Directorate of Town & Country Planning, Haryana
SCO-71-75, 2nd Floor, Sector 17 C, Chandigarh
Phone: 0172-2549349 e-mail:tcphry@gmail.com
website:-http://tcpharyana.gov.in

To

Vatika Ltd.,
7th Floor, Vatika Triangle,
Block-A, Sushant Lok-I,
Gurgaon-122002.

Memo No.LC-2805-JE (VA)-2016/ 554 Dated: 8/1/2016

Subject: **Approval of Service Plan/Estimates for GROUP HOUSING COLONY on the land measuring 11.125 acres in the revenue estate of village Harsaru, Sector 89A, Distt. Gurgaon-(Licence No. 87 of 2013 dated 11.10.2013).**

Ref. With reference to Chief Administrator, HUDA memo dated 11.09.2014 received on 17.09.2014.

The service plan/estimates of Group Housing Colony falling in the revenue estate of village Harsaru, Sector 89A of Gurgaon Manesar Urban Complex, Distt. Gurgaon being developed by you, has been checked and corrected wherever necessary by Chief Administrator, HUDA, Panchkula and are hereby approved subject to the following terms & conditions:

1. You will have to pay the proportionate cost of external development charges for the services like water supply, sewerage, storm water drainage, roads, bridges, community buildings, street lighting, horticulture etc. on gross average basis as and when approved by the Director. These charges are modifiable as and when approved by the Government and modified charges will be binding upon the colonizer.
2. You are liable to maintain the estate developed by you as per HUDA norms till such time the colony is taken over by the Local Authority/State Govt.
3. The wiring system of the street lighting will be under ground and the specifications of the street lighting fixture etc. will be as per relevant standard of HVPNL.
4. That appropriate provision for fire fighting as required in the NBC/ISI code should also be provided by you and a fire safety certificate will be obtained by you from the competent authority before undertaking any construction. You will be sole responsible for fire safety arrangements. You will not make connection with the master services without prior approval of the competent authority.
5. You will be fully responsible to make the arrangement of disposal of sewerage and storm water drainage till such time these are made available by HUDA and all link connections with the external system will be done by you at your own cost. You will have to ensure that sewer/storm water drainage to be laid by you will be connected by gravity with the master services laid/to be laid by HUDA/State Govt. in this area as per your scheme. In case pumping is required the same will be done by you at your own cost.

6. The correctness of the levels of the colony will be your sole responsibility and you will integrate the internal sewer/storm water drainage of the colony by gravity with the master services.

7. It is made clear that roof top rain harvesting system shall be provided by you as per norms and the same shall be kept operational/maintained all the time. The arrangement for segregation of first rain shall be made by you.

8. The estimate do not include the provision of electrification of the colony, therefore the supervision charges and O & M charges shall be paid by you directly to the HVPN.

9. You will be responsible for the construction of various structures such as RCC under ground tank etc. according to the standard specifications, good quality and its workmanship. The structural stability responsibility will entirely rest upon you.

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

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

12. Levels/extent of the services to be provided by the HUDA i.e. water supply, sewerage will be proportionate of EDC as and when made available by HUDA till that you will make your own arrangement.

13. You will comply with the conditions as specified in Annexure 'A' attached with service plan/estimates.

14. You shall get approved the electrical service plan estimates from the concerned power utility within 60 days and submit the same in this office after approval.

15. 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 Chief Engineer, HUDA, Panchkula under intimation to this office.

(S.K. SEHRAWAT)
District Town Planner (HQ)
For Director General, Town & Country Planning
Haryana Chandigarh

Endst. No. LC-2805-JE (VA)-2016/ Dated

A copy is forwarded to the Chief Administrator, HUDA, Panchkula with reference to his letter No. 11290 dated 11.09.2014 for information and necessary action please.

Sd.
S.K. SEHRAWAT)
District Town Planner (HQ)
For Director General, Town & Country Planning
Haryana Chandigarh

PROPOSED BUILDIND PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE

AT
GURGAON MANESAR URBAN COMPLEX, SECTOR-89A, HARYANA

SERVICE PLAN ESTIMATE
ON
PUBLIC HEALTH ENGINEERING SERVICES

Client

DALE DEVELOPERS PVT. LTD.
AND OTHERS IN COLLABORATION
WITH VATIKA LTD.

Plumbing & Fire Suppression Consultant

PARADISE CONSULTANTS
G-76C, Shaheen Bagh, New Delhi -110025

PROJECT REPORT / ESTIMATES FOR PROVIDING INTERNAL SERVICES e.g. WATER SUPPLY, FIRE, SEWERAGE & STORM WATER DRAINAGE ETC. IN RESPECT OF RESIDENTIAL PROJECT GROUP HOUSING, SECTOR-89A, GURGAON (HARYANA)

Gurgaon is located at 28°28'N 77°02'E28.47°N 77.03°E/28.47; 77.03. It has an average elevation of 220 metres (721 ft) Gurgaon district, comprising four blocks Pataudi, Sohna, Gurgaon and Farrukhnagar, was created on 15 August, 1979.On its north, it is bounded by the district of Rohtak and the Union Territory of Delhi. Faridabad district lies to its east. On its south, the district shares boundaries with the district of Mewat. To its west lies the district of Rewari and the State of Rajasthan.Gurgaon is situated between the Himalayas and Aravalis mountain ranges. It is surrounded on three sides by Haryana and to the east, across the river Yamuna by Uttar Pradesh. Its greatest length is around 13 miles and the greatest breadth is 17 miles. Delhi's altitude ranges between 213 to 305 meters above sea level.

GROUP HOUSING is a residential proposed between sector - 89A, at Gurgaon Manesar Urban Complex, Sector-89A, Haryana for development by **DALE DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.**

Water Supply

1 **Source**

The source of water supply shall be HUDA water supply connection. It has been proposed to construct undergorund tanks of capacity as per attached detaileds for domestic and other purpose. The underground tanks will be filled up from the riser and then pumped to the overhead water tanks of each tower.

2 **Pumping Equipments**

It has been proposed to install pumping set as described with standby of equal capacity. The provision for standby generating set has been provided in case of any electricity failure. Generator will be provided separately or added to the capacity of main generator.

3 **Sewerage**

This scheme is designed for sewer connecting to the proposed sewage treatment. The sewerage system has been marked on the respective plans.

The sewer lines have been designed for 3 times average DWR in relation to the water supply demand assuming that 80% fo the domestic water supply shall find its way into the proposed sewer SW pipe sewers have been proposed designed to run half full. The sewers have been designed on 0.75 mtr. per second velocity ie. Self cleansing velocity. Necessary provisions for laying SW pipes manholes etc. has been made in this estimate.

Necessary design statement for entire sewerage system has been prepared and attached with estimate.

4	**Storm Water Drainage**					
	The storm water drain is being designed to carry 6.25 mm 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 NP_3 pipe drain with minimum 400 mm dia is proposed in this area.					
5	**Roads**					
	Cost of road has been taken in the estimate					
6	**Street Lighting**					
	Provision for street lighting on surrounding area has been made.					
7	**Horticulture**					
	Estimates and details of plantation, landscaping, signage etc. has been included					
8	**Specifications :**					
	The work will be carried out in accordance with the standard specifications of PH as laid down by the HUDA/Haryana Government.					
9	**Rates**					
	Estimates for providing services in this site has been prepared on the recent HUDA rates.					
10	**Cost**					
	The total cost of development in this Project including various PH & B & R services works out to **Rs. ~~527.79~~ 995.50 lacs** which includes 3% contingency and PE charges and 14% departmental charges also.					
	The cost per gross acre for this phase works out to **Rs. ~~47.44~~ 89.48 Lacs/acre** which covers the provision of services like water supply, sewerage, storm water drainage, roads, street lighting and plantations including plantations maintenance thereof as well as future expansion whatsoever indicated.					
	DALE DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.					
	Authorised Signatory					

Paradise Consultants New Delhi

For VATIKA LIMITED

Authorised Signatory

GROUP HOUSING, SECTOR-89A, GURGAON (HARYANA)

	DESIGN CALCULATION				
1	**Daily Domestic Water Requirement**				
	Nos. of Blocks				
	Apartment Dwelling unit mais			422	Nos.
	Row House			6	Nos
	EWS			76	Nos
	Service Personnel			43	Nos
	Population @ 5 person per unit - Apartment			5	
	Population @ 5 person per unit - Row House			5	
	Population @ 2 person per unit - EWS			2	
	Population @ 2 person per unit - Service Personnel			2	
	Therefore population (Apartment)			2110	persons
	Therefore population (Row House)			30	persons
	Therefore population (EWS)			380 ~~152~~	persons
	Therefore population (Maintenance Personnel)			86	persons
	Total Population			~~2378~~ 2606	**persons**
			SAY	2606 ~~2378~~	**persons**
	Water requirement for apartmant		@	172.5	lpd.
				449535 ~~410205.00~~	lpd. or 449.54KL
			or	say ~~410.21~~ 450	**KLD (1)**
2	**Other Requirement**				
a.)	Nursery School	0	@	10000	lit/day
	Therefore daily water requirement			0	lit/day
				0.00	KLD
b.)	No. of Community Building	1	@	25000	lit/day
	Daily water requirement lumpsum			25000	lit/day
	Therefore daily water requirement			25.00	KLD
c.)	No. of Convenient □Shopping	1	@	5000	lit/day
	Daily water requirement lumpsum			5000	lit/day
	Therefore daily water requirement			5.00	KLD
			Total	**30.00**	**KLD (3)**

3	Total Daily Water Requirement (1+2)			~~440.21~~ 480	**KLD**	
i)	Domestic Water Requirement @	65%		312 ~~286.13~~	KLD	
			Say	320 ~~**290.00**~~	**KLD**	
ii)	Flushing Water Requirement @	35%		168 ~~154.07~~	KLD	
			Say	170 ~~**160.00**~~	**KLD**	
4	**Water usage from STP**					
a)	Area under Parks 11672.673 Sqm	2.89	acre			
	Daily water requirement		@	25000	lit/acre/day	
				72250.00	lit/day	
				72.25	KLD	
b)	Area under Roads					
	Daily water requirement		Lumpsum	25000	lit/acre/day	
				25000	lit/day	
				25	KLD	
c)	Under Road+ Parks **(a+b)**		**Total**	97.25	KLD	
			Say	**100.00**	**KLD**	
d)	**Total treated water requirement [3 (ii) + c]**			270 ~~**260.00**~~	KLD	
	Total Daily Requirement [3 (i) + d]			590 ~~**550.00**~~	**KLD**	
			SAY	600 ~~**550.00**~~	**KLD**	

I	**Underground Tank**					
	Daily fresh water requirement for domestic use			320 ~~290.00~~	KLD	
	Capacity of under ground tank					
	24 hours storage	320 ~~290.00~~	x 24 / 24	320 ~~290.00~~	KLD	
	Fire Tank Capacity As/NBC Code 100 kld. But Proposed			400.00		
			Total	720 ~~690~~	**KL**	
		730				
	It is proposed to provide under ground tank of capacity **690 KL** which also includes **400 KL** capacity for fire fighting.					
	Both tanks will have Six compartments, two for fire, two for raw and the other two for domestic use. The water first enters the fire compartment, then over flows to the raw use compartment so that the water in the fire compartment shall remain fresh.					
	FIRE WATER TANK				**400.00**	**KL**
	TOTAL UG STORAGE (DOMESTIC + FLUSHING + HORTICULTURE)				600 **~~550.00~~**	**KL**
	RAW WATER TANK				160 **~~140.00~~**	**KL**
	DOMESTIC WATER TANK				170 **~~150.00~~**	**KL**
	FLUSHING, HORTICULTURE & ROAD WASHING (PART OF STP)				270 **~~260.00~~**	**KL**

IV	**DOMESTIC WATER PUMPS - LOCATED IN PUMP ROOM**					
a.)	**Domestic Water Transfer Pumps** (Dom)					
ii)	**For Towers, EWS, Community Building & Shopping**				312	
	Daily requirement for domestic use			=	~~286.13~~	KL
	Assuming 6 hours running 3 pumps (with one standby)				17.33	
	Discharge/hour	~~286.13~~ 312	/ 6 / 3	=	~~15.90~~	KL/HR
	Head of pump				288.88 LPM say 300 LPM	
	i) Suction lifts			=	0.0	m
	ii) Friction loss in M<main & specials			=	5.0	m
	iii) Residual head			=	5.0	m
	iv) Clear head			=	105.0	m
			$\frac{300 \times 115}{4500 \times 0.65}$			
				=	115.0	m
					11.80	
	BHP of motor	15.90	x1000x115/4500x60x0.6		~~11.3~~	HP
			SAY	=	**12.5**	**HP**

Flushing water transfer Pump

Daily requirement for flushing water = 170 KLD
Hostel 72.25 KL
242.25 KL

6 Hrs running 3 Pumps (with one standby)

$242.25/6 \times 3$ = 13.45 KLH or 224.30 LPM

Say 225 LPM

Head required = 115 m

BHP of motor = $\frac{225 \times 115}{4500 \times 0.65}$ = 8.85 BHP

say 10 BHP

However it is proposed 4 Nos flushing water transfer Pump of 225 LPM, 115m Head with 10 BHP (3 Nos working + 1 standby)

5	**PUMPS FOR FIRE PROECTION**					
	Pump Description	**Location**	**Nos.**	**Discharge**	**Head**	**HP**
i)	**Diesel Driven Pump**	Pump Room	**1**	**2280**	**150.00**	
ii)	**Hydrant Pump**	Pump Room	**1**	**2280**	**150.00**	**130**
iii)	**Sprinkler Pump**	Pump Room	**1**	**2280**	**150.00**	**130**
iv)	**Jockey Pump**	Pump Room	**1**	**180**	**150.00**	**25**
	Capacity of Gen Set	Nos.	HP			
	Domestic Water Transfer Pumps for Towers, EWS, Community, Shopping & N. School	3	12.5	=	37.5	HP
	Flushing water Transfer Pump	3	10.0		30	HP
	Fire Pump (Jockey)	~~2~~ 1	25.0	=	~~50~~ 25	HP
	Lighting			=	25	HP
					~~112.5~~	HP
					117.50	
	or	117.5	x0.746x1.50		131.48 ~~125.89~~	KVA
			Say		130.00	KVA
	Requirement of 130 KVA capacity will be added in to the main D.G. set to provide standby supply.					

Estimate for Providing in Internal Development works for Housing for

DALE DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Final Abstract of Cost

		Amount (Lacs.)
Sub Work - I Water Supply	Rs 244.90 lacs	~~178.43~~
Sub Work - II Sewerage	Rs 106.42 lacs	~~72.36~~
Sub Work - III Storm Water Drainage	Rs 66.27 lacs	~~58.27~~
Sub Work - IV Roads ~~& Footpath~~	Rs 220.13 lacs	~~83.89~~
Sub Work - V Street Lighting	Rs 25.61 lacs	~~22.86~~
Sub Work - VI - Horticulture	Rs 18.45 lacs	~~15.28~~
Sub Work - VII - Maintenance of Services for 10 years including resurfacing of roads after 1st 5 years & II phase i.e. 10 years of maintenance (as per HUDA norms)	Rs 313.69 lacs	~~96.70~~
	995.47 lac	say 995.50 lacs
	Total	~~527.79~~

Cost Per Acre ~~864.37 / 11.125~~ = ~~77.70~~ lac / Acre

(~~RUPEES FIVE CRORE TWENTY SEVEN LACS SEVENTY NINE THOUSAND ONLY~~)

995.50 lacs / 11.125 ACS. = Rs 89.48 lacs

DALE DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Authorized Signatory

Superintending Engineer
HUDA Circle No. 1
Gurgaon

Paradise Consultants
New Delhi

For VATIKA LIMITED

Authorised Signatory

Executive Engineer
HUDA Divn. No. 3
Gurgaon

Checked subject to comments in forwarding letter No. 112-9-2 Dt. 11/9/14 and notes attached with the estimate

C/S
Director General
Town & Country Planning,
Haryana, Chandigarh

Executive Engineer (W)
for Chief Engineer
HUDA Panchkula
11/9/14
10/9/14

FINAL ABSTRACT OF REVISED COST		
Amount (Lacs.)		Amount (Lacs.)
Sub Head - (I) Head Works	62.05	~~42.10~~ 38.65
Sub Head - (II) Pumping Machinery	56.00	~~64.50~~ 53.40
Sub Head - (III) Distribution System (Dom + Flushing + Rising main)	19.47 las	~~23.50~~
Sub Head - (IV) Irrigation Scheme	1.34 las	~~11.75~~ 9.00
Sub Head - (V) Fire Scheme	20.72 las	~~28.91~~ 27.41
	159.58 las	~~170.76~~
	47.88 las	~~163.74~~
	Total	~~151.96~~
Add 3% Contingencies & PE. charges	164.36 las	~~4.91~~ 4.56
	80.54 la	~~175.88~~ ~~163.68~~
	Total	~~156.52~~
49 %. Add 14% Departmental Charges, price escalation unforseen, Admn. charges	244.90 las	~~26.18~~ 21.91
	Grand Total	~~178.43~~
(CO to final abstract of cost)	Say	~~178.43~~

	Sub Work I				**Water Supply**	
	Sub Head No. I				**Head Works**	
S. No.	**Description**	**Unit**	**Qty**	**Rate**	**Amount**	
					Rs. (lacs)	
1	Construction of boosting chambers of suitable size along with under ground tank of capacity ~~690~~ 730 **KL** pumping machinery and generating set etc. complete in all respects.					
	Details of boosting station					
i)	construction of boosting chamber	LS	-	-	7.50	
ii)	UG tank ~~690~~ 730 **KL** capacity incl. 400 KL for fire fighting in two compartments @ ~~3000 / KL~~ 3500/-	KL	~~690~~ 730	~~4000~~ ~~3500~~ 3500/-	~~27.60~~ ~~24.15~~	25.55
4	Provision for carriage of material and other unforeseen items.	LS	-	-	2.00	
5	Provision for facilites staff for Maintenance	LS	-	-	5.00	
	(C.O. to abstract of cost of Sub-work No.I)				~~42.60~~ ~~38.65~~	Lacs
				Say	~~42.60~~ ~~38.65~~	Lacs

(C.O. to Abstract of cost of Sub No I)

6 Prov for Boring cum installing stainless steel tubewell with reverse rotary rig complete with pipe and strainer to a depth about 120m complete in all respects 2 No. @ Rs. 7.00 Lacs Rs 14.00 Lacs

(For drinking purposes only)

7) Provision for Rising main connecting Bore well with water main and by pass arrangement Rs 2.00 Lacs

8) Const. of tubewell chamber of size 1.50 m x 1.50 m x 1.50 m for housing tube well 2 Nos (L.S) Rs 2.00 Lacs

9) Prov. and installing electrically driven submersible pumping set capable of delivery about 18 KL/hr of water against a total Head of 75 m complete in all respects with motor and accessories. 2 Nos @ 2.00 Lacs 4.00

62.55 Lacs

	Sub Work I				**Water Supply**	
	Sub Head No. II				**Pumping Machinery**	
S. No.	**Description**	**Unit**	**Qty**	**Rate**	**Amount**	
					(in Lakhs)	
1 (i)	Providing & installing electricity driven pumping set capable of delivering 270 LPM of water against a total head of 115 m complete with motor and other accessories (For Domestic - 12.5 HP).	Nos.	4	1.25 lac ~~2.50000~~ 135000.00	~~10-00~~ 5-00 ~~5.40~~	
	(ii) For Flushing 10 ~~Pumps~~ (3 w+1 s.by)		4	1.00	~~4-00~~	lac
2	Provision for diesel engine generator set each for standby Arrangements for booster pump complete with gear haed arrangements of following capacities.					
	1 No. - 130 KVA	Nos.	1	~~1600000.00~~	12-00 ~~16.00~~	
3	Providing & installing pumping set of following capacities for fire protection:					
i)	180 LPM @ 150 M Head (25 HP)	Nos.	1	200000 ~~150000.00~~	2.00 ~~1.50~~	
ii)	2280 LPM @ 150 M Head (130 HP) Hydrant	Nos.	1	7.50 ~~750000.00~~	7.50 ~~7.50~~	7.50 lac
iii)	2280 LPM @ 150 M Head (130 HP) Sprinkler	Nos.	1	7.50 ~~750000.00~~	7.50 ~~7.50~~	7.50 lac
iv)	2280 LPM @ 150 M Head (DG Pump)	Nos.	1	~~1000000.00~~ 10-00	~~10.00~~	10-00
4	Provision for making foundations & erection of pumping machinery.	LS	-	-	2.00 ~~1.00~~	
5	Provision for pipes, valves & specials inside the pump chamber.	LS	-	-	2.00 ~~1.25~~	
6	Provision for electric services connection including electric fittings for tubewells chambers complete.	LS	-	-	3.50 ~~2.50~~	
7	Provision for carriage for materials and other unforeseen items.	LS	-	-	0.50 ~~1.50~~ ~~0.75~~	
	(C.O. to abstract of cost of Sub-work No.I)				56.00 lac ~~54.90~~ ~~53.40~~	
				Say	~~53.40~~ 54.50	

(Co. to Abstract of cost of SW I)

	Sub Work I				**Water Supply**	
	Sub Head No. III				**Distribution System/Rising Main** +	
					Dom. + Flushing –	
S. No.	**Description**	**Unit**	**Qty**	**Rate**	**Amount (Rs.)**	
1	Providing, laying, jointing & testing D.I. pipes including cost of excavation complete as per ISI marked.				13.05 lacs	
i)	80 mm dia	M	361	1250.00	~~451250.00~~	
ii)	100 mm dia 1044	M	683	~~1500.00~~	~~1024500.00~~	
iii)	150 mm dia	M	30	~~1950.00~~	~~58500.00~~	
				1575	0.47 lacs	
2	Providing, fixing & Testing Sluice valves including cost of complete in all respects.					
i)	80 mm i/d	Nos.	5	~~10000.00~~	~~50000.00~~	
ii)	100 mm i/d	Nos.	1	12000.00	~~12000.00~~	0.72 lacs
iii)	150 mm i/d	Nos.	2	15000.00	30000.00	
3	Providing, fixing & Testing Non Return valves (NRV) including cost of complete in all respects.					
i)	150 mm i/d	Nos.	1	16000.00	16000.00	
5	Providing and fixing air valves and scour valves including cost of complete in all respects.	Nos.	2	10000.00	20000.00	
6	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	11	1000.00	11000.00	
7	Provision for carriage of material	LS	-	-	150000.00	
8	Provision for cutting the roads and making to its original conditions.	LS	-	-	150000.00	
					0.50 lacs	
9	Making water supply connection. on master road	LS	-	-	~~250000.00~~	
10	Provision for rising main from HUDA water supply line to UG Tank.			1575	1.02 lacs	
i)	150 mm i/d	M	65	~~1950.00~~	~~126750.00~~	
	(C.O. to abstract of cost of Sub-work No.I)				~~2350000.00~~	
				Say	~~23.50~~	**Lacs**
					19.47 lacs	

	Sub Work I				**Water Supply**	
	Sub Head No. IV				**Irrigation**	
S. No.	**Description**	**Unit**	**Qty**	**Rate**	**Amount (Rs.)**	
1	Providing, laying, jointing & testing uPVC pipe line confirming to IS 4985 including cost of Excavation etc. complete in all respect.					
~~i)~~	~~80 mm dia~~ connect with flushing line	M	~~1025~~	~~800.00~~	~~820000.00~~	
2	Providing and fixing 20mm dia Irrigation hydrant valve complete in all respect.	Nos.	20	3500 ~~800.00~~	70000 ~~16000.00~~	
3	Providing & fixing valve 25mm dia	Nos.	20	500 ~~400.00~~	10000 ~~8000.00~~	
4	Providing, fixing & Testing Sluice valves including cost of complete in all respects.					
i)	80 mm i/d	Nos.	1	10000 ~~4750.00~~	10000 ~~4750.00~~	
5	Providing and fixing air valves and scour valves including cost of complete in all respects.	Nos.	1	4500.00	4500.00	
6	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	2	10000 ~~800.00~~	20000 ~~1600.00~~	
7	Provision for carriage of materials etc. and other unforsean charges	LS	-	-	25000 ~~15000.00~~	
~~8~~	~~Provision for cutting of roads & making good to its in original condition~~	LS	-	-	150000 ~~30000.00~~	
			Total		~~175950~~ 134250/ ~~899850.00~~	
			Say		~~9.00 Lacs~~ ~~1.25 lac~~ 1.34 lacs	

	Sub Work I					
	Sub Head No. V				**Fire Scheme**	
S. No.	**Description**	**Unit**	**Qty**	**Rate**	**Amount (Rs.)**	
1	Providing, laying, jointing & testing M.S. pipes for fire ring main including cost of Fittings & excavation complete (as per ISI marked) in all respect.			1575	13.67 lacs	
a)	150 mm dia	M	868	~~2000.00~~	~~1736000.00~~	
b)	80 mm dia	M	266	1000.00	266000.00	
2	Providing and fixing External Fire Hydrants complete with masonary chambers.	Nos.	19	15000.00	1.90 lacs ~~285000.00~~	
3	Providing & fixing valve 150mm dia.			15000	0.45 lacs	
a)	150 mm dia	Nos.	3	~~20000.00~~	~~60000.00~~	
~~b)~~	~~80 mm dia~~	~~Nos.~~	~~19~~	~~10000.00~~	~~190000.00~~	
4	Providing, fixing & Testing Non Return valves (NRV) including cost of complete in all respects.					
~~i)~~	~~80 mm i/d~~	(L.S) ~~Nos.~~	~~19~~	~~5000.00~~	~~95000.00~~	
5	Provision for cutting of roads and carriage of materials etc. and other unforsean charges	LS	-	-	40000.00	
6	Provision for indication plates	Nos.	19	1000.00	19000.00	
7	Provision for carriage of material and other unforseen items	LS	-	-	~~200000.00~~ ~~50000.00~~ 0.50 lacs ~~2891000~~	
			Total		~~**2741000.00**~~ 20.72 lacs	
			Say		~~**27.41**~~ **Lacs** ~~28.91 lac~~	

	Sub Work II			Sewerage Scheme		
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Providing, lowering, jointing, cutting salt glazed stone ware pipes and specials into trenches including cost of excavation, bed concrete lot of manholes complete.					
i)	**250 mm i/d**				10.75 lacs	
a)	Average depth 1.5 m to 4.5 m	M	597	1800.00	~~1074600.00~~	
ii)	**400 mm i/d**			2500	0.25 lacs	
a)	Average depth 1.5 m to 4.5 m	M	10	~~2250.00~~	~~22500.00~~	
2	Provision for lighting, watching and temporary diversion of traffic, timbering etc	LS	-	-	100000.00	
3	Provision for cutting of roads and carriage of materials etc. and other unforsean charges	LS	-	-	0.50 lac ~~100000.00~~	
4	Provision for connection with HUDA on master road	LS	-	-	0.50 lacs ~~200000.00~~	
5	400 Cost of **360 Kld** Sewerage Treatment Plant.	LS	-	-	50 — ~~4500000.00~~	
6	Provision for CI / DI pipe 150 mm dia pipe from STP. To Huda Main Line.	M	85	1575 ~~1950.00~~	1.34 lacs ~~165750.00~~	
7	Provn for vent pipe at suitable places (LS)				1.0 lac	
					~~6162850.00~~	69.34 lac
	Add 3% contingencies & P.E. charges				~~184885.5~~	2.08 lacs
					6347735.50	71.42 lacs
					~~34~~ ~~3403903~~ 35.0	
	Add ~~14%~~ 42% Deptt. Charges, price escalation, unforseen Admin. charges				888682.97	106.42 lacs
				Total	~~7236418.47~~ ~~7455175.90~~	
	(C.O. to abstract of cost of Sub-work No. 1)			Say	~~72.36~~ Lacs 74.59 lacs	

	Sub Work - III				Storm Water Drain	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Providing, lowering, jointing, cutting RCC NP_3 pipes and specials into trenches including cost of excavation cost of manholes, ventilating chambers etc. complete in all respects.					
~~i)~~	~~250 mm i/d~~					
~~a)~~	~~Average depth upto 1.5 m~~	~~M~~	~~550~~	~~1300.00~~	~~715000.00~~	
ii)	400 mm i/d					
a)	Average depth upto 1.5 m	M	0	1800.00	0.00	
b)	Average depth 1.5 m to 4.5 m	M	720	2000.00	~~1440000.00~~ 18-00 Las	
iii)	500 mm i/d					
a)	Average depth upto 1.5 m	M	0	2050.00	0.00	
b)	Average depth 1.5 m to 4.5 m	M	25	~~2150.00~~ 2700	~~53750.00~~ 0.68 Las	
2	Provision for Road Gully & Drain with 300 mm dia pipe Connection	LS	-	-	~~250000.00~~ 150000/-	
3	Provision for cutting of roads and carriage of materials etc. and other unforseen items	LS	-	-	250000.00	
4	Provision for disposal arrangements Recharge Pit. (L.S)	Nos	~~12~~	~~150000.00~~	15-00 ~~1800000.00~~	
5	Provision for lighting, watching and temporary diversion of traffic, fingering	LS	-	-	500000.00	
6	Provision for connection with HUDA on master road				0.50 Lacs	
~~i)~~	~~500 mm i/d~~	~~M~~	~~25~~	~~2150.00~~	~~53750.00~~	
					~~4962500.00~~	43.18 Lacs
	Add 3% contingencies cl, P.E. Charges				~~148875.00~~	1.30 La
					~~5111375.00~~	44.48 La
	Add ~~14%~~ 49% Deptt. Charges, unforseen, price escalation Admin. charges				~~715592.5~~	~~2234574~~ 21.79 La
			Total		~~5826967.50~~	~~7615946~~
		SAY			~~58.27~~ Lacs	66.27 La
	(C.O. to abstract of cost of Sub-work No. 1				~~76.16 La~~	

Roads on basement

HSR 10.29 C.C. 1:8:16 with stone aggregate 20mm nominal size in foundation & Plinth

HSR 10.132 C.C. 1:2:4 with stone aggregate 20mm nominal size in pavement, roads, taxi tracks and runway laid to required slop and camber including consolidation finishing and tamping complete

Taking 10m length

(2") 1:8:16 10 x 6 x 0.05 = 3.00 cum @ Rs 336.25 P.cum Rs 1008.75

(3") 1:2:4 10 x 6 x 0.075 = 4.50 cum @ Rs 729.30 P.cum Rs 3281.85

Rs 4290.60

Add 450% C. Premium Rs 19307.70

Rs 23598.30

Rate per mtr = 23598.30/10 = 2359.83 P.mtr

Say 2360/mt

335 mtr @ Rs 2360/mtr Rs 7.91 Lks

	Sub Work IV				Road Work	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Provision for leveling & earth filling as per site condition 11.125 acre @ 100000/acre	Acres	11.125	100000	1112500.00	
2	Construction of road by:- i) soling coat 100 mm thick (63-45) mm gauge compacted to 75 mm thick WBM conforming to MOT specification (table 400-6,grading no 2) ~~7126.815 sqm.X0.10 m - 712.68 cum say 713 cum @ 1000/ cum~~	300 mm GSB 250 mm Stone aggregate Cu. mtr.	~~713.0~~	~~1000~~	~~713000.00~~	
	ii) Wearing coat (top coat) 100 mm thick (53-22.4)mm gauge compacted to 75mm thick conforming to MOT specifications (table 400-6, grading no ~~3) 7126.815 sqm.X0.10 m - 712.68 cum say 713 cum @ 500/ cum~~	~~Cu. mtr.~~	~~713.0~~	~~500~~	356500.00	
	iii) 25mm thick pre-mix carpet with seal coat ~~7126.815 sqm. Say 7127 sqm @ 265/ sqm~~ 50 mm thick DBM. 40 mm thick SDBC	Sq. mtr.	~~7127.0~~ 11020	~~850~~ 265 1000/-	~~6057950~~ ~~1888655.00~~	110.20 lacs
3	Provision for making approach and pavement to building block by providing concrete pavement or tiles. ~~Etc. 2911.97 sqm. Say 2912 sqm @ 500 / sqm.~~ 3(a) PL. see ofb. Kerb and channel	Sq. mtr.	~~2912.0~~	~~600~~ 500	~~1747200~~ 1456000.00	7.91 lacs
4	Provision for ~~parking arrangement~~ ~~1836 sqm.@ 500/sqm~~ on both side	Sq. mtr.	1200 ~~1836.0~~	600	7.20 lacs ~~918000.00~~	
5	Provision for Carriage of material e.g. other unforseen items	LS.		~~500000.00~~	900000.00	
6	Provision for traffic lighting and guide map/ indicators	LS.		~~500000~~ ~~200000.00~~	500000 200000.00	
			Total		~~1190850~~ ~~7144655.00~~	143.44 lacs
	Add 3% contingencies e.g. P.E. Charges				~~357425~~ 4.30 lacs ~~214339.65~~	
					~~12262305~~ ~~1962368~~	147.74 lacs
					~~7358994.65~~	
	49 %,		Total		~~6008529~~ ~~73.59~~ Lacs	72.39 lacs
	Add ~~14~~ % department charges, price escalation unforseen, Admin charges				~~861550~~ ~~10.30~~ Lacs	220.13 lacs
		SAY			~~17623979~~ ~~83.89~~ Lacs ~~18270834~~ ~~178.24 lacs~~ ~~182.71 lacs~~	

(c. o. tof. Abbreviation of cost)

	Sub Work V				Street Lighting	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Prov. street lighting on roads ~~Supply, installation, testing and commissioning of Street Lighting GI Poles, Light Fixtures, Feeder Pillars, Cables & Wires including cable end terminations and Earthing Station etc. for Street Lighting~~ as per standard spec. of HVPN (with CFL)	per acre	11.125	1.50 lcs ~~175000.00~~	16.69 lcs ~~1946875.00~~	
	Add 3% contingencies on P.E. charges				~~58406.25~~	0.50
	Total				~~2005281.25~~	17.19 lcs
	Add 14% Deptt. Charges, unforseen, price escalation Admin. charges				~~280739.375~~	8.42 lcs
			Total		~~2286021.00~~	25.61 lcs
		SAY			~~22.86~~	Lacs
					~~29.88 lcs~~	

c.o.t final abstract of cost

	Sub Work VI				Horticulture	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Development of lawn area					
	a) Trenching the ordinary soil upto depth of 60 cm.Including removal & packing of serviceable material & disposing at a lead of 50 M and making up the trenched area to prope level by filling with earth mixed with manure befor & after flodding trench with water including cost of imported earth & manure.					
	b) Rough dressing of trenched area.					
	c) Grassing including watering & maintenance of lawns free from weeds & fit for mowing in rows including hedges, shrubs & green belts (as per HUDA Norms)					
			11.25	1.00	11.125	Lacs
	11.125 acres @ ~~Rs. 0.90 lacs.~~	per acre	~~11.125~~	~~90000.00~~	~~1,001,250~~	
(2)	~~400~~ 120 trees @ Rs. 750/- each				~~300,000~~	0.90 Lacs
					~~1301250.00~~	12.02 Lacs
	Add 3% contingency charges				~~39037.50~~	0.36 Lacs
				Total	~~1340287.50~~	12.38 Lacs
	Add ~~14%~~ 49.1% Deptt. Charges, price escalation unforseen, Admn. charges				~~187640.25~~	~~656240~~ 6.07 Lacs
				Total	~~1527927.75~~	~~1997027~~
			say		~~15.28~~	Lacs 18.45 Lacs
	C.O. to final abstract of cost				~~1998 Lac~~	

2) Plan and planting of trees with tree guards on roads at 12m interval

335 + 360 m = 695 m

695/12 = 57.92 tree

say 60 No

2 × 60 = 120 Nos

Cost details

Excavation = Rs 30-00

manure Rs 60-00

Tree plant Rs 60-00

Tree guards Rs 600-00

Rs. 750-00

	Sub Work VII				Maintenance Charges & Resurfacing of Roads	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Provision for maintenance charges for water supply, sewerage,storm water drainage, roads, street light, horticulture etc. complete including operation & establishments charges as per HUDA norms after completion & resurfacing of roads after 10 years or 1st phase.					
	11.125 acres @ 5 lacs per acre	per acre	11.125	500000.00	5562500	
2	Provision for resurfacing & strengthening of road after five years of Ist phase ~~7127 sqm @ 250/-~~ per sqm	Sq. mtr.	11020 ~~7127~~	600/ ~~250~~	~~4271200~~ ~~1950540~~ ~~1781750.00~~	66.12 lacs
3	Provision for resurfacing & strengthening of road after ten years of 2nd phase ~~7127 sqm @ 125/-~~ per sqm	Sq. mtr.	11020 ~~7127~~	750/ ~~400~~ ~~125~~	~~2250840~~ ~~1276200~~ 890875.00	82.65 lacs
	~~4. Provi for resurfacing & strengthening of prot/ footpath 2913 sqm @ 300/- per sqm~~			Total	~~8736750~~ 8235125	204.40 lacs
				Total	~~1296314~~ ~~388894~~	6.13 lacs
	Add 3% contingency & PE charges				247053.75	
					~~13352034~~ ~~1307435~~	210.53
				Total	~~6542~~ ~~8482178.75~~	193.16
	42 ft.					
	Add ~~14%~~ Departmetal charges, price escalation, unforseen Admin- charges				~~1187505.025~~	313.69 lacs
				Total	~~9669683.775~~	
			say		~~96.70~~ Lacs	

~~148 95 Lac~~

c.o. to final abstract of cost.

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-8

DOMESTIC WATER SUPPLY QUANTITY SHEET

S.No.	Line No	Length of Pipe mtr.	Dia of Pipe mtr.
1	*Pump Room - D1*	30.0	150
2.	D1 - D2	104.0	100
3.	D2 - D2a	92.0	80
4.	D2 - D3	113.0	100
5.	D3 - D3a	32.0	100 ~~80~~
6.	D1 - D4	62.0	100
7.	D4 - D3	93.0	100

FLUSHING WATER SUPPLY QUANTITY SHEET

1	*STP - F1*	30.0	100
2.	F1 - F2	25.0	100
3.	F2 - F3	93.0	100
4.	~~F3 - F3a~~	~~32.0~~	~~80~~
5.	F3 - F4	113.0	~~80~~ 100
6.	F2 - F4	163.0	100
7.	F4 - F4a	92.0	~~80~~ 100

HUDA WATER SUPPLY QUANTITY SHEET

1	**HUDA Water Supply Line**	65.0	150

	Length in (MTR)	Pipe Dia (MM)
Domestic & Flushing Water Supply line	361.0	~~80~~ 100
Domestic & Flushing Water Supply line	683.0	100
Domestic & Flushing Water Supply line	30.0	150

	Length in (M)	Pipe Dia
Municipal Water Supply line	65.0	150

~~80 Dia Valve~~	~~5~~	Nos.
100 Dia Valve	1 + 5	Nos.
150 Dia Valve	2	Nos.
150 Dia Non Return Valve	1	Nos.
Air Valve	2	Nos.

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

IRRIGATION WATER SUPPLY QUANTITY SHEET

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mm.
1	*STP.*	G1	36.0	80
2.	G1	G2	159.0	80
3.	G2	G3	86.0	80
4.	G3	G4	56.0	80
5.	G4	G5	250.0	80
6.	G1	G6	168.0	80
7.	G6	G2	195.0	80
8.	G6	G5	75.0	80
Irrigation Water Supply line			1025.0	80
Garden Hydrant			20	Nos.
80 Dia Valve			1	Nos.
Air Valve			1	Nos.

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR

FIRE QUANTITY SHEET

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mtr.
1	***UGT.***	B1	9.0	150
2.	B1	B2	61.0	150
3.	B2	B3	97.0	150
4.	B3	B4	216.0	150
5.	B4	B5	121.0	150
	B1	B7	86.0	150
6.	B7	B6	82.0	150
7.	B6	B5	126.0	150
8.	Fire Brigade Inlet Connection		35.0	150
9.	Fire Brigade Withdrawl Connection		35.0	150
80 mm Dia Pipe			**266.0**	**mtr.**
150 mm Dia Pipe			**868.0**	**mtr.**
External Fire Hydrant			**19**	**Nos.**
80 Dia Valve			**19**	**Nos.**
150 Dia Valve			**3**	**Nos.**
80 Dia Non Return Valve			**19**	**Nos.**

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

TITLE - SEWERAGE QUANTITY SHEET

S.No.	Line No.		Length	Pipe Dia		Depth			Excavation Depth	EXCAVATION			
						Start	End	Avg.		0.0 - 1.5	1.5 - 3.0	3.0 - 4.5	4.5 - 6.0
	From	To	(mtr.)	(mm)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(cum.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)
1	S1	S2	112.0	250	0.250	1.50	2.09	1.79	152.50	0.0	112.0	0.0	0.0
2.	S2a	S2	45.0	250	0.250	1.50	1.74	1.62	56.11	0.0	45.0	0.0	0.0
3.	S2	S3	110.0	250	0.250	2.09	2.67	2.38	191.54	0.0	110.0	0.0	0.0
4.	S3	S4	88.0	250	0.250	2.67	3.13	2.90	183.04	0.0	88.0	0.0	0.0
5.	S5	S6	138.0	250	0.250	1.50	2.23	1.86	194.04	0.0	138.0	0.0	0.0
6.	S6	S4	104.0	250	0.250	2.23	2.77	2.50	189.28	0.0	104.0	0.0	0.0
7.	S4	S.T.P	10.0	400	0.400	3.13	3.16	3.15	27.56	0.0	0.0	10.0	0.0
Total			607.0						995.0	0.0	597.0	10.0	0.0

Excavation Depth				
	(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)	(4.5 - 6.0)
250 mm Dia pipe	0.0	597.0	0.0	0.0
400 mm Dia pipe	0.0	0.0	10.0	0.0

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

TITLE : STORM WATER QUANTITY SHEET

S.No.	Line No.		Length	Size of Pipe		Depth			Excavation Depth	EXCAVATION		
						Start	End	Avg.		0.0 -1.5	1.5 - 3.0	3.0 - 4.5
	From	To	(mtr.)	(mm)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(cum.)	(mtr.)	(mtr.)	(mtr.)
1	A1	A2	52.0	400	0.400	1.80	1.89	1.85	111.57	0.0	52.0	0.0
2.	A2	D.C.01	2.0	400	0.400	1.89	1.89	1.89	4.39	0.0	2.0	0.0
3.	D.C.01	***R.P.01***	2.0	400	0.400	1.89	1.90	1.90	4.39	0.0	2.0	0.0
4.	***R.P.01***	A3	2.0	400	0.400	1.80	1.80	1.80	4.20	0.0	2.0	0.0
5.	A3	A4	57.0	400	0.400	1.80	1.90	1.85	122.75	0.0	57.0	0.0
6.	A4	D.C.02	3.0	400	0.400	1.90	1.91	1.91	6.62	0.0	3.0	0.0
7.	D.C.02	***R.P.02***	2.0	400	0.400	1.91	1.91	1.91	4.42	0.0	2.0	0.0
8.	***R.P.02***	A5	3.0	400	0.400	1.80	1.81	1.80	6.31	0.0	3.0	0.0
9.	A5	A6	45.0	400	0.400	1.81	1.88	1.84	96.51	0.0	45.0	0.0
10.	A6	D.C.03	2.0	400	0.400	1.88	1.89	1.89	4.37	0.0	2.0	0.0
11.	D.C.03	***R.P.03***	2.0	400	0.400	1.89	1.89	1.89	4.38	0.0	2.0	0.0
12.	***R.P.03***	A7	3.0	400	0.400	1.80	1.81	1.80	6.31	0.0	3.0	0.0
13.	A7	A8	46.0	400	0.400	1.81	1.89	1.85	98.70	0.0	46.0	0.0
14.	A8	D.C.04	2.0	400	0.400	1.89	1.89	1.89	4.38	0.0	2.0	0.0
15.	D.C.04	***R.P.04***	2.0	400	0.400	1.89	1.89	1.89	4.38	0.0	2.0	0.0
16.	***R.P.04***	A9	3.0	400	0.400	1.80	1.81	1.80	6.31	0.0	3.0	0.0
17.	A9	A10	39.0	400	0.400	1.81	1.87	1.84	83.44	0.0	39.0	0.0
18.	A10	D.C.05	2.0	400	0.400	1.87	1.88	1.88	4.35	0.0	2.0	0.0
19.	D.C.05	***R.P.05***	2.0	400	0.400	1.88	1.88	1.88	4.36	0.0	2.0	0.0
20.	***R.P.05***	A11	4.0	400	0.400	1.80	1.81	1.80	8.41	0.0	4.0	0.0
21.	A11	A12	40.0	400	0.400	1.81	1.88	1.84	85.68	0.0	40.0	0.0
22.	A12	D.C.06	2.0	400	0.400	1.88	1.88	1.88	4.36	0.0	2.0	0.0
23.	D.C.06	***R.P.06***	2.0	400	0.400	1.88	1.88	1.88	4.36	0.0	2.0	0.0
24.	***R.P.06***	A13	4.0	400	0.400	1.80	1.81	1.80	8.41	0.0	4.0	0.0
25.	A13	A14	37.0	400	0.400	1.81	1.87	1.84	79.16	0.0	37.0	0.0
26.	A15	A16	25.0	400	0.400	1.80	1.84	1.82	53.05	0.0	25.0	0.0
27.	A16	D.C.07	2.0	400	0.400	1.84	1.85	1.85	4.29	0.0	2.0	0.0
28.	D.C.07	***R.P.07***	2.0	400	0.400	1.85	1.85	1.85	4.30	0.0	2.0	0.0
29.	***R.P.07***	A17	4.0	400	0.400	1.80	1.81	1.80	8.41	0.0	4.0	0.0
30.	A17	A18	34.0	400	0.400	1.81	1.87	1.84	72.65	0.0	34.0	0.0

S.No.	Line No.		Length	Size of Pipe		Depth			Excavation Depth	EXCAVATION		
						Start	End	Avg.		0.0 -1.5	1.5 - 3.0	3.0 - 4.5
	From	To	(mtr.)	(mm)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(cum.)	(mtr.)	(mtr.)	(mtr.)
31.	A18	D.C.8	2.0	400	0.400	1.87	1.87	1.87	4.34	0.0	2.0	0.0
32.	D.C.8	***R.P.08***	2.0	400	0.400	1.87	1.87	1.87	4.34	0.0	2.0	0.0
33.	***R.P.08***	A19	5.0	400	0.400	1.80	1.81	1.80	10.52	0.0	5.0	0.0
34.	A19	A20	54.0	400	0.400	1.81	1.90	1.86	116.43	0.0	54.0	0.0
35.	A20	D.C.09	2.0	400	0.400	1.90	1.91	1.91	4.41	0.0	2.0	0.0
36.	D.C.09	***R.P.09***	2.0	400	0.400	1.91	1.91	1.91	4.42	0.0	2.0	0.0
37.	***R.P.09***	A21	4.0	400	0.400	1.80	1.81	1.80	8.41	0.0	4.0	0.0
38.	A21	A22	55.0	400	0.400	1.81	1.90	1.86	118.54	0.0	55.0	0.0
39.	A22	D.C.10	2.0	400	0.400	1.90	1.91	1.91	4.41	0.0	2.0	0.0
40.	D.C.10	***R.P.10***	2.0	400	0.400	1.91	1.91	1.91	4.42	0.0	2.0	0.0
41.	***R.P.10***	A23	3.0	400	0.400	1.80	1.81	1.80	6.31	0.0	3.0	0.0
42.	A23	A24	79.0	400	0.400	1.81	1.94	1.87	171.79	0.0	79.0	0.0
43.	A24	D.C.11	3.0	400	0.400	1.94	1.95	1.95	6.74	0.0	3.0	0.0
44.	D.C.11	***R.P.11***	3.0	400	0.400	1.95	1.95	1.95	6.76	0.0	3.0	0.0
45.	***R.P.11***	A25	4.0	400	0.400	1.80	1.81	1.80	8.41	0.0	4.0	0.0
46.	A25	A14	67.0	400	0.400	1.81	1.92	1.87	145.11	0.0	67.0	0.0
47.	A14	D.C.12	2.0	400	0.400	1.92	1.93	1.93	4.45	0.0	2.0	0.0
48.	D.C.12	***R.P.12***	2.0	400	0.400	1.93	1.93	1.93	4.46	0.0	2.0	0.0
49.	***R.P.12***	***To Huda***	25.0	500	0.500	1.90	1.93	1.92	60.95	0.0	25.0	0.0
50.	**Catch Basin Line**		550.0	250	0.250	0.60	0.70	0.65	444.13	550.0	0.0	0.0
	Total		**1295.0**						**2055.0**	**550.0**	**745.0**	**0.0**

Excavation Depth			
	(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)
250 mm Dia pipe	550.0	-	-
400 mm Dia pipe	0.0	720.0	0.0
500 mm Dia pipe	0.0	25.0	0.0

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

TITLE : ROAD QUANTITY SHEET

AREA OF METALLED ROAD (A)

S.NO.	ROAD NO.	LENGTH (In Sq. Mt.)	WIDTH	TOTAL AREA (In Sq. Mt.)
1	R1	69.416	7.500	520.620
2.	R2	-	-	66.996
3.	R3	-	-	93.225
4.	R4	75.491	7.500	566.183
5.	R5	-	-	49.337
6.	R6	48.258	6.000	289.548
7.	R7	-	-	158.084
8.	R8	-	-	93.364
9.	R9	64.107	7.500	480.803
10.	R10	-	-	118.208
11.	R11	-	-	150.068
12.	R12	29.313	8.100	237.435
13.	R13	-	-	302.299
14.	R14	45.567	6.000	273.402
15.	R15	35.977	7.500	269.828
16.	R16	-	-	78.467
17.	R17			158.651
18.	R18	78.373	7.500	587.798
19.	R19	-	-	290.871
20.	R20	39.731	7.500	297.983
21.	R21	-	-	1011.523
22.	R22	57.165	6.000	342.990
23.	R23	-	-	41.242
		543.398	TOTAL	6478.923
		54.33	ADD 10% FOR CURVES	647.892
		597.73	TOTAL METALLED ROAD AREA (A)	7126.815
		Say = 600 mtr		

12 m wide semi road = 360 m
metalled width 5.50 m
1980 Sqm

AREA OF HARD PAVED		(For Fire Tender Movement) (B)		
S.NO.	ROAD NO.	LENGTH	WIDTH	TOTAL AREA
		(In Sq. Mt.)		(In Sq. Mt.)
1	F1	-	-	154.445
2.	F2	40.197	6.000	241.182
3.	F3	-	-	73.392
4.	F4	56.915	6.000	341.490
5.	F5	8.031	9.718	78.045
6.	F6	-	-	121.015
7.	F7	9.667	6.000	58.002
8.	F8	-	-	4.538
9.	F9	-	-	67.440
10.	F10	36.999	6.000	221.994
11.	F11	-	-	113.041
12.	F12	37.002	6.000	222.012
13.	F13	-	-	73.374
14.	F14	56.915	6.000	341.490
15.	F15	-	-	196.115
16.	F16	16.411	6.000	98.466
17.	F17	40.201	6.000	241.206
		302.338 mtr	TOTAL	2647.25
	Add 10% for curves	30.23	ADD 10% FOR CURVES	264.72
		332.57	TOTAL HARD PAVED AREA (B)	2,911.97
		say 335 mtr		

AREA UNDER CAR PARKING (C)	
NO. OF CARS ON SURFACE = 153 NO.	
AREA UNDER CAR PARKING = 5 X 2.5 X 153 = ~~1838~~ 1912.50 SQM	1912.36
TOTAL AREA UNDER CAR PARKING (C)	~~1836 SQM.~~
TOTAL AREA OF ROADS = A + B + C = 7126.815 + ~~2911.97~~ + 1836 = 11874.79 SQM	

1912.36 = 9039.18

say 9040 sqm

12 m wide semi road 1980 sqm

11020 sqm

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

(Pump Riser Calculation Sheet)

Domestic Water Supply Design Calculation For Towers, EWS, Community Building & Shopping

Line No.	Probable demand (lps)	Assumed pipe dia. (mm)	Head loss (mtr./mtr.)	Pipe length (mtr.)	Eq. Length fitts.(%)	Eq. Length (mtr.)	Total length (mtr.)	Head loss line (mtr.)	Head loss prog (mtr.)	Velocity (m/sec)	Pump Head Available in basement	Residual Head Available at terrace	Residual Head Available at inlet of tank	Tower Height From Pump Room To OHT	Building Name
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Pump Room - D1	13.247	150	0.007	30.0	5	1.50	31.50	0.228	0.228	0.749	115.00	114.77	-	-	-
D1 - D2	6.447	100	0.014	104.0	5	5.20	109.20	1.500	1.728	0.820	114.77	113.04	20.04	93.00	Tower - 4 & 5
D2 - D2a	0.156	80	0.000	92.0	5	4.60	96.60	0.004	1.732	0.031	113.04	111.31	91.31 Used PRV	20.00	Row Houses
D2 - D3	2.035	100	0.002	113.0	5	5.65	118.65	0.193	1.920	0.259	113.04	111.12	6.12	105.00	Tower - 6
D3 - D3a	0.789	80	0.001	32.0	5	1.60	33.60	0.028	1.948	0.157	111.12	109.18	85.18 Used PRV	24.00	EWS
D1 - D4	6.800	100	0.015	62.0	5	3.10	65.10	0.987	1.215	0.865	114.77	113.56 Used PRV For	11.56 Com. Bld. & Shopping	102.00	Tower - 3, Community Bld. & Con. Shopping
D4 - D3	4.257	100	0.006	93.0	5	4.65	97.65	0.622	1.836	0.542	113.56	111.72	18.72	93.00	Tower - 1 & 2

Flow Rate	**13.247**	lps
	794.8	**LPM**
(3 W + 1 S)	**264.9**	**LPM**
Maximum Building Height	93	m
Pump Head	**115.00**	m
Pump HP	11.3	HP
Say	**12.5**	**HP**

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

TITLE : HYDRAULIC SEWAGE DESIGN CHART

S.No.	Line No.		Gross Water Requirement (Load on Line)	Sewage Flow (Self Load on Line) LPD	Sewage Flow (Self Load on Line) KLD	Previous Load	Progressive Discharge	Progressive Discharge (Average)	Progressive Discharge (Peak)	Infiltration @ 25% Av. Discharge	Total Discharge	Length	Pipe Size	Slope (1 in)	Fall	Velocity	Capacity of Pipe	Formation Road Levels at Start	Invert Levels at Start	Formation Road Levels at End	Invert Levels at End	Manhole Depth at Start	Manhole Depth at End	Average Depth
	From	To	(lps.)	80%	1000	(kld.)	(kld.)	(lps.)	(lps.)	(lps.)	(lps.)	(mtr.)	(mm)	(mm)	(mtr.)	(m/s) (v)	(lps.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)
1.	S1	S2	54510	43608	43.61	0.00	43.61	0.50	1.51	0.13	1.64	112.0	250	190	0.59	0.76	18.70	220.950	219.45	220.900	218.86	1.50	2.04	1.77
2.	S2a	S2	13110	10488	10.49	0.00	10.49	0.12	0.36	0.03	0.39	45.0	250	190	0.24	0.76	18.70	220.900	219.40	220.900	219.16	1.50	1.74	1.62
3.	S2	S3	72450	57960	57.96	54.10	112.06	1.30	3.89	0.32	4.22	110.0	250	190	0.58	0.76	18.70	220.900	218.86	220.850	218.28	2.04	2.57	2.30
4.	S3	S4	69000	55200	55.20	112.06	167.26	1.94	5.81	0.48	6.29	88.0	250	190	0.46	0.76	18.70	220.850	218.28	220.800	217.82	2.57	2.98	2.78
5.	S5	S6	77625	62100	62.10	0.00	62.10	0.72	2.16	0.18	2.34	138.0	250	190	0.73	0.76	18.70	220.950	219.45	220.850	218.72	1.50	2.13	1.81
6.	S6	S4	153510	122808	122.81	62.10	184.91	2.14	6.42	0.54	6.96	104.0	250	190	0.55	0.76	18.70	220.850	218.72	220.800	218.18	2.13	2.62	2.38
7.	S4	*S.T.P*	0	0	0.00	352.16	352.16	4.08	12.23	1.02	13.25	10.0	400	370	0.03	0.75	46.93	220.800	217.82	220.800	217.79	2.98	3.01	3.00

Formula Used:

Peak factor is considered as 3 times for population upto 20,000 persons & above 20,000 person peak factor is considered 2.5 times.

Velocity(m/s)=(1/n)x(A/P)^(2/3)*(1/slope)^.5

n=.013 for RCC pipe (Manning's Coefficient)

A=Area of x-section of pipe in sqm.

P =Wetted Perimeter in m

Capacity of pipe(lps) =Area of x-section of pipe in sqm x velocity in m/s x1000x1/2(Sewers are designed to run half full)

Abbreviation Used:

IL=Invert level of pipe

FSL=Full supply level

FRL=Formation Road Level

CL=Connection Level

PROJECT : PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

LOAD ON SEWAGE LINES

			Residential Sewage Load						Non Residential Sewage Load		Residential + Non Residential Load		
S.No.	Name of Sewer Line		Main Apartment	Population @ 5 persons / Unit	Water Reuirement @ 172.5 Ltr/day/Person	EWS & Service	Population @ 2 persons / Unit	Water Reuirement @ 172.5 Ltr/day/Person	Amenity	Water Reuirement @ Lumsum / day	Gross Water Requirement (Load on Line)	Sewage Flow (Self Load on Line)	Sewage Flow (Self Load on Line)
			Unit	Nos.	lpd.	Unit	Nos.	lpd.	sqm.	lpd.	lpd.	lpd.	kld.
				5	172.5	-	2	172.5	-	-	-	80%	1000
	From	To											
1.	S1	S2	48	240	41400	38	76	13110	-	0	54510	43608	43.61
2.	S2a	S2	0	0	0	38	76	13110	-	0	13110	10488	10.49
3.	S2	S3	84	420	72450	0	0	0	-	0	72450	57960	57.96
4.	S3	S4	80	400	69000	0	0	0	-	0	69000	55200	55.20
5.	S5	S6	90	450	77625	0	0	0	-	0	77625	62100	62.10
6.	S6	S4	126	630	108675	43	86	14835	Cumminity Building & Convenient Shopping	30000	153510	122808	122.81
7.	S4	*S.T.P*	0	0	0	0	0	0	-	0	0	0	0.00
			428	**2140**	**369150**	**119**	**238**	**41055**		**30000.00**	**440205.00**	**352164.00**	**352.16**

PROJECT :- PROPOSED BUILDING PLAN FOR GROUP HOUSING COLONY AREA MEASURING 11.125 ACRE IN SECTOR-89A

TITLE :- HYDRAULIC STORM WATER DESIGN CHART

S.No.	Line No.		Length	Catchment Area (Sqm.)			Discharge @ 6.25 mm / hr rainfall	Pipe dia	Slope 1. in	Velocity m/sec.	Capacity of pipe	Fall in line	Levels at start (mtr.)			Levels at End (mtr.)			Manhole Depth Depth (mtr.)		Avg.
	From	To	(mtr.)	Self	Progg.	Total	60% runoff (lps)	(mm)	(mm)	m/sec.	lps.	mtr.	FRL	FSL	IL	FRL	FSL	IL	Start	End	Depth
1.	A1	A2	52.0	3150.0	0.0	3150.0	3.28	400	570	0.60	75.63	0.09	220.950	219.55	219.15	220.950	219.46	219.06	1.80	1.89	1.85
2.	A2	D.C.01	2.0	0.0	3150.0	3150.0	3.28	400	570	0.60	75.63	0.00	220.950	219.46	219.06	220.950	219.46	219.06	1.89	1.89	1.89
3.	D.C.01	***R.P.01***	2.0	0.0	3150.0	3150.0	3.28	400	570	0.60	75.63	0.00	220.950	219.46	219.06	220.950	219.45	219.05	1.89	1.90	1.90
4.	***R.P.01***	A3	2.0	0.0	3150.0	3150.0	3.28	400	570	0.60	75.63	0.00	220.950	219.55	219.15	220.950	219.55	219.15	1.80	1.80	1.80
5.	A3	A4	57.0	3450.0	3150.0	6600.0	6.88	400	570	0.60	75.63	0.10	220.950	219.55	219.15	220.950	219.45	219.05	1.80	1.90	1.85
6.	A4	D.C.02	3.0	0.0	6600.0	6600.0	6.88	400	570	0.60	75.63	0.01	220.950	219.45	219.05	220.950	219.44	219.04	1.90	1.91	1.91
7.	D.C.02	***R.P.02***	2.0	0.0	6600.0	6600.0	6.88	400	570	0.60	75.63	0.00	220.950	219.44	219.04	220.950	219.44	219.04	1.91	1.91	1.91
8.	***R.P.02***	A5	3.0	0.0	6600.0	6600.0	6.88	400	570	0.60	75.63	0.01	220.950	219.55	219.15	220.950	219.54	219.14	1.80	1.81	1.80
9.	A5	A6	45.0	3470.0	6600.0	10070.0	10.49	400	570	0.60	75.63	0.08	220.950	219.54	219.14	220.950	219.47	219.07	1.81	1.88	1.84
10.	A6	D.C.03	2.0	0.0	10070.0	10070.0	10.49	400	570	0.60	75.63	0.00	220.950	219.47	219.07	220.950	219.46	219.06	1.88	1.89	1.89
11.	D.C.03	***R.P.03***	2.0	0.0	10070.0	10070.0	10.49	400	570	0.60	75.63	0.00	220.950	219.46	219.06	220.950	219.46	219.06	1.89	1.89	1.89
12.	***R.P.03***	A7	3.0	0.0	10070.0	10070.0	10.49	400	570	0.60	75.63	0.01	220.950	219.55	219.15	220.950	219.54	219.14	1.80	1.81	1.80
13.	A7	A8	46.0	3780.0	10070.0	13850.0	14.43	400	570	0.60	75.63	0.08	220.950	219.54	219.14	220.900	219.46	219.06	1.81	1.84	1.82
14.	A8	D.C.04	2.0	0.0	13850.0	13850.0	14.43	400	570	0.60	75.63	0.00	220.900	219.46	219.06	220.900	219.46	219.06	1.84	1.84	1.84
15.	D.C.04	***R.P.04***	2.0	0.0	13850.0	13850.0	14.43	400	570	0.60	75.63	0.00	220.900	219.46	219.06	220.900	219.46	219.06	1.84	1.84	1.84
16.	***R.P.04***	A9	3.0	0.0	13850.0	13850.0	14.43	400	570	0.60	75.63	0.01	220.900	219.50	219.10	220.900	219.49	219.09	1.80	1.81	1.80
17.	A9	A10	39.0	3360.0	13850.0	17210.0	17.93	400	570	0.60	75.63	0.07	220.900	219.49	219.09	220.850	219.43	219.03	1.81	1.82	1.81
18.	A10	D.C.05	2.0	0.0	17210.0	17210.0	17.93	400	570	0.60	75.63	0.00	220.850	219.43	219.03	220.850	219.42	219.02	1.82	1.83	1.83
19.	D.C.05	***R.P.05***	2.0	0.0	17210.0	17210.0	17.93	400	570	0.60	75.63	0.00	220.850	219.42	219.02	220.850	219.42	219.02	1.83	1.83	1.83
20.	***R.P.05***	A11	4.0	0.0	17210.0	17210.0	17.93	400	570	0.60	75.63	0.01	220.850	219.45	219.05	220.850	219.44	219.04	1.80	1.81	1.80
21.	A11	A12	40.0	3170.0	17210.0	20380.0	21.23	400	570	0.60	75.63	0.07	220.850	219.44	219.04	220.850	219.37	218.97	1.81	1.88	1.84
22.	A12	D.C.06	2.0	0.0	20380.0	20380.0	21.23	400	570	0.60	75.63	0.00	220.850	219.37	218.97	220.850	219.37	218.97	1.88	1.88	1.88

S.No.	Line No.		Length	Catchment Area (Sqm.)			Discharge @ 6.25 mm / hr rainfall	Pipe dia	Slope 1 in	Velocity m/sec.	Capacity of pipe	Fall in line	Levels at start (mtr.)			Levels at End (mtr.)			Manhole Depth		
																			Depth (mtr.)		Avg.
	From	To	(mtr.)	Self	Progg.	Total	60% runoff (lps)	(mm)	(mm)	m/sec.	lps.	mtr.	FRL	FSL	IL	FRL	FSL	IL	Start	End	Depth
23.	D.C.06	***R.P.06***	2.0	0.0	20380.0	20380.0	21.23	400	570	0.60	75.63	0.00	220.850	219.37	218.97	220.850	219.37	218.97	1.88	1.88	1.88
24.	***R.P.06***	A13	4.0	0.0	20380.0	20380.0	21.23	400	570	0.60	75.63	0.01	220.850	219.45	219.05	220.850	219.44	219.04	1.80	1.81	1.80
25.	A13	A14	37.0	2240.0	20380.0	22620.0	23.56	400	570	0.60	75.63	0.06	220.850	219.44	219.04	220.800	219.38	218.98	1.81	1.82	1.81
26.	A15	A16	25.0	1520.0	0.0	1520.0	1.58	400	570	0.60	75.63	0.04	220.950	219.55	219.15	220.950	219.51	219.11	1.80	1.84	1.82
27.	A16	D.C.07	2.0	0.0	1520.0	1520.0	1.58	400	570	0.60	75.63	0.00	220.950	219.51	219.11	220.950	219.50	219.10	1.84	1.85	1.85
28.	D.C.07	***R.P.07***	2.0	0.0	1520.0	1520.0	1.58	400	570	0.60	75.63	0.00	220.950	219.50	219.10	220.950	219.50	219.10	1.85	1.85	1.85
29.	***R.P.07***	A17	4.0	0.0	1520.0	1520.0	1.58	400	570	0.60	75.63	0.01	220.950	219.55	219.15	220.950	219.54	219.14	1.80	1.81	1.80
30.	A17	A18	34.0	2910.0	1520.0	4430.0	4.61	400	570	0.60	75.63	0.06	220.950	219.54	219.14	220.950	219.48	219.08	1.81	1.87	1.84
31.	A18	D.C.8	2.0	0.0	4430.0	4430.0	4.61	400	570	0.60	75.63	0.00	220.950	219.48	219.08	220.950	219.48	219.08	1.87	1.87	1.87
32.	D.C.8	***R.P.08***	2.0	0.0	4430.0	4430.0	4.61	400	570	0.60	75.63	0.00	220.950	219.48	219.08	220.950	219.48	219.08	1.87	1.87	1.87
33.	***R.P.08***	A19	5.0	0.0	4430.0	4430.0	4.61	400	570	0.60	75.63	0.01	220.950	219.55	219.15	220.950	219.54	219.14	1.80	1.81	1.80
34.	A19	A20	54.0	3270.0	4430.0	7700.0	8.02	400	570	0.60	75.63	0.09	220.950	219.54	219.14	220.900	219.45	219.05	1.81	1.85	1.83
35.	A20	D.C.09	2.0	0.0	7700.0	7700.0	8.02	400	570	0.60	75.63	0.00	220.900	219.45	219.05	220.900	219.44	219.04	1.85	1.86	1.86
36.	D.C.09	***R.P.09***	2.0	0.0	7700.0	7700.0	8.02	400	570	0.60	75.63	0.00	220.900	219.44	219.04	220.900	219.44	219.04	1.86	1.86	1.86
37.	***R.P.09***	A21	4.0	0.0	7700.0	7700.0	8.02	400	570	0.60	75.63	0.01	220.900	219.50	219.10	220.900	219.49	219.09	1.80	1.81	1.80
38.	A21	A22	55.0	3330.0	7700.0	11030.0	11.49	400	570	0.60	75.63	0.10	220.900	219.49	219.09	220.850	219.40	219.00	1.81	1.85	1.83
39.	A22	D.C.10	2.0	0.0	11030.0	11030.0	11.49	400	570	0.60	75.63	0.00	220.850	219.40	219.00	220.850	219.39	218.99	1.85	1.86	1.86
40.	D.C.10	***R.P.10***	2.0	0.0	11030.0	11030.0	11.49	400	570	0.60	75.63	0.00	220.850	219.39	218.99	220.850	219.39	218.99	1.86	1.86	1.86
41.	***R.P.10***	A23	3.0	0.0	11030.0	11030.0	11.49	400	570	0.60	75.63	0.01	220.850	219.45	219.05	220.850	219.44	219.04	1.80	1.81	1.80
42.	A23	A24	79.0	6780.0	11030.0	17810.0	18.55	400	570	0.60	75.63	0.14	220.850	219.44	219.04	220.800	219.31	218.91	1.81	1.89	1.85
43.	A24	D.C.11	3.0	0.0	17810.0	17810.0	18.55	400	570	0.60	75.63	0.01	220.800	219.31	218.91	220.800	219.30	218.90	1.89	1.90	1.90
44.	D.C.11	***R.P.11***	3.0	0.0	17810.0	17810.0	18.55	400	570	0.60	75.63	0.01	220.800	219.30	218.90	220.800	219.30	218.90	1.90	1.90	1.90
45.	***R.P.11***	A25	4.0	0.0	17810.0	17810.0	18.55	400	570	0.60	75.63	0.01	220.800	219.40	219.00	220.800	219.39	218.99	1.80	1.81	1.80

S.No.	Line No.		Length	Catchment Area (Sqm.)			Discharge @ 6.25 mm / hr rainfall	Pipe dia	Slope 1 in	Velocity m/sec.	Capacity of pipe	Fall in line	Levels at start (mtr.)			Levels at End (mtr.)			Manhole Depth		
																			Depth (mtr.)		Avg.
	From	To	(mtr.)	Self	Progg.	Total	60% runoff (lps)	(mm)	(mm)	m/sec.	lps.	mtr.	FRL	FSL	IL	FRL	FSL	IL	Start	End	Depth
46.	A25	A14	67.0	4050.0	17810.0	21860.0	22.77	400	570	0.60	75.63	0.12	220.800	219.39	218.99	220.800	219.28	218.88	1.81	1.92	1.87
47.	A14	D.C.12	2.0	0.0	44480.0	44480.0	46.33	400	570	0.60	75.63	0.00	220.800	219.28	218.88	220.800	219.27	218.87	1.92	1.93	1.93
48.	D.C.12	***R.P.12***	2.0	0.0	44480.0	44480.0	46.33	400	570	0.60	75.63	0.00	220.800	219.27	218.87	220.800	219.27	218.87	1.93	1.93	1.93
49.	***R.P.12***	**To Huda**	25.0	0.0	44480.0	44480.0	46.33	500	770	0.60	117.98	0.03	220.800	219.40	218.90	220.000	219.37	218.87	1.90	1.13	1.52

Formula Used:

Velocity(m/s)=(1/n)x(A/P)^(2/3)*(1/slope)^.5

n=.015 for RCC pipe (Manning's Coefficient)

A=Area of x-section of pipe in sqm.

P =Wetted Perimeter in m

Capacity of pipe(lps) =Area of x-section of pipe in sqm x velocity in m/s x1000x1/2(Storm water are designed to run full flow)

Abbreviation Used:

IL=Invert level of pipe

FSL=Full supply level

FRL=Formation Road Level

CL=Connection Level

C.E. No. 11290
Dated 11/9/14

Annexure-A

SUB:- **Approval of service plan /estimate for Group Housing Colony on the land measuring 11.125 acres being developed by M/S. Vatika Ltd. (License No. 87 of 2013 dated 11.10.2013) at Village Harsaru in Sec-889A Gurgaon.**

Technical note and comments:-

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

SE-2
11/9

EE(W)
10/9/14

C.E. No. 1290

Dated:- 11/9/14

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

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

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

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

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

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

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

11/9

Executive Engineer (W),

For Chief Administrator, HUDA,

Panchkula

10/9/14