegible]	[illegible]	0.0086	8.61	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
37	RWH-6	SMH-6D	0.00	[illegible]	[illegible]	0.0086	8.61	~~350~~ 400		0.013	0.74	70.78	9.0	--	425	--	0.021	227.500	227.500	[illegible]	[illegible]
38	SMH-6D	SMH-6	0.21	[illegible]	[illegible]	0.0021	2.06	~~350~~ 400		0.013	0.74	70.78	74.0	--	425	--	0.174	227.500	227.500	[illegible]	[illegible]
39	RWH-7	SMH-6E	0.00	0.000	0.000	0.0000	8.00	~~350~~ 400		0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
40	RWH-8	SMH-6E	0.00	0.000	0.000	0.0000	8.00	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
41	SMH-6E	SMH-6	0.17	0.000	0.173	0.0012	21	~~350~~ 400		0.013	0.74	70.78	109.0	--	425	--	0.256	227.500	227.500	[illegible]	[illegible]
42	SMH-6	SMH-7	2.03	4.098	6.124	0.0430	43.02	--	450	0.013	0.75	119.46	--	49.0	570	--	0.086	227.500	227.500	[illegible]	[illegible]
43	SMH-7A	SMH-7B	0.26	0.000	0.257	0.0018	[illegible]	~~350~~ 400		0.013	0.74	70.78	81.0	--	425	--	0.190	227.500	227.500	[illegible]	[illegible]
44	SMH-7B	RWH-1	0.85	0.257	1.111	0.0078	7.80	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
45	RWH-1	SMH-7C	0.00	1.111	1.111	0.0078	7.80	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
46	SMH-7C	RWH-2	0.09	1.111	[illegible]	0.0084	[illegible]	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	[illegible]	[illegible]	[illegible]	[illegible]
47	RWH-2	SMH-7D	0.00	1.194	[illegible]	0.0084	[illegible]	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	[illegible]	[illegible]	[illegible]	[illegible]
48	SMH-7D	SMH-7	0.25	1.194	1.450	0.0102	[illegible]	~~350~~ 400		0.013	0.74	70.78	74.0	--	425	--	0.174	[illegible]	[illegible]	[illegible]	[illegible]
49	RWH-3	SMH-7E	0.00	0.000	0.000	0.0000	1.00	~~350~~ 400		0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	[illegible]	[illegible]	[illegible]
50	RWH-4	SMH-7F	0.00	0.000	0.000	0.0000	1.00	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	[illegible]	[illegible]	[illegible]
51	SMH-7E	SMH-7	0.13	0.000	[illegible]	0.0009	0.91	~~350~~	--	0.013	0.74	70.78	45.0	--	425	--	0.106	227.500	[illegible]	[illegible]	[illegible]

400

S.NO.	NAME OF THE LINE		AREA TO BE SERVED IN ACRES			DISCHARGE @ 1/4" RAIN FALL	FINAL DISCHARGE	SIZE OF PIPE DRAIN (IN MM)		n VALUE	VELOCITY	DISCHARGE CAPACITY OF PIPE	LENGTH OF PIPE		SLOPE	FALL IN METERS		GROUND LEVEL		INVERT LEVEL	
			SELF	PREVIOUS	TOTAL	6.23xAx0.0010															
						(in M³/sec)	(In LPS)	In mm	In mm		(In m/sec)	(In LPS)	(In mtrs. For 350)	(In mtrs for 450)	(In mtrs.)	As per pipe slope for 350 (in mtrs.)	As per pipe slope for 450 (in mtrs.)	Start (In mtrs.)	End (In mtrs.)	Start (In mtrs.)	End (In mtrs.)
32	SMH-7	SMH-8	1.72	[illegible]	9.124	0.0620	64.38	--	450	0.013	0.75	119.46	--	25.9	370	--	0.04	227.500	227.500	226.475	[illegible]
53	SMH-8	TO CITY DRAIN	0.00	8.823	8.824	0.0620	64.38	--	450	0.013	0.75	119.46	--	8.0	530	--	0.01	227.500	227.500	226.451	[illegible]
54	RWH-21	SMH-9A	0.00	[illegible]	0.100	0.0000	0.70	~~350~~ 400		0.013	0.74	70.78	10.0	--	425	--	0.02	227.500	227.500	[illegible]	[illegible]
55	RWH-22	SMH-9A	0.00	[illegible]	0.130	0.0003	0.30	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.067	227.500	227.500	[illegible]	[illegible]
56	SMH-9A	SMH-9B	0.30	[illegible]	[illegible]	0.0021	2.14	~~350~~ 400		0.013	0.74	70.78	128.0	--	425	--	0.301	227.500	227.500	[illegible]	[illegible]
57	SMH-9B	RWH-23	1.44	[illegible]	1.749	0.0123	12.29	~~350~~ 400		0.013	0.74	70.78	4.0	--	425	--	0.009	227.500	227.500	[illegible]	[illegible]
58	RWH-23	SMH-9C	0.00	[illegible]	1.749	0.0123	12.29	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
59	SMH-9C	RWH-24	0.14	[illegible]	1.885	0.0132	13.24	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
60	RWH-24	SMH-9D	0.00	1.88	1.885	0.0132	13.24	~~350~~ 400		0.013	0.71	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
61	SMH-9D	SMH-9E	0.00	1.88	1.885	0.0132	13.24	~~350~~ 400		0.013	0.71	70.78	11.0	--	425	--	0.026	227.500	227.500	[illegible]	[illegible]
62	SMH-9E	RWH-25	0.07	1.96	1.954	0.0137	13.72	~~350~~ 400		0.013	0.71	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
63	RWH-25	SMH-9F	0.12	1.95	2.074	0.0146	14.56	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
64	SMH-9F	RWH-26	0.10	2.07	2.175	0.0153	15.28	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
65	RWH-26	SMH-9G	0.00	2.175	2.175	0.0153	15.28	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
66	SMH-9G	SMH-9K	0.00	2.175	2.175	0.0153	15.28	~~350~~ 400		0.013	0.71	70.78	10.0	--	425	--	0.024	227.500	227.500	[illegible]	[illegible]
67	RWH-27	SMH-9H	0.00	0.11	[illegible]	0.0000	0.46	~~350~~ 400		0.013	0.71	70.78	10.0	--	425	--	0.024	227.500	227.500	[illegible]	[illegible]
68	RWH-28	SMH-9H	0.00	0.11	[illegible]	0.0000	0.00	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
69	SMH-9H	SMH-9I	0.16	[illegible]	[illegible]	0.0011	1.10	~~350~~ 400		0.013	0.74	70.78	28.0	--	425	--	0.066	227.500	227.500	[illegible]	[illegible]
70	SMH-9I	SMH-9J	0.42	0.30	[illegible]	0.0029	2.97	~~350~~ 400		0.013	0.00	70.78	24.0	--	425	--	0.058	227.500	227.500	[illegible]	[illegible]
71	SMH-9J	SMH-9K	0.29	0.37	[illegible]	0.0061	8.07	~~350~~ 400		0.013	0.74	70.78	102.0	--	425	--	0.240	227.500	227.500	[illegible]	[illegible]
72	SMH-9K	SMH-9L	0.97	[illegible]	3.953	0.0289	27.94	~~350~~ 400		0.013	0.72	70.78	28.0	--	425	--	0.066	227.500	227.500	[illegible]	[illegible]
73	SMH-9L	SMH-9M	0.16	[illegible]	[illegible]	0.0292	29.23	~~350~~ 400		0.013	0.74	70.78	10.0	--	425	--	0.021	227.500	227.500	[illegible]	[illegible]
74	SMH-9M	RWH-29	0.00	[illegible]	[illegible]	0.0292	29.23	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
75	RWH-29	SMH-9N	0.00	[illegible]	[illegible]	0.0292	29.23	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
76	SMH-9N	RWH-30	0.17	[illegible]	4.334	0.0304	30.4	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
77	RWH-30	SMH-9O	0.00	[illegible]	4.334	0.0304	30.4	~~350~~ 400		0.013	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
78	SMH-9O	SMH-9P	0.00	[illegible]	4.334	0.0304	30.4	~~350~~ 400		0.013	0.74	70.78	10.0	--	425	--	0.024	227.500	227.500	[illegible]	[illegible]
79	SMH-9P	SMH-9	0.11	[illegible]	[illegible]	0.0311	31.12	~~350~~ 400		0.013	0.74	70.78	17.0	--	425	--	0.040	227.500	227.500	[illegible]	[illegible]
80	RWH-32	SMH-9U	0.00	0.000	[illegible]	0.0000	0.00	~~350~~ 400		0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
81	SMH-9S	SMH-9U	0.20	0.000	[illegible]	0.0014	1.4	~~350~~ 400		0.013	0.74	70.78	40.0	--	425	--	0.212	227.500	227.500	[illegible]	[illegible]
82	SMH-9T	SMH-9U	0.16	0.000	[illegible]	0.0011	1.12	~~350~~ 400		0.013	0.74	70.78	55.0	--	425	--	0.125	227.500	227.500	[illegible]	[illegible]
83	SMH-9U	SMH-9R	0.62	[illegible]	[illegible]	0.0069	6.88	~~350~~ 400		0.013	0.74	70.78	31.0	--	425	--	0.073	227.500	227.500	[illegible]	[illegible]
84	RWH-31	SMH-9R	0.00	0.000	[illegible]	0.0000	0.00	~~350~~ 400		0.01	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
85	SMH-9Q	SMH-9R	0.19	[illegible]	[illegible]	0.0014	1.35	~~350~~ 400		0.01	0.74	70.78	31.0	--	425	--	0.073	227.500	227.500	[illegible]	[illegible]
86	SMH-9R	SMH-9	0.33	1.171	[illegible]	0.0195	19.53	~~350~~ 400		0.013	0.74	70.78	66.0	--	425	--	0.233	227.500	227.500	[illegible]	[illegible]
87	SMH-9	SMH-10	[illegible]	[illegible]	[illegible]	0.0388	38.82		450	0.012	0.75	119.46	--	49.0	370	--	0.056	227.500	227.500	[illegible]	[illegible]
88	SMH-10A	SMH-10	0.25	[illegible]	[illegible]	0.0017	1.74	~~350~~ 400	--	0.012	0.74	70.78	130.0	--	425	--	0.306	227.500	227.500	[illegible]	[illegible]
89	SMH-10B	SMH-10	0.26	[illegible]	[illegible]	0.0019	1.85	~~350~~ 400	--	0.012	0.74	70.78	86.0	--	425	--	0.202	227.500	227.500	[illegible]	[illegible]
90	RWH-33	SMH-11	0.00	[illegible]	[illegible]	0.0000	0.00	~~350~~ 400	--	0.012	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
91	SMH-10	SMH-11	2.13	[illegible]	[illegible]	0.0277	27.73	--	450	0.012	0.73	119.46	--	49.0	370	--	0.086	227.500	227.500	[illegible]	[illegible]
92	SMH-11A	SMH-11	0.27	[illegible]	[illegible]	0.0019	1.89	~~350~~ 400	--	0.012	0.74	70.78	130.0	--	425	--	0.306	227.500	227.500	[illegible]	[illegible]
93	RWH-34	SMH-11B	0.00	[illegible]	[illegible]	0.0000	0.00	~~350~~ 400	--	0.012	0.74	70.78	3.0	--	425	--	0.007	227.500	227.500	[illegible]	[illegible]
94	SMH-11B	SMH-11	0.17	[illegible]	[illegible]	0.0012	1.19	~~350~~ 400	--	0.012	0.74	70.78	86.0	--	425	--	0.202	227.500	227.500	[illegible]	[illegible]
95	SMH-11	SMH-12	2.16	[illegible]	7.916	0.0556	55.57	--	450	0.012	0.73	119.46	--	45.0	370	--	0.079	227.500	227.500	[illegible]	[illegible]
96	SMH-12A	SMH-12B	0.27	[illegible]	[illegible]	0.0019	1.87	~~350~~ 400	--	0.013	0.74	70.78	16.0	--	425	--	0.038	227.500	227.500	[illegible]	[illegible]
97	SMH-12B	SMH-12C	0.23	[illegible]	[illegible]	0.0016	1.65	~~350~~ 400	--	0.013	0.74	70.78	36.0	--	425	--	0.061	227.500	227.500	[illegible]	[illegible]
98	RWH-35	SMH-12E	0.00	[illegible]	[illegible]	0.0000	0.00	~~350~~ 400	--	0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
99	SMH-12C	SMH-12E	0.39	[illegible]	[illegible]	0.0063	6.27	~~350~~ 400	--	0.013	0.74	70.78	35.0	--	425	--	0.124	227.500	227.500	[illegible]	[illegible]
100	SMH-12D	SMH-12E	0.24	[illegible]	[illegible]	0.0017	1.68	~~350~~ 400	--	0.013	0.74	70.78	28.0	--	425	--	0.066	227.500	227.500	[illegible]	[illegible]
101	SMH-12E	SMH-12	0.48	[illegible]	[illegible]	0.0113	11.35	~~350~~ 400	--	0.013	0.74	70.78	52.0	--	425	--	0.422	227.500	227.500	[illegible]	[illegible]
102	RWH-36	SMH-12F	0.00	[illegible]	[illegible]	0.0000	0.00	~~350~~ 400	--	0.013	0.74	70.78	8.0	--	425	--	0.019	227.500	227.500	[illegible]	[illegible]
103	SMH-12F	SMH-12	0.29	[illegible]	[illegible]	0.0020	2.04	~~350~~ 400	--	0.013	0.74	70.78	74.0	--	425	--	0.186	227.500	227.500	[illegible]	[illegible]
104	SMH-12	SMH-12	1.13	9.516	[illegible]	0.0772	77.28	--	450	0.013	0.75	119.46	--	51.0	370	--	0.142	227.500	227.500	[illegible]	[illegible]

S.NO.	NAME OF THE LINE		AREA TO BE SERVED IN ACRES			DISCHARGE FOR RAIN FALL	FINAL DISCHARGE	SIZE OF PIPE (DIAMETER IN MM)		"C" VALUE	VELOCITY	DISCHARGE CAPACITY OF PIPE	LENGTH OF PIPE		SLOPE	FALL IN METERS		GROUND LEVEL		INVERT LEVEL	
			SELF	PREVIOUS	TOTAL	6.25MM/HR															
						(In M³/sec)	(In LPS)	In mm	In mm		(In m/sec)	(In LPS)	(In mtrs. For 350)	(In mtrs. for 450)	(In mtrs.)	As per pipe slope for 350 (in mtrs.)	As per pipe slope for 450 (in mtrs.)	Start (In mtrs.)	End (In mtrs.)	Start (In mtrs.)	End (In mtrs.)
105	SMH-13A	SMH-13	0.24	0.000	0.2[illegible]	0.0017	1.71	350	--	0.013	0.74	70.78	60.0	--	425	--	0.141	227.500	227.500	225.[illegible]	22[illegible]
106	SMH-13	SMH-14	0.64	11.239	11.879	0.0834	83.16	--	450	0.013	0.75	119.46	--	49.0	370	--	0.986	227.500	227.500	225.45[illegible]	22[illegible]
107	RWH-37	SMH-14A	0.00	0.000	[illegible]	0.0010	1.10	350	--	0.013	0.74	70.79	8.0	--	425	--	0.019	227.500	227.500	225.[illegible]	[illegible]
108	SMH-14A	SMH-14	0.25	11.879	12.134	0.0852	85.25	350	--	0.013	0.74	70.78	116.0	--	425	--	0.273	227.500	227.500	[illegible]	[illegible]
109	SMH-14	SMH-15	1.23	12.134	13.[illegible]4	0.0943	[illegible]	--	450	0.013	0.75	119.46	--	49.0	370	--	0.1[illegible]	227.500	227.500	[illegible]	[illegible]
110	RWH-38	SMH-15A	0.00	0.000	0.[illegible]	0.0003	[illegible]	350	--	0.013	0.74	70.75	8.0	--	425	--	0.196	227.500	227.500	[illegible]	[illegible]
111	SMH-15A	SMH-15	0.20	0.000	0.[illegible]	0.0014	[illegible]	350	--	0.013	0.74	70.78	88.0	--	425	--	0.119	227.500	227.500	[illegible]	[illegible]
112	RWH-39	SMH-16	0.00	0.000	0.[illegible]	0.0003	[illegible]	350	--	0.013	0.74	70.78	8.0	--	425	--	0.207	227.500	227.500	[illegible]	[illegible]
113	SMH-15	SMH-16	0.92	13.500	[illegible]	0.1014	101.32	--	450	0.013	0.75	119.46	--	70.0	370	--	0.119	227.500	227.500	[illegible]	[illegible]
114	SMH-16	TO CITY DRAIN	0.00	14.495	[illegible]	0.1015	101.42	--	450	0.013	0.75	119.46	--	50.0	370	--	0.135	227.500	227.500	[illegible]	[illegible]

RAJIV GANDHI
ARCHITECT
LIC. No.-DA/91/13852

MATERIAL STATEMENT FOR Plot 03, SECTOR-89A GURUGRAM					
S.No.	Sewerage Line No.		Intermediate Manhole no.	Length (m)	Pipe Size (mm)
	From	To			
1	MH-1A	MH-1	11	168.0	200
2	MH-1B	MH-1	7	46.0	200
3	MH-1	MH-2	1	49.0	200
4	MH-2A	MH-2	11	170.0	200
5	MH-2B	MH-2	7	109.0	200
6	MH-2	MH-3	1	49.0	~~250~~ 300
7	MH-3A	MH-3	11	169.0	200
8	MH-3C	MH-3D	0	15.0	200
9	MH-3E	MH-3D	3	39.0	200
10	MH-3D	MH-3	5	39.0	200
11	MH-3	MH-4	1	48.0	~~250~~ 300
12	MH-4A	MH-4	11	170.0	200
13	MH-4B	MH-4	2	46.0	200
14	MH-4	MH-5	1	49.0	~~250~~ 300
15	MH-5E	MH-5	2	46.0	200
16	MH-5	MH-6	2	46.0	~~250~~ 300
17	MH-6F	MH-6E	0	363.0	200
18	MH-6E	MH-6D	0	14.0	200
19	MH-6C	MH-6D	1	30.0	200
20	MH-6I	MH-6E	6	100.0	200
21	MH-6E	MH-6	2	36.0	200
22	MH-6F	MH-6H	3	49.0	200
23	MH-6C	MH-6H	5	79.0	200
24	MH-6I	MH-6J	1	31.0	200
25	MH-6I	MH-6J	2	37.0	200
26	MH-6J	MH-6	7	14.0	200
27	MH-6	MH-7	1	47.0	~~250~~ 300
28	MH-7A	MH-7	8	21.0	200
29	MH-7B	MH-7	6	100.0	200
30	MH-7	MH-8	1	49.0	~~250~~ 300
31	MH-8A	MH-8	8	121.0	200
32	MH-8B	MH-8	6	100.0	200
33	MH-8	MH-12	1	45.0	~~250~~ 300
34	MH-12I	MH-12	5	48.0	200
35	MH-9A	MH-9	5	79.0	200
36	MH-9B	MH-9	3	82.0	200
37	MH-9	MH-10	1	49.0	~~250~~ 300
38	MH-10A	MH-10	7	107.0	200
39	MH-10	MH-11	1	49.0	~~250~~ 300
40	MH-11A	MH-11	3	51.0	200
41	MH-11	MH-12	4	81.0	~~250~~ 300
42	MH-12	MH-13	3	51.0	~~250~~ 300
43	MH-13A	MH-12	2	34.0	200
44	MH-13	MH-14	2	42.0	~~250~~ 300
45	MH-14A	MH-14	2	34.0	200
46	MH-14	MH-15	1	32.0	~~250~~ 300
47	MH-15	STP	0	5.0	~~300~~ 450

MATERIAL STATEMENT				
SR NO	ROAD (From)	ROAD (To)	LENGTH OF (9Mtr Raod)	LENGTH OF (12Mtr Raod)
1	RD-1	RD-2	169	-
2	RD-3	RD-4	172	--
3	RD-5	RD-6	168	--
4	RD-7	RD-8	177	--
5	RD-9	RD-10	119	--
6	RD-11	RD-12	90	--
7	RD-13	RD-14	182	--
8	RD-15	RD-16	32	--
9	RD-17	RD-18	127	--
10	RD-19	RD-20	129	--
11	RD-21	RD-22	119	--
12	RD-23	RD-24	31	--
13	RD-25	RD-26	31	--
14	RD-27	RD-28	58	--
15	RD-29	RD-30	112	--
16	RD-31	RD-32	84	--
17	RD-33	RD-34	84	--
18	RD-35	RD-36	90	--
19	RD-37	RD-38	90	--
20	RD-39	RD-40	145	--
21	RD-41	RD-42	85	--
22	RD-43	RD-44	46	--
23	RD-45	RD-46	43	--
24	RD-47	RD-48	42	--
25	RD-49	RD-50	98	--
26	RD-51	RD-52	48	--
27	RD-53	RD-54	105	--
28	RD-55	RD-56	46	--
29	RD-57	RD-58	--	694
		TOTAL	2722	694
		SAY	2725	695

MATERIAL STATEMENT OF STORM WATER DRAINAGE SYSTEM FOR Sub-Plot-03, BESTECH SECTOR-89A,GURUGRAM				
S.NO.	NAME OF THE LINE		LENGTH OF PIPE	
			(In mtrs. For 350)	(In mtrs.for 450)
1	SMH-1	SMH-2	--	25.0
2	SMH-2A	SMH-2	37.0	--
3	SMH-2	RWH-20	--	12.0
4	RWH-20	SMH-3A	--	3
5	SMH-3A	RWH-19	--	3
6	RWH-19	SMH-3B	--	3
7	SMH-3B	SMH-3	--	12
8	SMH-3	SMH-4	--	30
9	RWH-13	SMH-4A	8.0	--
10	SMH-4A	SMH-4B	126.0	--
11	SMH-4B	RWH-14	3.0	--
12	RWH-14	SMH-4C	3.0	--
13	SMH-4C	RWH-15	3.0	--
14	RWH-15	SMH-4D	3.0	--
15	SMH-4D	SMH-4E	14.0	--
16	SMH-4E	RWH-16	3.0	--
17	RWH-16	SMH-4F	3.0	--
18	SMH-4F	RWH-17	3.0	--
19	RWH-17	SMH-4G	3.0	--
20	SMH-4G	SMH-4	11.0	--
21	RWH-18	SMH-4H	8.0	--
22	SMH-4H	SMH-4	36.0	--
23	SMH-4	SMH-5	--	49.0
24	RWH-9	SMH-5A	8	--
25	RWH-10	SMH-5A	3.0	--

S.NO.	NAME OF THE LINE		LENGTH OF PIPE	
			(In mtrs. For 350)	(In mtrs.for 450)
26	SMH-5A	SMH-5	182.0	--
27	RWH-12	SMH-5C	2.0	--
28	SMH-5C	SMH-5B	25.0	--
29	SMH-5D	SMH-5B	43.0	--
30	RWH-11	SMH-5	8.0	--
31	SMH-5B	SMH-5	72.0	--
32	SMH-5	SMH-6	--	49
33	SMH-6A	SMH-6B	84.0	--
34	SMH-6B	RWH-5	9.0	--
35	RWH-5	SMH-6C	3.0	--
36	SMH-6C	RWH-6	3.0	--
37	RWH-6	SMH-6D	9.0	--
38	SMH-6D	SMH-6	74.0	--
39	RWH-7	SMH-6E	8.0	--
40	RWH-8	SMH-6E	3.0	--
41	SMH-6E	SMH-6	109.0	--
42	SMH-6	SMH-7	--	49.0
43	SMH-7A	SMH-7B	84.0	--
44	SMH-7B	RWH-1	3.0	--
45	RWH-1	SMH-7C	3.0	--
46	SMH-7C	RWH-2	3.0	--
47	RWH-2	SMH-7D	3.0	--
48	SMH-7D	SMH-7	74.0	--
49	RWH-3	SMH-7E	8.0	--
50	RWH-4	SMH-7E	3.0	--
51	SMH-7E	SMH-7	45.0	--

S.NO.	NAME OF THE LINE		LENGTH OF PIPE	
			(In mtrs. For ~~350~~ 450)	(In mtrs.for 450)
52	SMH-7	SMH-8	--	25.0
53	SMH-8	TO CITY DRAIN	--	8.0
54	RWH-21	SMH-9A	10.0	--
55	RWH-22	SMH-9A	3.0	--
56	SMH-9A	SMH-9B	128.0	--
57	SMH-9B	RWH-23	4.0	--
58	RWH-23	SMH-9C	3.0	--
59	SMH-9C	RWH-24	3.0	--
60	RWH-24	SMH-9D	3.0	--
61	SMH-9D	SMH-9E	11.0	--
62	SMH-9E	RWH-25	3.0	--
63	RWH-25	SMH-9F	3.0	--
64	SMH-9F	RWH-26	3.0	--
65	RWH-26	SMH-9G	3.0	--
66	SMH-9G	SMH-9K	10.0	--
67	RWH-27	SMH-9H	10.0	--
68	RWH-28	SMH-9H	3.0	--
69	SMH-9H	SMH-9J	28.0	--
70	SMH-9	SMH-9J	24.0	--
71	SMH-9	SMH-9K	102.0	--
72	SMH-9K	SMH-9L	28.0	--
73	SMH-9L	SMH-9M	10.0	--
74	SMH-9M	RWH-29	3.0	--
75	RWH-29	SMH-9N	3.0	--
76	SMH-9N	RWH-30	3.0	--
77	RWH-30	SMH-9O	3.0	--

S.NO.	NAME OF THE LINE		LENGTH OF PIPE	
			(In mtrs. For ~~350~~ 450)	(In mtrs.for 450)
78	SMH-9O	SMH-9P	10.0	--
79	SMH-9P	SMH-9	17.0	--
80	RWH-32	SMH-9U	8.0	--
81	SMH-9S	SMH-9U	90.0	--
82	SMH-9T	SMH-9U	55.0	--
83	SMH-9U	SMH-9R	31.0	--
84	RWH-31	SMH-9R	8.0	--
85	SMH-9Q	SMH-9R	31.0	--
86	SMH-9R	SMH-9	99.0	--
87	SMH-9	SMH-10	--	49.0
88	SMH-10A	SMH-10	130.0	--
89	SMH-10B	SMH-10	86.0	--
90	RWH-33	SMH-11	3.0	--
91	SMH-10	SMH-11	--	49.0
92	SMH-11A	SMH-11	130.0	--
93	RWH-34	SMH-11B	3.0	--
94	SMH-11B	SMH-11	86.0	--
95	SMH-11	SMH-12	--	45.0
96	SMH-12A	SMH-12C	16.0	--
97	SMH-12B	SMH-12C	26.0	--
98	RWH-35	SMH-12E	8.0	--
99	SMH-12C	SMH-12E	55.0	--
100	SMH-12D	SMH-12E	28.0	--
101	SMH-12E	SMH-12	52.0	--
102	RWH-36	SMH-12F	8.0	--
103	SMH-12F	SMH-12	79.0	--

S.NO.	NAME OF THE LINE		LENGTH OF PIPE	
			(In mtrs. For 350)	(In mtrs.for 450)
104	SMH-12	SMH-13	--	81.0
105	SMH-13A	SMH-13	60.0	--
106	SMH-13	SMH-14	--	49.0
107	RWH-37	SMH-14A	8.0	--
108	SMH-14A	SMH-14	116.0	--
109	SMH-14	SMH-15	--	49.0
110	RWH-38	SMH-15A	8.0	--
111	SMH-15A	SMH-15	88.0	--
112	RWH-39	SMH-16	8.0	--
113	SMH-15	SMH-16	--	106.0
114	SMH-16	TO CITY DRAIN	--	8.0
		TOTAL	2886.0	704.0
		MANHOLE = 238 NOS.		
	RAIN WATER HARVESTING PIT = 39 NOS.			

INVOICE

BESTECH INDIA PVT. LTD.

BESTECH HOUSE PLOT NO 51 SECTOR 44 GURGAON HARYANA-122002

Invoice No. : BBT/17-18/214 **Bill Date:** 01-Mar-18

To,

M/S Reliance Jio Infocomm Limited
7th Floor, Palm Court, 20/4, Sukhrali Chowk, Opp. Sector-14, Gurgaon
Haryana-122001
GSTIN : 06AABCI6363G1ZN
PAN : AABCI6363G

Sl. No.	Particulars	Unit	Area	Rate (Rs.)	Amount (Rs.)
1.	Rent for Area at Bestech Business Towers, Sector 48, Sohna Road, Gurgaon- 122001 for the period from 01/03/2018 to 31/03/2018	Sft.	100	L.S.	45,148.00
			Sub Total		45,148.00
			CGST @9%		4,063.00
			SGST @9%		4,063.00
Rupees FiftyThree Thousand Two Hundred SeventyFour Only			Total		53,274.00

GSTIN : **06AABCB6551B1Z6**
PAN No. : **AABCB6551B**
CIN : **U99999DL2001PTC110996**
SAC : **997212**
(Rental or leasing services involving own or leased non-residential property)

For Bestech India Pvt. Ltd.

Receiver's Signature

Auth. Signatory

- E & O. E.
- Cheques should be made in favour of "BESTECH INDIA PVT. LTD."
- Online remmittance details, Bestech India Pvt.Ltd., Corporation Bank, A/c No. 510101005735571, IFSC Code: CORP0000449
- Share UTR No. and payment advices at puneet@bestechgroup.com.
- Interest as applicable will be charged on all delayed payments.

Please attach this portion with your payment

Invoice No. : BBT/17-18/214 Customer Name M/S Reliance Jio Infocomm Limited

Total Amt. Due : 53274 TDS Deducted .....

Net Paid ..... Other Deductions .....

Enclosed is my Cheque / DD No.: ..... dated ..... For Rs.....

Customer Signature