PROPOSED BUILDIND PLAN FOR GROUP HOUSING COLONY AREA MEASURING 29.34675 ACRE

AT
GURGAON MANESAR URBAN COMPLEX, SECTOR-77, HARYANA

SERVICE PLAN ESTIMATE
ON
PUBLIC HEALTH ENGINEERING SERVICES

Client

SH. SANJAY PASSI, ROBIN SOFTWARE LLP,
NEEMRAN DEVELOPERS PVT. LTD.
C/o EMAAR MGF LAND LTD.

Architect

ARCOP ASSOCIATES (P.) LTD
PLOT NO. - 36, SECTOR - 32, GURGAON

Plumbing & Fire Suppression Consultant

PARADISE CONSULTANTS
PLOT NO. 103, POCKET-1, BASEMENT, NEAR LIVING STYLE MALL, JASOLA VIHAR, 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-77, 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 - 77, at Gurgaon for development by **SH. SANJAY PASSI, ROBIN SOFTWARE LLP, NEEMRAN DEVELOPERS PVT. LTD. C/o EMAAR MGF LAND LTD.**

Water Supply

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.

1 **Source**

The source of water supply in this area is tubewells as the underground water is sweet and fit for human consumption, moreover, the water is available at reasonable depth.The average yield of tubewell with 60'–80' strainer will be about 15000 lph per hour. The recharging of under ground water table in this belt is stated to be good. However still we shall resort to rain water harvesting system to keep up the recharging system. The number of tubewells required for the above area has been worked out to 9 Nos and the tubewells will be bored in tune with growth of demand to avoid absolence of the tubewells.But provide 5 Nos. tubewell 50% of total requirement.

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. ~~2292.48~~ lacs** which includes 3% contingency and PE charges and 49% departmental charges also.				31565	
	The cost per gross acre for this phase works out to **Rs. ~~78.12~~ 107.57 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.					
	SH. SANJAY PASSI, ROBIN SOFTWARE LLP, NEEMRAN DEVELOPERS PVT. LTD. C/o EMAAR MGF LAND LTD.					
	Authorised Signatory					

Paradise Consultants New Delhi

Arcop Associates Pvt. Ltd. Gurgaon

GROUP HOUSING, SECTOR-77, GURGAON (HARYANA)

	DESIGN CALCULATION					
1	**Daily Domestic Water Requirement**					
	Nos. of Blocks			**PART- I**	**PART- II**	
	Apartment			738	775	
	EWS			0	267	
	Service Personnel			7	152	
	Population @ 5 person per unit - Apartment			5	5	
	Population @ 5 person per unit - EWS			5	5	
	Population @ 2 person per unit - Service Personnel			2	2	
	Therefore population (Apartment)			3690	3875	persons
	Therefore population (EWS)			0	1335	persons
	Therefore population (Maintenance Personnel)			14	304	persons
	Total Population			**3704**	**5514**	**persons**
			SAY	**3704**	**5514**	**persons**
	Water requirement for apartmant		@	172.5	172.5	lpd.
				638940.00	951165.00	lpd.
			or	**638.94**	**951.17**	**KLD (1)**
2	**Other Requirement**					
a.)	Nursery School	1	@	10000	-	lit/day
	Therefore daily water requirement			10000	-	lit/day
				10.00	0.00	KLD
b.)	Primary School	2	@	-	~~10000~~ 25	lit/day
	Therefore daily water requirement			-	~~20000~~	lit/day
				0.00	~~50~~.00	KLD
c.)	No. of Community Building	1	@	-	25000	lit/day
	Daily water requirement lumpsum			-	25000	lit/day
	Therefore daily water requirement			0.00	25.00	KLD
d.)	No. of Convenient Shopping	1	Lumpsum	-	5000	lit/day
	Daily water requirement lumpsum			-	5000	lit/day
	Therefore daily water requirement			0.00	5.00	KLD

e.)	No. of M.L.C.P.	1	Lumpsum	-	15000	lit/day
	Daily water requirement lumpsum			-	15000	lit/day
	Therefore daily water requirement			0.00	15.00	KLD
					95.00	
			Total	**10.00**	~~**65.00**~~	**KLD (2)**
3	Total Daily Water Requirement (1+2)			**648.94**	**1046.17**	**KLD**
				FC		
i)	Domestic Water Requirement @	65%		421.81 ~~425.31~~	680.01 ~~667.51~~	KLD
			Say	425 ~~430.00~~	680 ~~670.00~~	**KLD**
ii)	Flushing Water Requirement @	35%		227.12 ~~223.63~~	366.16 ~~348.66~~	KLD
			Say	**230.00**	~~**350.00**~~	**KLD**
					370.00	
4	**Water usage from STP**					
a)	Area under Parks	5.14	acre			
	Daily water requirement		@	-	25000	lit/acre/day
				-	128500.00	lit/day
				0.00	128.50	KLD
b)	Area under Roads					
	Daily water requirement		Lumpsum	-	25000	lit/acre/day
				-	25000	lit/day
				0.00	25	KLD
c)	Under Road+ Parks **(a+b)**		**Total**	0.00	153.50	KLD
			Say	**0.00**	**160.00**	**KLD**
d)	**Total treated water requirement [3 (ii) + c]**			**230.00**	**530.00**	KLD
				655.00	1210.00	
	Total Daily Requirement [3 (i) + d]			~~**660.00**~~	~~**1180.00**~~	**KLD**
				655.00	1210.00	
			SAY	~~**660.00**~~	~~**1180.00**~~	**KLD**

I	**Tubewell**					
	Assuming working hours of tubewells			10	10	hours
	Assuming discharge/hour of each tubewell			18	18	KL/hours
	Total fresh water demand			425 ~~430.00~~	680 ~~670.00~~	KLD
		425 & 680				
	No. of tubewells required	~~430 & 670~~	/10/18	2.36	~~4.47~~	3.77
	~~Add 10% standby.~~			~~0.29~~	~~0.45~~	
			Total	2.36 ~~3.15~~	~~4.91~~	3.77
			Say	2.00	~~5.00~~ 4.00	
	Provide no. of tubewell = 50% of total requirement.					
	For **PART- I** Provide 2 Nos. of tubewell with 180 KL/hour discharge.					
	However as it is expected that the water supply would be made avaible by HUDA.It is proposed to install only 2 No. tubewell as standby / makeup source of water.					
	For **PART- II** Provide 3 Nos. of tubewell with 180 KL/hour discharge.					
	However as it is expected that the water supply would be made avaible by HUDA.It is proposed to install only 3 No. tubewell as standby / makeup source of water.					
II	**Pumping machinery for tubewell**					
	Gross working load		=	65.00	65.00	m
	Average fall in SL		=	3.05	3.05	m
	Depression head		=	6.10	6.10	m
	Friction loss in main		=	2.50	2.50	m
			=	76.65	76.65	m
		Say	=	**77.00**	**77.00**	m
	BHP = 18000x77x1/60x60x75x0.6		=	8.56	8.56	BHP
	With 60% efficiency	Say		10.0	10.0	BHP
III	**Underground Tank**			425.00	680.00	
	Daily fresh water requirement for domestic use			~~430.00~~	~~670.00~~	KL
	Capacity of under ground tank	425 & 680		425.00	680.00	
	24 hours storage	~~430 & 670~~	x 24 / 24	~~430.00~~	~~670.00~~	KL
	Fire Tank Capacity As/NBC Code 100 kl. But Proposed			200.00	400.00	KL
			Total	625 ~~630~~	1080	**KL**
	PART- I					
	It is proposed to provide under ground tank of capacity **630KL** which also includes **200 KL** capacity for fire fighting.					
	PART- II					
	It is proposed to provide under ground tank of capacity **1080KL** which also includes **400 KL** capacity for fire fighting.					
	Both (PART- I & PART- II) 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			**200.00**	**400.00**	**KL**
	TOTAL UG STORAGE (DOMES + FLUSH + HORTICULTURE)			**660.00**	**1180.00**	**KL**
	RAW WATER TANK			**200.00**	**300.00**	**KL**
	DOMESTIC WATER TANK			**230.00**	**370.00**	**KL**
	FLUSHING, HORTICUL. & ROAD WASHING (PART OF STP)			**230.00**	**510.00**	**KL**
IV	**DOMESTIC WATER PUMPS - LOCATED IN PUMP ROOM**					
a.)	**For PART- I Towers & Nuersery School**				421.81	
	Daily requirement for domestic use			=	~~425.34~~	KL
	Assuming 6 hours running 2 pumps (with one standby)	421.81				
	Discharge/hour	~~425.34~~	/ 6 / 2	=	35.~~45~~	KL/HR
	Head of pump					585.83 Lpm
	i) Suction lifts			=	0.0	m Say 600 Lpm
	ii) Friction loss in M<main & specials			=	7.0	m
	iii) Residual head			=	5.0	m
	iv) Clear head			=	41.0	m
				=	53.0	m
	BHP of motor	35.~~45~~	x1000x53/4500x60x0.6		11.~~8~~	HP
	⊗ PL. See opp.		**SAY**	=	**12.5**	**HP**
b.)	**For PART- II Towers, EWS, Community Building, Shopping, MLCP & Primery Schools**				680.01	
	Daily requirement for domestic use			=	~~667.51~~	KL
	Assuming 6 hours running 5 pumps (with one standby)	680.01			22.67	
	Discharge/hour	~~667.51~~	/ 6 / 5	=	~~22.25~~	KL/HR
	Head of pump					377.78 Lpm
	i) Suction lifts			=	0.0	m Say 400 Lpm
	ii) Friction loss in M<main & specials			=	3.0	m
	iii) Residual head			=	5.0	m
	iv) Clear head			=	89.0	m
				=	97.0	m
					13.57	
	BHP of motor	22.~~67~~	x1000x97/4500x60x0.6		~~13.3~~	HP
	⊗ PL. See opp.		**SAY**	=	**15.0**	**HP**

5	**PUMPS FOR FIRE PROECTION**					
	FOR PART- I					
	Pump Description	**Location**	**Nos.**	**Discharge**	**Head**	**HP**
i)	**Diesel Driven Pump**	Pump Room	**1**	**1620**	**95.00**	
ii)	**Hydrant Pump**	Pump Room	**1**	**1620**	**95.00**	**60**
iii)	**Sprinkler Pump**	Pump Room	**1**	**1620**	**95.00**	**60**
iv)	**Jockey Pump**	Pump Room	**1**	**180**	**95.00**	**7.5**
	FOR PART- II					
	Pump Description	**Location**	**Nos.**	**Discharge**	**Head**	**HP**
i)	**Diesel Driven Pump**	Pump Room	**1**	**2850**	**135.00**	**-**
ii)	**Hydrant Pump**	Pump Room	**1**	**2850**	**135.00**	**150**
iii)	**Sprinkler Pump**	Pump Room	**1**	**2850**	**135.00**	**150**
iv)	**Jockey Pump**	Pump Room	**1**	**180**	**135.00**	**15**
v)	**Water Curtain Pump**	Pump Room	**1**	**2850**	**45.00**	**50**
	Capacity of Gen Set	Nos.	HP			
	Domestic Water Transfer Pumps for **PART- I** Towers & Nursery Schools	2	12.5	=	25	HP
	Domestic Water Transfer Pumps for **PART- II** Towers, EWS, Community, Shopping & Primary Schools	5	15.0	=	75	HP
	Flushing water Pump Part I+II 2+5 X 7.50				52.50	
	Fire Pump (Jockey) For **PART- I**	1	7.5	=	7.5	HP
	Fire Pump (Jockey) **For PART- II**	1	15.0	=	15	HP
	Tube Well	4	10.0	=	40 ~~75~~	HP
	Lighting			=	25	HP
					240 ~~222.5~~	HP
		240			260.56	
	or	~~222.5~~	x0.746x1.50		~~248.98~~	KVA
			Say		260 ~~250.00~~	KVA
	Requirement of 260 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

SH. SANJAY PASSI, ROBIN SOFTWARE LLP, NEEMRAN DEVELOPERS PVT. LTD. C/o EMAAR MGF LAND LTD.

	Amount (Lacs.)
Rs.	668.30 ~~635.83~~
Sub Work - I Water Supply	
Rs.	362.26 ~~247.69~~
Sub Work - II Sewerage	
Rs	259.73 ~~495.88~~
Sub Work - III Storm Water Drainage	
Rs	790.40 ~~533.86~~
Sub Work - IV Roads & Footpath	
Rs	112.58 ~~76.82~~
Sub Work - V Street Lighting	
Rs	17.03 ~~45.71~~
Sub Work - VI - Horticulture	
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.	946.20 ~~554.07~~
Total	3156.50 ~~2292.48~~

~~(RUPEES TWENTY TWO CRORE NINETY TWO LACS FOURTY EIGHT THOUSAND ONLY)~~

Dev. Cost Rs. 3156.50 lacs = 107.55 lacs
29.34675 Acs

SH. SANJAY PASSI, ROBIN SOFTWARE LLP, NEEMRAN DEVELOPERS PVT. LTD. C/o EMAAR MGF LAND LTD.

Authorized Signatory

Paradise Consultants New Delhi

Arcop Associates Pvt. Ltd. Gurgaon

Executive Engineer
HUDA, Division No.-VI
Gurgaon

Checked subject to comments in forwarding letter No. 25134 Dt. 15/12/16 and notes attached with the estimate

Executive Engineer (W)
for Chief Engineer
HUDA Panchkula

Superintending Engineer
HUDA Circle-II, Gurgaon

FINAL ABSTRACT OF REVISED COST

	Amount (Lacs.)	Amount (Lacs.)
	Rs.	125.85
	Sub Head - (I) Head Works	~~411.50~~
	Rs.	135.00
	Sub Head - (II) Pumping Machinery	~~97.50~~
	Rs.	86.62 Lacs
	Sub Head - (III) Distribution System	~~86.52~~
	Rs.	13.21
	Sub Head - (IV) Irrigation Scheme	~~25.46~~
	Rs.	74.78
	Sub Head - (V) Fire Scheme	~~93.32~~
		435.46
	Total	~~414.30~~
	Add 3% Contingencies & PE. Charges	13.06 ~~12.43~~
		448.52
	Total	~~426.73~~
	Add 49% Departmental Charges, price escalation	219.78 ~~209.10~~
	unforseen, Adm.	
	Grand Total	668.30 Lacs ~~635.83~~
	(CO to final abstract of cost) **Say**	~~636.83~~

	Sub Work I				Water Supply	
	Sub Head No. I				Head Works	
S. No.	Description	Unit	Qty	Rate	Amount	
					Rs. (lacs)	
1	Boring and installing 510 mm i/d tubewells with reverse/direct rotary rig complete with pipe strainer to a depth of about 80 m. complete.	Nos.	~~5~~ 4	~~500000.00~~ 10-00	~~25.00~~ 40.00	
2	Constructing pump chambers as per standard design of PWD PH/HUDA of size 1.50x1.50 m. ~~for~~ Housing T.W.	Nos.	5 4	100000.00	~~5.00~~ 4.00	
3	Construction of boosting chambers of suitable size along with under ground tank of capacity **630 KL & 1070 KL** pumping machinery and generating set etc. complete in all respects.					
	Details of boosting station					
i)	construction of boosting chamber ~~two~~ location	Nos.	2	7.50	15.00	
ii)	UG tank **630 KL + 1070 KL** capacity incl. 200KL + 400 KL for fire fighting in two compartments @ ~~3000/KL~~ at two location	KL	~~1700~~ 1710	3500/-	~~59.50~~ 59.85	
4	Provision for carriage of material and other unforeseen items.	LS	-	-	2.00	
5	Provision for facilites staff for Maintenance	LS	-	-	5.00	
					125.85 Lacs	
	(C.O. to abstract of cost of Sub-work No.I)				~~111.50 Lacs~~	
				~~Say~~	~~111.50 Lacs~~	

	Sub Work I				Water Supply
	Sub Head No. II				Pumping Machinery
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)
1	Providing and installing electricity driven electro or submersible pumping set capable of delivering about 18.0 KL water per hour against a total head of 77.0 M complete with motor and other accessories. (For Tubewell -10.0 HP)	Nos.	4 ~~5~~	200000.00	8.00 ~~5.00~~
2	Providing & installing electricity driven pumping set capable of delivering 600 LPM of water against a total head of 53 m complete with motor and other accessories (For Domestic - 12.5 HP). Pt. I	Nos.	(2+1) 3	150000.00	4.50 ~~3.60~~
	2(a) — do — 320 LPM, Head 53 m, 7.5 HP For Flushing part J		(2+1) 3	1.00 Lac	3.00 Lacs
3	Providing & installing electricity driven pumping set capable of delivering 380 LPM of water against a total head of 97 m complete with motor and other accessories (For Domestic - 15.0 HP). Pt. II	Nos.	(5+1) 6	150000.00	9.00 ~~8.40~~
	3(a) — do — 210 LPM, 97 m Head, 7.5 HP For Flushing		(5+1) 6	1.00 Lac	6.00 Lacs
2	Provision for diesel engine generator set each for standby Arrangements for booster pump complete with gear haed arrangements of following capacities.			(L.S)	25.00
	1 No. - 250 KVA	Nos.	1	~~2000000.00~~	~~20.00~~
3	Providing & installing pumping set of following capacities for fire protection:				
	For **PART- I**				
i)	180 LPM @ 95 M Head (7.5 HP)	Nos.	1	200000.00	2.00
ii)	1620 LPM @ 95 M Head (60 HP) Hydrant	Nos.	1	6.00 ~~450000.00~~	6.00 ~~4.50~~
iii)	1620 LPM @ 95 M Head (60 HP) Sprinkler	Nos.	1	6.00 ~~450000.00~~	6.00 ~~4.50~~
iv)	1620 LPM @ 95 M Head (DG Pump)	Nos.	1	~~600000.00~~ 7.50 Lac	7.50 ~~6.00~~
	For **PART- I**				
i)	180 LPM @ 135 M Head (15 HP)	Nos.	1	250000.00	2.00 ~~1.50~~
ii)	2850 LPM @ 135 M Head (150 HP) Hydrant	Nos.	1	750000.00	7.50
iii)	2850 LPM @ 135 M Head (150 HP) Sprinkler	Nos.	1	750000.00	7.50
iv)	2850 LPM @ 135 M Head (DG Pump)	Nos.	1	1000000.00	10.00
v)	2850 LPM @ 45 M Head (50 HP) Water Curtain Pump	Nos.	1	400000.00	4.00
4	Provision for diesel engine genset stand bye arrangements for Tubewells.	Nos.	4 ~~5~~	150000.00	6.00 ~~7.50~~
5	Provision for cheap pressure type chlorination plant complete.	Nos.	4 ~~6~~	15000.00	4.00 ~~0.75~~
6	Provision for making foundations & erection of pumping machinery.	LS	-	-	5.00 ~~1.00~~
7	Provision for pipes, valves & specials inside the pump chamber.	LS	-	-	5.00 ~~1.25~~

8	Provision for electric services connection including electric fittings for tubewells chambers complete. incl. cost of transformer	LS	-	-	S.w ~~2.50~~	
9	Provision for carriage for materials and other unforeseen items.	LS	-	-	1,00	
	(C.O. to abstract of cost of Sub-work No.I)				135.w ~~97.50~~	
				Say	~~97.50~~	

	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.					
i)	100 mm dia	M	2748	1250.00	3435000.00	
ii)	150 mm dia	M	1948	1575.00	3068100.00	
iii)	200 mm dia	M	50	~~1950.00~~ 2150/-	97500.00 1.08 Lacs	
2	Providing, fixing & Testing Sluice valves including cost of complete in all respects.				1.68 Lacs	
i)	100 mm i/d	Nos.	7+7	12000.00	~~84000.00~~	
ii)	150 mm i/d	Nos.	3+3	15000.00	~~45000.00~~ 0.90 Lacs	
iii)	200 mm i/d	Nos.	2	20000.00	40000.00	
3	Providing, fixing & Testing Non Return valves (NRV) including cost of complete in all respects.					
i)	100 mm i/d	Nos.	5	12000.00	60000.00	
5	Providing and fixing air valves and scour valves including cost of complete in all respects.	Nos.	6	10000.00	60000.00	
6	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	23	1000.00	23000.00	
7	Provision for carriage of material & other unforseen items		-	-	~~150000.00~~ 3.00 Lacs	
8	Provision for cutting the roads and making to its original conditions.	LS	-	-	150000.00	
~~9~~	~~Making water supply connection.~~	~~LS~~	-	-	~~250000.00~~	
10	Provision for rising main from HUDA water supply line to UG Tank.		144		1.80	
i)	100 mm i/d (Tube Line)	M	~~160~~	1250.00	~~200000.00~~	
ii)	150 mm i/d (Tube Line)	M	~~84~~ 137	1575.00	~~132300.00~~	2.16
iii)	~~200 mm i/d (Tube Line)~~ connecting civ. + UGT (m-I)	~~M~~	~~53~~	~~1950.00~~	~~103350.00~~	
iv)	100 mm i/d (~~Connection From HUDA Line~~)	M	540	1250.00	675000.00	
v)	150 mm i/d (Connection From HUDA Line) + (m-I)	M	50	1575.00	78750.00	
	(C.O. to abstract of cost of Sub-work No.I)				8662000.00	
				Say	86.62	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 to Flushing line	M	~~2886~~	~~800.00~~	~~2308800.00~~	
	20/25 mm d irrigation Hydrant line		(L.S)		10-0	
2	Providing and fixing 20mm dia Irrigation hydrant valve complete in all respect.	Nos.	61	3500/- ~~4200.00~~	2.14 Lacs ~~73200.00~~	
~~3~~	~~Providing & fixing valve 25mm dia~~	~~Nos.~~	~~61~~	~~400.00~~	~~24400.00~~	
~~4~~	~~Providing, fixing & Testing Sluice valves including cost of complete in all respects.~~					
~~i)~~	~~80 mm i/d~~	~~Nos.~~	~~5~~	~~4750.00~~	~~23750.00~~	
~~5~~	~~Providing and fixing air valves and scour valves including cost of complete in all respects.~~	~~Nos.~~	~~2~~	~~4500.00~~	~~9000.00~~	
3	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	7	1000.00	7000.00	
4	Provision for carriage of materials etc. and other unforsean charges	LS	-	-	50000.00	
5	Provision for cutting of roads & making good to its in original condition	LS	-	-	50000.00	
					13.21 Lacs	
			Total		~~2546150.00~~	
			Say		~~25.46 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/-	61.43 Lacs	
a)	150 mm dia	M	3980	~~2000.00~~	~~7872000.00~~	
b)	80 mm dia	M	300	1000.00	300000.00	
2	Providing and fixing External Fire Hydrants complete with masonary chambers.	Nos.	30	15000.00	3.60 Lacs ~~450000.00~~	
3	Providing & fixing valve 150mm dia.			15000/-	1.05 Lacs	
a)	150 mm dia	Nos.	7	~~20000.00~~	~~140000.00~~	
b)	80 mm dia	Nos.	30	10000.00	300000.00	
4	Providing, fixing & Testing Non Return valves (NRV) including cost of complete in all respects.					
i)	80 mm i/d	Nos.	30	5000.00	150000.00	
5	Provision for cutting of roads and carriage of materials etc. and other unforsean charges	LS	-	-	40000.00	
6	Provision for indication plates	Nos.	30	1000.00	30000.00	
7	Provision for carriage of material	LS	-	-	50000.00	
					74.78 Lacs	
			Total		~~**9332000.00**~~	
			Say		**93.32**	**Lacs**

	Sub Work II			Sewerage Scheme	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)
1	Providing, lowering, jointing, cutting salt glazed stone ware / RCC NP3 pipes and specials into trenches including cost of excavation, bed concrete lot of manholes complete.				
i)	**200 mm i/d** (S.W. PIPE)				23.39 Lacs
a)	Average depth 0.0 m to 1.5 m	M	1871	1350.00	~~2525850.00~~
i)	**250 mm i/d** (S.W. PIPE)			1700/-	2.18 Lacs
a)	Average depth 0.0 m to 1.5 m	M	128	~~1650.00~~	~~211200.00~~
b)	Average depth 1.5 m to 4.5 m	M	139	1800.00	250200.00
ii)	**300 mm i/d** (S.W. PIPE)			2150/-	4.86 Lacs
a)	Average depth 0.0 m to 1.5 m	M	226	~~1850.00~~	~~418100.00~~
iii)	**400 mm i/d** (S.W. PIPE)				7.98 Lacs
a)	Average depth 0.0 m to 1.5 m	M	319	2500.00	~~660000.00~~
b)	Average depth 1.5 m to 4.5 m	M	133	~~2250.00~~	~~299250.00~~
				2700/-	3.59 Lacs
iv)	**700 mm i/d** (RCC NP.3)			5085/	2.08 Lacs
a)	Average depth 1.5 m to 4.5 m	M	41	~~2950.00~~	~~120950.00~~
2	Provision for lighting, watching and temporary diversion of traffic	LS	-	-	500000.00
3	Provision for cutting of roads and carriage of materials etc. and other unforsean charges	LS	-	-	100000.00
4	Provision for connection with HUDA on master road	LS	-	-	0.50 ~~200000.00~~
5	Cost of **1350 Kld** Sewerage Treatment Plant. (Tertiary treatment)	LS	-	-	170.00 Lacs ~~41000000.00~~
6	Provision for CI / DI pipe 150 mm dia pipe from STP. To Huda Main Line.	M	125	1575/ ~~1950.00~~	1.97 Lacs ~~243750.00~~
7.	Prov. for vent pipe as per P.H. rep. (2.5)				10.00 Lac
					~~16139200.00~~
					236.65 Lacs
	Add 3% contingencies on PE. charges				7.08 Lacs ~~484176~~
					~~16623376.00~~ 243.13 Lacs
	Add 49% Deptt. Charges, price escalation, unforseen Adum. charges				119.13 Lac ~~8145454.24~~
				Total	~~24768830.24~~ 362.26 Lacs
	(C.O. to abstract of cost of Sub-work No. 1)			Say	~~247.69 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~~	~~250~~	~~1650.00~~	~~412500.00~~	
ii)	**400 mm i/d**				2.63 Lacs	
a)	Average depth upto 1.5 m	M	105	2500.00	~~220500.00~~	
b)	Average depth 1.5 m to 4.5 m	M	3106	~~2250.00~~ 2600/-	~~6988500.00~~ 80.76 Lacs	
iii)	**500 mm I/d**			3400/-	5.37 Lacs	
a)	Average depth 1.5 m to 4.5 m	M	158	~~2450.00~~	~~387100.00~~	
iv)	**600 mm i/d**			4070/-	0.98 Lacs	
a)	Average depth 1.5 m to 4.5 m	M	24	~~2750.00~~	~~66000.00~~	
					7.50 Lacs	
2	Provision for Road Gully & Drain. pipe 300 mmø	LS	-	-	~~450000.00~~	
					5.00 Lacs	
3	Provision for cutting of roads and carriage of materials etc. and other unforseen items.	LS	-	-	~~450000.00~~	
4	Provision for disposal arrangements Recharge Pit.					
~~i)~~	~~3.0 M dia Recharge Pit~~	Nos	16 } 30 Nos	~~150000.00~~	~~2400000.00~~	60.00 Lacs
~~ii)~~	~~1.2 M dia Recharge Pit~~	Nos	14 } (-5)	~~80000.00~~	1120000.00	
5	Provision for lighting, watching and temporary diversion of traffic, ~~fencing~~, shoring	LS	-	-	500000.00	
6	Provision for connection with HUDA		(2.5)		2.00 Lacs	
~~i)~~	~~600 mm i/d~~	~~M~~	~~25~~	~~2750.00~~	~~68750.00~~	
					169.24 Lacs	
					~~12763350.00~~	5.08 Lacs
	Add 3% contingencies ~~on~~ PE. charges				~~382900.50~~	
						174.32 Lacs
					~~43446250.50~~	
	Add 49% Deptt. Charges, price escalation, unforseen Admin. charges				~~6441662.745~~	85.41 Lacs
			Total		~~19587913.25~~	259.73 Lacs
		SAY			~~195.88~~	Lacs
	(C.O. to abstract of cost of Sub-work No. 1					

	Sub Work IV				Road Work	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Provision for leveling & earth filling as per site condition ~~29.34675 acre @ 125000/acre~~	Acres	29.34675	1.50 Lacs ~~100000~~	44.02 Lacs ~~2934675.00~~	
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) 57212.60 sqm.X0.10 m - 5721.26 cum say 5725 cum @ 950/ cum GSB 300 mm + WMM 250 mm ~~Cu. mtr.~~	~~5725~~	~~1000~~	~~5725000.00~~		
	ii) Wearing coat (dense) 100 mm thick 40 mm BC 22.4)mm gauge compacted to 75mm thick conforming to MOT specifications (table 400-6, grading no 3) 57212.60 sqm.X0.10 m – 5721.26 cum say 5721.26 cum @ 950/ cum ~~Cu. mtr.~~	~~5725~~	~~500~~	~~2862500.00~~		
	iii) 25mm thick pre-mix carpet with seal coat ~~57212.60 sqm. Say 57250 sqm @ 265/ sqm~~	Sq. mtr.	~~57250~~ 34800	~~265~~ 1000/-	~~15171250.00~~ 348.00 Lacs	
3	Provision for making approach and pavement to building block by providing concrete pavement or tiles. Etc. 1~~4240.18.00 sqm. Say 11250.00 sqm @ 500 / sqm~~.	Sq. mtr.	11250.00	600/-	67.50 Lacs ~~5625000.00~~	
4	Provision for ~~parking arrangement~~ Kerb & channel 1:2½:5 ~~3537.50 sqm.@ 500/sqm~~ Complete in all respect	~~Sq. mtr.~~	~~3637.5~~ 800 Rmt	600/-	48.00 Lacs ~~4768750.00~~	
5	Provision for Carriage of material & other unforseen items	LS.		~~450000.00~~	5.00 Lacs ~~450000.00~~	
6	Provision for traffic lighting and guide map/ indicators	LS.		~~250000.00~~	250000.00	
			~~Total~~		~~34787475.00~~	515.02
	Add 3% contingencies & PE charges				~~1043615.25~~	15.45
						530.47
					~~35830790.25~~	259.93
			~~Total~~		~~358.31 Lacs~~	
	Add 49 % department charges price escalation, unforseen, Admin.	SAY			~~175.57 Lacs~~ 790.40 Lacs ~~533.88 Lacs~~	

S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
	Sub Work V				**Street Lighting**	
1	Supply, installation, testing and commissioning of Street Lighting GI ~~Poles~~, Light ~~Fixtures~~, Feeder Pillars, Cables & Wires including equip. cable end terminations and Earthing Station ~~etc.~~ for Street Lighting on roads as per standard specification of HVPN with CFL	per acre	29.347	~~175000.00~~ 2.50 Lacs	~~5135681.25~~ 73.36 Lacs	
	Add 3% contingencies & PE Charges				~~154070.44~~ 2.20 Lacs	
	Total				~~5289751.69~~ 75.56 Lacs	
	Add 49% Deptt. Charges, price escalation unforseen, Admn. Charges				~~2591978.327~~ 37.02 Lacs	
			Total		~~7881730.00~~ 112.58 Lacs	
		SAY			~~78.82~~	Lacs

c.o. to 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)					
	20798.50 Sqm or 5.15 acre		5.15	1.50 lacs	7.72 lacs	
	~~29.34675 acres @ Rs. 0.00 lacs.~~	per acre	~~29.3468~~	~~00000.00~~	~~2,641,208~~	
(K)	Pl. see below. 450 trees @ Rs. 750/- each				3.38 ~~337,500~~	lacs
	SAPE				~~2978707.50~~	11.10 lacs
	Add 3% contingency charges				~~89364.23~~	0.33 lacs
				Total	~~3068068.73~~	11.43 lacs
	Add 49% Deptt. Charges, price escalation				~~1503353.66~~	5.60 lacs
	unforseen, Admn.			Total	~~4571422.40~~	
			say		~~45.71~~ Lacs	17.03 lacs

(K) Per-la planting trees along road side at 12 m interval

Cost details

Excavation = 30-00
manure = 60-00
Tree plant = 60-00
Tree guard = 600-00
₹ 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 draienage, 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.					
	29.34675 acres @ 5 lacs per acre	per acre	29.34675	500000.00	14673375	
2	Provision for resurfacing & strengthening of road after five years of Ist phase 6000 sqm @ 250/- per sqm ie. 100 mm thick BUSG carpet of 75 mm thick with 25 mm thick premix carpet with seal coat with mechanised paver	Sq. mtr.	~~57250~~ 34800	~~250~~ 600/-	~~44312500.00~~ 208.80	Lacs
3	Provision for resurfacing & strengthening of road after ten years of 2nd phase 6000 sqm @ 125/- per sqm ie. 25 mm thick premix carpet with seal coat with mechanised paver	Sq. mtr.	~~57250~~ 34800	~~125~~ 750/-	~~7156250.00~~ 261.00	Lacs
						616.54 Lacs
				Total	~~36142125~~	
						18.49 Lacs
	Add 3% contingency & PE charges				~~1084263.75~~	
						635.03 Lacs
				Total	~~37226388.75~~	311.17 Lacs
	Add 49% Departmetal charges, unforseen, price escalation, Admn.				~~18240930.49~~	
				Total	~~55467319.24~~	946.20 Lacs
				say	~~554.67~~	Lacs

c.o. to final abstract of cost

DOMESTIC WATER SUPPLY QUANTITY SHEET

S.No.	Line No	Length of Pipe mtr.	Dia of Pipe mm.
1 I	*Pump Room - D1*	25.0	200
2.	D1 - D2	87.0	150
3.	D2 - D3	145.0	150
4.	D3 - D5	80.0	150
5.	D3 - D4	106.0	100
6.	D4 - D5	23.0	100
7.	D5 - D6	131.0	150
8.	D6- D7	16.0	150
9.	D1 - D8	47.0	150
10.	D8 - D9	65.0	150
11.	D9 - D2	70.0	150
12.	D9 - D10	125.0	150
13.	D10 - D11	27.0	150
14.	D11 - D7	105.0	150
15.	D11 - D6	74.0	100
16. II	*Pump Room - DD1*	25.0	200
17.	DD1 - DD2	13.0	150
18.	DD2 - DD2a	76.0	150
19.	DD2 - DD3	54.0	150
20.	DD3 - DD3a	31.0	150
21.	DD3a - DD3b	51.0	150
22.	DD3a - DD4	162.0	100
23.	DD3 - DD4	110.0	150
24.	DD4 - DD5	130.0	100

S.No.	Line No	Length of Pipe mtr.	Dia of Pipe mm.
25.	DD2a - DD3b	52.0	100
26.	DD3b - DD5	163.0	100
27.	DD2a - DD7	113.0	100
28.	DD1 - DD6	104.0	150
29.	DD6 - DD7	95.0	100
30.	DD7 - DD8	68.0	100
FLUSHING WATER SUPPLY QUANTITY SHEET			
1	*STP - F1*	25.0	150
2.	F1 - F2	87.0	150
3.	F2 - F3	145.0	100
4.	F3 - F5	80.0	100
5.	F3 - F4	106.0	100
6.	F4 - F5	23.0	100
7.	F5 - F6	131.0	100
8.	F6 - F7	16.0	100
9.	F1 - F8	47.0	100
10.	F8 - F9	65.0	100
11.	F9 - F2	70.0	100
12.	F9 - F10	125.0	100
13.	F10 - F11	27.0	100
14.	F11 - F7	105.0	100
15.	F11 - F6	74.0	100
16.	*STP - FF1*	25.0	150
17.	FF1 - FF2	132.0	150

S.No.	Line No	Length of Pipe mtr.	Dia of Pipe mm.
18.	FF2 - FF3	31.0	150
19.	FF2 - FF2a	51.0	100
20.	FF2a - FF9	163.0	100
21.	FF2a - FF4a	52.0	100
22.	FF4a - FF6	113.0	100
23.	FF1 - FF8	29.0	150
24.	FF8 - FF9	130.0	100
25.	FF8 - FF3	110.0	150
26.	FF3 - FF4	54.0	150
27.	FF4 - FF4a	76.0	100
28.	FF4 - FF5	118.0	150
29.	FF5 - FF6	95.0	100
30.	FF6 - FF7	68.0	100
MUNICIPAL WATER SUPPLY QUANTITY SHEET			
1	Municipal - M1	50.0	150
2.	M1 - UGT 1	275.0	100
3.	M1 - UGT 2	265.0	100
TUBE WELL WATER SUPPLY QUANTITY SHEET			
1.	Tube Well 01 - T1	28.0	100
2.	Tube Well 02 - T1	32.0	100
3.	T1 - UGT 1	18.0	150
4.	Tube Well 03 - T2	80.0	100
5.	Tube Well 04 - T2	4.0	100
6.	T2 - T3	66.0	150
7.	~~Tube Well 04 - T3~~	~~16.0~~	~~100~~

S.No.	Line No	Length of Pipe	Dia of Pipe
		mtr.	mm.
8.	T3 - UGT 2	53.0	~~200~~ 150
		Length in (MTR)	**Pipe Dia (MM)**
Domestic & Flushing Water Supply line		2748.0	100
Domestic & Flushing Water Supply line		1948.0	150
Domestic & Flushing Water Supply line		50.0	200
		Length in (M)	**Pipe Dia**
Tube Well Water Supply line		~~460.0~~ 144	100
Tube Well Water Supply line		~~84.0~~ 137	150
~~Tube Well Water Supply line~~		~~53.0~~	~~200~~
Municipal Water Supply line		540.0	100
Municipal Water Supply line		50.0	150
100 Dia Valve		7	Nos.
150 Dia Valve		3	Nos.
~~200 Dia Valve~~		~~2~~	~~Nos.~~
100 Dia Non Return Valve		5	Nos.
Air Valve		6	Nos.

IRRIGATION WATER SUPPLY QUANTITY SHEET

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mm.
1	***STP.***	G1	25.0	80
2.	G1	G7	223.0	80
3.	G7	G12	40.0	80
4.	G7	G8	224.0	80
5.	G8	G9	149.0	80
6.	G9	G10	102.0	80
7.	G1	G2	40.0	80
8.	G2	G11	94.0	80
9.	G11	G23	57.0	80
10.	G11	G12	52.0	80
11.	G12	G13	37.0	80
12.	G13	G15	82.0	80
13.	G13	G14	41.0	80
14.	G14	G15	112.0	80
15.	G14	G24	43.0	80
16.	G2	G3	78.0	80
17.	G3	G16	51.0	80
18.	G16	G23	58.0	80
19.	G23	G24	66.0	80
20.	G24	G22	101.0	80
21.	G16	G17	27.0	80
22.	G17	G17a	50.0	80
23.	G17	G18	29.0	80
24.	G18	G18a	54.0	80
25.	G18	G19	29.0	80
26.	G19	G4	117.0	80

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mm.
27.	G19	G20	35.0	80
28.	G20	G20a	86.0	80
29.	G20	G21	55.0	80
30.	G21	G20a	68.0	80
31.	G21	G22	47.0	80
32.	G22	G10	25.0	80
33.	G10	G6	35.0	80
34.	G3	G4	149.0	80
35.	G4	G5	31.0	80
36.	G5	G5a	65.0	80
37.	G5	G6	309.0	80
Irrigation Water Supply line			**2886.0**	**80**
Garden Hydrant			**61**	**Nos.**
80 Dia Valve			**5**	**Nos.**
Air Valve			**2**	**Nos.**

FIRE QUANTITY SHEET

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mm.
1	***U.G.Tank 1***	B1	20.0	150
2.	B1	B2	67.0	150
3.	B2	B9	68.0	150
4.	B2	B3	24.0	150
5.	B3	B10	69.0	150
6.	B3	B4	148.0	150
7.	B4	B4a	141.0	150
8.	B4	B5	26.0	150
9.	B5	B6	155.0	150
10.	B6	B4a	8.0	150
11.	B6	B7	70.0	150
12.	B7	B8	17.0	150
13.	B1	B9	80.0	150
14.	B9	B10	26.0	150
15.	B10	B11	126.0	150
16.	B11	B12	29.0	150
17.	B12	B8	83.0	150
18.	B12	B13	30.0	150
19.	B13	B7	85.0	150
20.	B13	B4a	148.0	150
21.	Fire Brigade Inlet Connection		210.0	150
22.	Fire Brigade Withdrawl Connection		210.0	150

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mm.
1	***U.G.Tank 2***	BB1	30.0	150
2.	BB1	BB1a	71.0	150
3.	BB1a	BB6	95.0	150
4.	BB1a	BB3a	63.0	150
5.	BB1	BB2	14.0	150
6.	BB2	BB5	142.0	150
7.	BB5	BB6	63.0	150
8.	BB6	BB7	137.0	150
9.	BB5	BB7	157.0	150
10.	BB2	BB3	68.0	150
11.	BB3	BB3a	80.0	150
12.	BB3a	BB4	171.0	150
13.	BB3	BB4	267.0	150
14.	Fire Brigade Inlet Connection For UGT.		250.0	150
15.	Fire Brigade Inlet Connection For Basement		250.0	150
16.	Fire Brigade Withdrawl Connection		250.0	150
80 mm Dia Pipe			**300.0**	**mtr.**
150 mm Dia Pipe			~~2936.0~~ 3900	**mtr.**
External Fire Hydrant			**30**	**Nos.**
80 Dia Valve			**30**	**Nos.**
150 Dia Valve			**7**	**Nos.**
80 Dia Non Return Valve			**30**	**Nos.**

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	151.0	200	0.200	1.20	1.28	1.24	139.62	151.0	0.0	0.0	0.0
2.	S2	S3	95.0	200	0.200	1.28	1.34	1.31	91.71	95.0	0.0	0.0	0.0
3.	S3	S4	47.0	200	0.200	1.34	1.37	1.35	46.63	47.0	0.0	0.0	0.0
4.	S4a	S4	55.0	200	0.200	1.20	1.59	1.40	55.98	55.0	0.0	0.0	0.0
5.	S4	S5	116.0	250	0.250	1.59	1.20	1.40	128.04	116.0	0.0	0.0	0.0
6.	S7	S8	140.0	200	0.200	1.20	1.22	1.21	126.95	140.0	0.0	0.0	0.0
7.	S8a	S8	68.0	200	0.200	1.20	1.22	1.21	61.64	68.0	0.0	0.0	0.0
8.	S8	S9	47.0	200	0.200	1.22	1.27	1.24	43.57	47.0	0.0	0.0	0.0
9.	S9a	S9b	88.0	200	0.200	1.20	1.23	1.21	79.90	88.0	0.0	0.0	0.0
10.	S9c	S9b	11.0	200	0.200	1.20	1.28	1.24	10.16	11.0	0.0	0.0	0.0
11.	S9d	S9b	23.0	200	0.200	1.20	1.36	1.28	21.83	23.0	0.0	0.0	0.0
12.	S9b	S9	21.0	200	0.200	1.36	1.30	1.33	20.59	21.0	0.0	0.0	0.0
13.	S9	S10	37.0	200	0.200	1.30	1.57	1.44	38.55	37.0	0.0	0.0	0.0
14.	S10a	S10	6.0	200	0.200	1.20	1.24	1.22	5.48	6.0	0.0	0.0	0.0
15.	S10	S11	48.0	200	0.200	1.57	1.21	1.39	48.72	48.0	0.0	0.0	0.0
16.	S11a	S11	64.0	200	0.200	1.20	1.21	1.21	57.79	64.0	0.0	0.0	0.0
17.	S11	S12	12.0	250	0.250	1.21	1.20	1.21	11.78	12.0	0.0	0.0	0.0
18.	S12a	S12	54.0	200	0.200	1.20	1.59	1.39	54.85	54.0	0.0	0.0	0.0
19.	S12	S13	22.0	250	0.250	1.59	1.90	1.74	29.22	0.0	22.0	0.0	0.0
20.	S13a	S13	15.0	200	0.200	1.20	1.31	1.25	13.98	15.0	0.0	0.0	0.0
21.	S13	S14	74.0	300	0.300	1.90	1.25	1.57	97.10	0.0	74.0	0.0	0.0
22.	S14a	S14	74.0	200	0.200	1.20	1.27	1.24	68.20	74.0	0.0	0.0	0.0
23.	S14	S15	16.0	300	0.300	1.27	1.34	1.30	17.97	16.0	0.0	0.0	0.0
24.	S15a	S15b	90.0	200	0.200	1.20	1.23	1.22	81.93	90.0	0.0	0.0	0.0
25.	S15c	S15b	31.0	200	0.200	1.20	1.22	1.21	28.13	31.0	0.0	0.0	0.0
26.	S15b	S15	121.0	200	0.200	1.23	1.24	1.24	111.72	121.0	0.0	0.0	0.0

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.)
27.	S15	S5	26.0	400	0.400	1.34	1.41	1.37	34.76	26.0	0.0	0.0	0.0
28.	S5	S6	68.0	400	0.400	1.41	1.39	1.40	92.39	68.0	0.0	0.0	0.0
29.	S16	S17	64.0	200	0.200	1.20	1.27	1.23	58.88	64.0	0.0	0.0	0.0
30.	S17a	S17	44.0	200	0.200	1.20	1.51	1.36	43.75	44.0	0.0	0.0	0.0
31.	S17b	S17	20.0	200	0.200	1.20	1.34	1.27	18.86	20.0	0.0	0.0	0.0
32.	S17	S18	160.0	200	0.200	1.51	1.25	1.38	161.41	160.0	0.0	0.0	0.0
33.	S19	S20	60.0	200	0.200	1.20	1.63	1.41	61.71	60.0	0.0	0.0	0.0
34.	S20a	S20	44.0	200	0.200	1.20	1.51	1.36	43.75	44.0	0.0	0.0	0.0
35.	S20	S21	117.0	250	0.250	1.63	2.01	1.82	161.15	0.0	117.0	0.0	0.0
36.	S21	S22	136.0	300	0.300	2.01	2.55	2.28	245.75	0.0	136.0	0.0	0.0
37.	S22	S23	133.0	400	0.400	2.55	1.45	2.00	244.72	0.0	133.0	0.0	0.0
38.	S23	S24	182.0	400	0.400	1.45	1.32	1.38	244.85	182.0	0.0	0.0	0.0
39.	S24a	S24	43.0	200	0.200	1.20	1.41	1.30	41.37	43.0	0.0	0.0	0.0
40.	S24	S18	43.0	400	0.400	1.41	1.52	1.47	60.72	43.0	0.0	0.0	0.0
41.	S18	S6	36.0	700	0.700	1.52	1.57	1.55	73.22	0.0	36.0	0.0	0.0
40.	S6	*S.T.P*	5.0	700	0.700	1.57	1.58	1.58	10.33	0.0	5.0	0.0	0.0
~~41.~~	~~Branch Line~~		~~150.0~~	~~200~~	~~0.200~~	~~0.75~~	~~0.90~~	~~0.83~~	~~101.70~~	~~150.0~~	~~0.0~~	~~0.0~~	~~0.0~~
Total			**2857.0**						**3192.0**	**2334.0**	**523.0**	**0.0**	**0.0**

Excavation Depth				
	(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)	(4.5 - 6.0)
200 mm Dia pipe	1871.0	0.0	0.0	0.0
250 mm Dia pipe	128.0	139.0	0.0	0.0
300 mm Dia pipe	16.0	210.0	0.0	0.0
400 mm Dia pipe	319.0	133.0	0.0	0.0
700 mm Dia pipe	0.0	41.0	0.0	0.0

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	R.P.01	57.0	400	0.400	1.50	1.60	1.55	105.45	0.0	57.0	0.0
2.	R.P.01	A2	19.0	400	0.400	1.60	1.63	1.62	36.42	0.0	19.0	0.0
3.	A2	R.P.02	81.0	400	0.400	1.63	1.53	1.58	152.55	0.0	81.0	0.0
4.	R.P.02	A3	15.0	400	0.400	1.53	1.56	1.55	27.70	0.0	15.0	0.0
5.	A3	R.P.03	70.0	400	0.400	1.56	1.54	1.55	129.40	0.0	70.0	0.0
6.	R.P.03	A4	19.0	400	0.400	1.54	1.57	1.55	35.23	0.0	19.0	0.0
7.	A4	A5	14.0	400	0.400	1.57	1.60	1.58	26.36	0.0	14.0	0.0
8.	A5	D.C 01	3.0	400	0.400	1.60	1.60	1.60	5.69	0.0	3.0	0.0
9.	D.C 01	R.P.04	2.0	400	0.400	1.60	1.60	1.60	3.80	0.0	2.0	0.0
10.	R.P.04	A6	2.0	400	0.400	1.50	1.50	1.50	3.60	0.0	2.0	0.0
11.	A6	A7	17.0	400	0.400	1.50	1.50	1.50	30.62	0.0	17.0	0.0
12.	A18	A19	79.0	400	0.400	1.50	1.64	1.57	147.67	0.0	79.0	0.0
13.	A19	R.P.05	19.0	400	0.400	1.64	1.51	1.58	35.65	0.0	19.0	0.0
14.	R.P.05	A20	19.0	400	0.400	1.51	1.55	1.53	34.78	0.0	19.0	0.0
15.	A20	A21	41.0	400	0.400	1.55	1.51	1.53	75.04	0.0	41.0	0.0
16.	A21	D.C 02	14.0	400	0.400	1.51	1.54	1.53	25.56	0.0	14.0	0.0
17.	D.C 02	R.P.06	2.0	400	0.400	1.54	1.54	1.54	3.68	0.0	2.0	0.0
18.	R.P.06	A22	2.0	400	0.400	1.50	1.50	1.50	3.60	0.0	2.0	0.0
19.	A22	A7	70.0	400	0.400	1.50	1.50	1.50	126.25	0.0	70.0	0.0
20.	A7	A8	11.0	400	0.400	1.50	1.50	1.50	19.82	0.0	11.0	0.0
21.	A23	A24	40.0	400	0.400	1.50	1.50	1.50	72.00	40.0	0.0	0.0
22.	A24	R.P.07	17.0	400	0.400	1.50	1.53	1.51	30.85	0.0	17.0	0.0
23.	R.P.07	A8	11.0	400	0.400	1.53	1.55	1.54	20.23	0.0	11.0	0.0
24.	A8	A9	44.0	400	0.400	1.55	1.63	1.59	83.06	0.0	44.0	0.0
25.	A9	D.C 03	2.0	400	0.400	1.63	1.63	1.63	3.86	0.0	2.0	0.0
26.	D.C 03	R.P.08	2.0	400	0.400	1.63	1.63	1.63	3.86	0.0	2.0	0.0
27.	R.P.08	A10	2.0	400	0.400	1.50	1.50	1.50	3.60	0.0	2.0	0.0
28.	A10	A11	57.0	400	0.400	1.50	1.54	1.52	103.84	0.0	57.0	0.0
29.	A25	A26	10.0	400	0.400	1.50	1.52	1.51	18.09	0.0	10.0	0.0
30.	A26	D.C 04	5.0	400	0.400	1.52	1.53	1.52	9.11	0.0	5.0	0.0
31.	D.C 04	R.P.09	2.0	400	0.400	1.53	1.53	1.53	3.66	0.0	2.0	0.0
32.	R.P.09	A27	6.0	400	0.400	1.50	1.51	1.51	10.83	0.0	6.0	0.0
33.	A27	A28	115.0	400	0.400	1.51	1.50	1.50	207.57	0.0	115.0	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.)
34.	A36	A37	117.0	400	0.400	1.50	1.53	1.51	212.28	0.0	117.0	0.0
35.	A37	D.C 05	2.0	400	0.400	1.53	1.53	1.53	3.66	0.0	2.0	0.0
36.	D.C 05	R.P.10	2.0	400	0.400	1.53	1.54	1.53	3.67	0.0	2.0	0.0
37.	R.P.10	A28	4.0	400	0.400	1.50	1.51	1.50	7.21	0.0	4.0	0.0
38.	A28	A29	21.0	400	0.400	1.51	1.50	1.50	37.89	0.0	21.0	0.0
39.	A29a	A29	102.0	400	0.400	1.50	1.56	1.53	186.66	0.0	102.0	0.0
40.	A29	R.P.11	10.0	400	0.400	1.56	1.58	1.57	18.69	0.0	10.0	0.0
41.	R.P.11	A30	7.0	400	0.400	1.58	1.59	1.58	13.19	0.0	7.0	0.0
42.	A30	A31	55.0	400	0.400	1.59	1.51	1.55	101.65	0.0	55.0	0.0
43.	A31	R.P.12	9.0	400	0.400	1.51	1.52	1.51	16.33	0.0	9.0	0.0
44.	R.P.12	A32	19.0	400	0.400	1.52	1.58	1.55	35.15	0.0	19.0	0.0
45.	A38	A39	63.0	400	0.400	1.50	1.52	1.51	114.01	0.0	63.0	0.0
46.	A39a	A39	20.0	400	0.400	1.50	1.54	1.52	36.35	0.0	20.0	0.0
47.	A39	A40	16.0	400	0.400	1.54	1.56	1.55	29.59	0.0	16.0	0.0
48.	A40a	A40	68.0	400	0.400	1.50	1.52	1.51	123.13	0.0	68.0	0.0
49.	A40	R.P.13	6.0	400	0.400	1.56	1.57	1.57	11.21	0.0	6.0	0.0
50.	R.P.13	A41	24.0	400	0.400	1.57	1.51	1.54	44.19	0.0	24.0	0.0
51.	A41a	A41	71.0	400	0.400	1.50	1.56	1.53	129.90	0.0	71.0	0.0
52.	A41	A42	24.0	400	0.400	1.56	1.67	1.62	46.00	0.0	24.0	0.0
53.	A42	D.C 06	2.0	400	0.400	1.67	1.68	1.68	3.95	0.0	2.0	0.0
54.	D.C 06	R.P.14	3.0	400	0.400	1.68	1.68	1.68	5.94	0.0	3.0	0.0
55.	R.P.14	A43	5.0	400	0.400	1.50	1.51	1.50	9.02	0.0	5.0	0.0
56.	A43a	A43	53.0	400	0.400	1.50	1.62	1.56	98.69	0.0	53.0	0.0
57.	A43	A32	29.0	400	0.400	1.62	1.50	1.56	53.96	0.0	29.0	0.0
58.	A32	A33	9.0	400	0.400	1.50	1.51	1.51	16.25	0.0	9.0	0.0
59.	A33	R.P.15	6.0	400	0.400	1.51	1.52	1.52	10.91	0.0	6.0	0.0
60.	R.P.15	A34	12.0	400	0.400	1.52	1.54	1.53	22.01	0.0	12.0	0.0
61.	A34	A35	56.0	400	0.400	1.54	1.54	1.54	103.20	0.0	56.0	0.0
62.	A35a	A35	123.0	400	0.400	1.50	1.72	1.61	234.67	0.0	123.0	0.0
63.	A44	A45	70.0	400	0.400	1.50	1.57	1.53	128.33	0.0	70.0	0.0
64.	A45	D.C 07	5.0	400	0.400	1.57	1.58	1.57	9.36	0.0	5.0	0.0
65.	D.C 07	R.P.16	2.0	400	0.400	1.58	1.58	1.58	3.75	0.0	2.0	0.0
66.	R.P.16	A46	2.0	400	0.400	1.50	1.50	1.50	3.60	0.0	2.0	0.0
67.	A46a	A46	67.0	400	0.400	1.50	1.54	1.52	121.88	0.0	67.0	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.)
68.	A46	A35	26.0	400	0.400	1.54	1.51	1.52	47.45	0.0	26.0	0.0
69.	A35	R.P.17	23.0	400	0.400	1.72	1.76	1.74	46.83	0.0	23.0	0.0
70.	A47	A48	77.0	400	0.400	1.50	1.55	1.53	140.53	0.0	77.0	0.0
71.	A48	R.P.18	9.0	400	0.400	1.55	1.57	1.56	16.72	0.0	9.0	0.0
72.	R.P.18	A49	7.0	400	0.400	1.57	1.58	1.57	13.10	0.0	7.0	0.0
73.	A49	A50	25.0	400	0.400	1.58	1.62	1.60	47.50	0.0	25.0	0.0
74.	A50	R.P.19	19.0	400	0.400	1.62	1.66	1.64	36.83	0.0	19.0	0.0
75.	R.P.19	A51	19.0	400	0.400	1.66	1.61	1.63	36.67	0.0	19.0	0.0
76.	A51	R.P.17	24.0	400	0.400	1.61	1.65	1.63	46.23	0.0	24.0	0.0
77.	R.P.17	A11	31.0	400	0.400	1.65	1.70	1.67	61.21	0.0	31.0	0.0
78.	A11	D.C 08	2.0	500	0.500	1.80	1.80	1.80	4.63	0.0	2.0	0.0
79.	D.C 08	R.P.20	3.0	500	0.500	1.80	1.81	1.81	6.95	0.0	3.0	0.0
80.	R.P.20	A12	10.0	500	0.500	1.60	1.61	1.61	20.97	0.0	10.0	0.0
81.	A12	A13	67.0	500	0.500	1.61	1.50	1.56	136.82	0.0	67.0	0.0
82.	A13a	A13	13.0	400	0.400	1.50	1.52	1.51	23.55	0.0	13.0	0.0
83.	A13	A14	36.0	500	0.500	1.62	1.67	1.65	77.07	0.0	36.0	0.0
84.	A52	A53	64.0	400	0.400	1.50	1.60	1.55	118.40	0.0	64.0	0.0
85.	A53	D.C 09	5.0	400	0.400	1.60	1.61	1.60	9.52	0.0	5.0	0.0
86.	D.C 09	R.P.21	2.0	400	0.400	1.61	1.61	1.61	3.82	0.0	2.0	0.0
87.	R.P.21	A54	9.0	400	0.400	1.50	1.52	1.51	16.27	0.0	9.0	0.0
88.	A54	A14	28.0	400	0.400	1.52	1.53	1.52	51.08	0.0	28.0	0.0
89.	A14	A15	11.0	500	0.500	1.67	1.68	1.68	23.92	0.0	11.0	0.0
90.	A55	A56	65.0	400	0.400	1.50	1.50	1.50	117.00	65.0	0.0	0.0
91.	A56a	A56	17.0	400	0.400	1.50	1.53	1.51	30.85	0.0	17.0	0.0
92.	A56	D.C 10	3.0	400	0.400	1.53	1.54	1.53	5.50	0.0	3.0	0.0
93.	D.C 10	R.P.22	2.0	400	0.400	1.54	1.54	1.54	3.67	0.0	2.0	0.0
94.	R.P.22	A57	5.0	400	0.400	1.50	1.51	1.50	9.02	0.0	5.0	0.0
95.	A57	A58	35.0	400	0.400	1.51	1.51	1.51	63.31	0.0	35.0	0.0
96.	A61	A62	48.0	400	0.400	1.50	1.52	1.51	86.86	0.0	48.0	0.0
97.	A62	R.P.23	15.0	400	0.400	1.52	1.55	1.53	27.49	0.0	15.0	0.0
98.	R.P.23	A58	15.0	400	0.400	1.55	1.65	1.60	28.43	0.0	15.0	0.0
99.	A58	A59	35.0	400	0.400	1.65	1.61	1.63	67.42	0.0	35.0	0.0
100.	A59	R.P.24	9.0	400	0.400	1.61	1.62	1.61	17.23	0.0	9.0	0.0
101.	R.P.24	A60	7.0	400	0.400	1.62	1.64	1.63	13.50	0.0	7.0	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.)
102.	A60	A15	50.0	400	0.400	1.64	1.62	1.63	96.44	0.0	50.0	0.0
103.	A15	D.C 11	9.0	500	0.500	1.72	1.73	1.73	20.08	0.0	9.0	0.0
104.	D.C 11	R.P.25	2.0	500	0.500	1.73	1.74	1.74	4.48	0.0	2.0	0.0
105.	R.P.25	A16	2.0	500	0.500	1.60	1.60	1.60	4.18	0.0	2.0	0.0
106.	A16	A17	16.0	500	0.500	1.60	1.62	1.61	33.67	0.0	16.0	0.0
107.	A63	A64	24.0	400	0.400	1.50	1.54	1.52	43.71	0.0	24.0	0.0
108.	A64	D.C 12	2.0	400	0.400	1.54	1.55	1.54	3.69	0.0	2.0	0.0
109.	D.C 12	R.P.26	2.0	400	0.400	1.55	1.55	1.55	3.69	0.0	2.0	0.0
110.	R.P.26	A65	3.0	400	0.400	1.50	1.51	1.50	5.41	0.0	3.0	0.0
111.	A65	A66	110.0	400	0.400	1.51	1.51	1.51	199.10	0.0	110.0	0.0
112.	A66	D.C 13	5.0	400	0.400	1.51	1.52	1.52	9.10	0.0	5.0	0.0
113.	D.C 13	R.P.27	2.0	400	0.400	1.52	1.53	1.53	3.65	0.0	2.0	0.0
114.	R.P.27	A67	5.0	400	0.400	1.50	1.51	1.50	9.02	0.0	5.0	0.0
115.	A67	A68	136.0	400	0.400	1.51	1.75	1.63	262.22	0.0	136.0	0.0
116.	A68	D.C 14	3.0	400	0.400	1.75	1.75	1.75	6.15	0.0	3.0	0.0
117.	D.C 14	R.P.28	2.0	400	0.400	1.75	1.76	1.75	4.11	0.0	2.0	0.0
118.	R.P.28	A69	4.0	400	0.400	1.50	1.51	1.50	7.21	0.0	4.0	0.0
119.	A69	A70	129.0	400	0.400	1.51	1.64	1.57	241.52	0.0	129.0	0.0
120.	A70	D.C 15	8.0	400	0.400	1.64	1.65	1.64	15.56	0.0	8.0	0.0
121.	D.C 15	R.P.29	2.0	400	0.400	1.65	1.66	1.65	3.91	0.0	2.0	0.0
122.	R.P.29	A71	7.0	400	0.400	1.50	1.51	1.51	12.64	0.0	7.0	0.0
123.	A71	A17	127.0	400	0.400	1.51	1.52	1.51	230.40	0.0	127.0	0.0
124.	A17	D.C 16	2.0	600	0.600	1.72	1.73	1.72	4.86	0.0	2.0	0.0
125.	D.C 16	R.P.30	2.0	600	0.600	1.73	1.73	1.73	4.86	0.0	2.0	0.0
126.	R.P.30	*To Huda Drain*	20.0	600	0.600	1.70	1.32	1.51	43.44	0.0	20.0	0.0
127.	~~Catch Basin Line~~		~~250.0~~	~~250~~	~~0.250~~	~~0.60~~	~~0.80~~	~~0.70~~	~~212.50~~	~~250.0~~	~~0.0~~	~~0.0~~
Total			**3643.0**						**6538.0**	**355.0**	**3288.0**	**0.0**

Excavation Depth			
	(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)
250 mm Dia pipe	250.0	-	-
400 mm Dia pipe	105.0	3106.0	0.0
500 mm Dia pipe	0.0	158.0	0.0
600 mm Dia pipe	0.0	24.0	0.0

TITLE :- ROAD QUANTITY SHEET

AREA OF METALLED ROAD (A)

NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
1	0.5	-	3.98	3.38	1	6.73
2.	0.5	-	1.96	5.81	1	5.69
3.	-	16.4	1.95	-	1	31.98
4.	0.5	-	1.73	3.74	1	3.24
5.	0.5	-	3.46	1.94	1	3.36
6.	-	8.2	6.07	-	1	49.77
7.	-	17.36	6.11	-	1	106.07
8.	-	8.07	5.6	-	1	45.19
9.	-	10.72	5.97	-	1	64.00
10.	-	3.17	3.27	-	1	10.37
11.	-	24.42	5.84	-	1	142.61
12.	-	9.96	9.3	-	1	92.63
13.	0.5	-	3	3.57	1	5.36
14.	0.5	-	0.78	20.23	1	7.89
15.	-	20.63	7.5	-	1	154.73
16.	0.5	-	0.71	3.92	1	1.39
17.	-	7.63	3.92	-	1	29.91
18.	0.5	-	12.08	1.08	1	6.52
19.	0.5	-	1.14	8.79	1	5.01
20.	0.5	-	4.51	60.53	1	136.50
21.	-	60.55	8.79	-	1	532.23
22.	0.5	-	1.52	30.01	1	22.81
23.	-	33.06	7.5	-	1	247.95
24.	0.5	-	1.4	44.32	1	31.02
25.	-	51.73	6.3	-	1	325.90
26.	-	15.53	2.86	-	1	44.42
27.	-	64.2	6.12	-	1	392.90
28.	0.5	-	0.96	19.89	1	9.55
29.	0.5	-	1.79	19.81	1	17.73
30.	-	64.75	7.5	-	1	485.63
31.	-	66.39	7.5	-	1	497.93
32.	-	23.57	5.85	-	1	137.88
33.	-	5.95	1.19	-	1	7.08
34.	-	18.48	5.95	-	1	109.96
35.	-	4.22	1.79	-	1	7.55
36.	-	7.9	1.5	-	1	11.85
37.	-	5.34	2.25	-	2	24.03
38.	-	5.34	1.74	-	3	27.87

AREA OF METALLED ROAD (A)						
NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
39.	-	56.69	7.5	-	1	425.18
40.	-	9.35	2.25	-	1	21.04
41.	-	105.31	7.5	-	1	789.83
42.	-	5.75	6.41	-	1	36.86
43.	-	78.37	7.5	-	1	587.78
44.	-	77.41	7.5	-	1	580.58
45.	0.5		1.42	7.5	1	5.33
46.	-	24.83	7.5	-	1	186.23
47.	-	20.65	7.5	-	1	154.88
48.	-	14.24	1.85	-	1	26.34
49.	-	96.66	7.5	-	1	724.95
50.	0.5	-	13.09	1.53	1	10.01
51.	0.5	-	8.17	3.55	1	14.50
52.	0.5	-	6.35	4.56	1	14.48
53.	-	36.4	6	-	1	218.40
54.	-	29.93	6	-	1	179.58
55.	-	66.42	6	-	1	398.52
56.	-	7.9	18.6	-	1	146.94
57.	0.5	-	2.76	6.14	1	8.47
58.	0.5	-	1.65	4.02	1	3.32
59.	0.5	-	1.365	3.85	1	2.63
60.	-	59.44	6	-	1	356.64
61.	-	6.04	6.73	-	1	40.65
62.	0.5	-	2.31	1.72	1	1.99
63.	0.5	-	3.94	4.95	1	9.75
64.	-	9.51	4.95	-	1	47.07
65.	0.5	-	6.86	4.43	1	15.19
66.	0.5	-	3.32	2.62	1	4.35
67.	-	6	7.25	-	1	43.50
68.	0.5	-	1.85	3.46	1	3.20
69.	-	5.5	10.19	-	1	56.05
70.	-	8.83	9.67	-	1	85.39
71.	-	5.98	7.45	-	1	44.55
72.	0.5	-	2.33	5.96	1	6.94
73.	0.5	-	3.9	5.21	1	10.16
74.	0.5	-	4.19	5.88	1	12.32
75.	0.5	-	2.33	7.15	1	8.33
76.	0.5	-	2.08	7.23	1	7.52
77.	0.5	-	8.23	7.53	1	30.99

AREA OF METALLED ROAD (A)						
NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
78.	0.5	-	3.9	8.27	1	16.13
79.	-	10.2	7.23	-	1	73.75
80.	-	7.5	2.59	-	1	19.43
81.	-	7.5	16.32	-	1	122.40
82.	-	1.83	6.75	-	1	12.35
83.	-	7.5	6.28	-	1	47.10
84.	0.5	-	3.19	4.29	1	6.84
85.	-	87.47	7.5	-	1	656.03
86.	0.5	-	4.68	3.15	1	7.37
87.	-	5.85	7.92	-	1	46.33
88.	0.5	-	3.78	3.59	1	6.79
89.	0.5	-	3.78	3.59	1	6.79
90.	-	26.79	7.5	-	1	200.93
91.	0.5	-	6.82	3.35	1	11.42
92.	0.5	-	5.53	3.34	1	9.24
93.	0.5	-	2.59	8.14	1	10.54
94.	0.5	-	2.59	6.4	1	8.29
95.	0.5	-	7.59	12.39	1	47.02
96.	0.5	-	2.32	7.59	1	8.80
97.	0.5	-	3.48	8.12	1	14.13
98.	0.5	-	3.3	7.4	1	12.21
99.	-	92.65	7.5		1	694.88
100.	0.5	-	1.82	7.77	1	7.07
101.	0.5	-	4.68	5.52	1	12.92
102.	-	7.59	7.77	-	1	58.97
103.	0.5	-	1.68	7.81	1	6.56
104.	0.5	-	8.23	7.81	1	32.14
105.	-	24.19	7.59	-	1	183.60
106.	-	19.1	7.5	-	1	143.25
107.	-	5.86	6.62	-	1	38.79
108.	-	7.5	7.09	-	1	53.18
109.	-	43.39	10.86	-	1	471.22
110.	-	5.43	1.42	-	1	7.71
111.	-	5.43	1.42	-	1	7.71
112.	-	15.86	9.78	-	1	155.11
113.	-	3	1.64	-	1	4.92
114.	0.5	-	8.21	1.38	1	5.66
115.	0.5	-	9.24	0.86	1	3.97
116.	-	5.29	1.96	-	1	10.37

AREA OF METALLED ROAD (A)

NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
117.	-	21.35	10.26	-	1	219.05
118.	0.5	-	11.31	2.72	1	15.38
119.	0.5	-	11.31	2.03	1	11.48
120.	-	5.34	3.19	-	1	17.03
121.	-	1.88	1.58	-	1	2.97
122.	-	0.87	5.29	-	1	4.60
123.	-	86.64	7.5	-	1	649.80
124.	-	57.07	7.5	-	1	428.03
125.	-	31.65	7.5	-	1	237.38
126.	-	43.02	7.5	-	1	322.65
127.	-	6.42	8.85	-	1	56.82
128.	-	45.93	1.39	-	1	63.84
129.	-	54.96	8.92	-	1	490.24
130.	-	45.34	12	-	1	544.08
131.	-	54.97	7.5	-	1	412.28
132.	-	69.79	12	-	1	837.48
133.	-	19.32	~~4066~~ 10.66	-	1	~~20595.12~~ 205.95
134.	0.5	-	1.67	5.88	1	4.91
135.	0.5	-	8.65	1.48	1	6.40
136.	0.5	-	4.48	3.96	1	8.87
137.	-	4.48	6.69	-	1	29.97
138.	-	3.02	1.03	-	1	3.11
139.	-	57.82	6.69	-	1	386.82
140.	-	29.04	7.4	-	1	214.90
141.	-	75.51	7.5	-	1	566.33
142.	0.5	-	1.01	8.63	1	4.36
143.	0.5	-	7.45	1.98	1	7.38
144.	0.5	-	11.32	5.34	1	30.22
					TOTAL	~~38677.005~~ 18187.93
					ADD 10% FOR CURVES	~~3867.700~~ 1818.78
					TOTAL METALLED ROAD AREA (A)	~~42434.71 SQM~~ 20006.61

Say = 20000 Sqm

AREA OF HARD PAVED **(For Fire Tender Movement) (B)**

NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
A	-	15.37	6	-	1	92.22
B	-	87.45	6	-	1	524.70
C	-	11.94	6	-	1	71.64
D	-	166.66	6	-	1	999.96
E	-	131.77	6	-	1	790.62

AREA OF METALLED ROAD (A)						
NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
F	-	75.96	6	-	1	455.76
G	-	83.49	6	-	1	500.94
H	-	131.54	6	-	1	789.24
J	-	86.63	6	-	1	519.78
K	-	69.71	6	-	1	418.26
L	-	18.87	6	-	1	113.22
M	-	100.45	6	-	1	602.70
N	-	18.86	6	-	1	113.16
O	-	65.5	6	-	1	393.00
P	-	62.79	6	-	1	376.74
Q	-	60.72	6	-	1	364.32
R	-	15.94	6	-	1	95.64
S	-	17.82	6	-	1	106.92
T	-	58.7	6	-	1	352.20
U	-	225.77	6	-	1	1354.62
V	-	44.74	6	-	1	268.44
W	-	22.62	6	-	1	135.72
X	-	59.21	6	-	1	355.26
Y	-	49.52	6	-	1	297.12
Z	-	21.06	6	-	1	126.36
					TOTAL	10218.54
					ADD 10% FOR CURVES	1021.854
					TOTAL HARD PAVED AREA (B)	11,240.39
AREA UNDER CAR PARKING (C)						
NO. OF CARS ON SURFACE = 283 NO.						
AREA UNDER CAR PARKING = 5 X 2.5 X 283 = 3537.50 SQM						
TOTAL AREA UNDER CAR PARKING (C)						3537.50 SQM
TOTAL AREA OF ROADS = A + B + C = ~~42434.71~~ 20000 + 11240.39 + 3537.50 = ~~57212.60~~ 34777.89 SQM						Say 34800 Sqm

PROJECT : PROPOSED BUILDIND PLAN FOR GROUP HOUSING COLONY AREA MEASURING 29.34675 ACRE

S.NO	Line No.		Average Demand	Peak Demand @ 1.5 Times	Flow Rate	Length of Pipe	Head Loss mtr./ mtr.	Total Head Loss	Velocity	Dia of Pipe
	From	To	lph.	lph.	lpm.	mtr.	mtr.	mtr.	m/sec	mm
1	Tube Well 01	T1	15.00	22.50	375.00	40.0	0.013	0.52	0.795	100
2.	Tube Well 02	T1	15.00	22.50	375.00	32.0	0.013	0.41	0.795	100
3.	T1	***UGT.***	30.00	45.00	750.00	55.0	0.006	0.36	0.707	150
4.	Tube Well 03	T2	15.00	22.50	375.00	84.0	0.013	1.09	0.795	100
5.	Tube Well 04	T2	15.00	22.50	375.00	3.0	0.013	0.04	0.795	100
6.	T2	T3	30.00	45.00	750.00	70.0	0.006	0.45	0.707	150
7.	Tube Well 05	T3	15.00	22.50	375.00	12.0	0.013	0.16	0.795	100
8.	T3	***UGT.***	45.00	67.50	1125.00	50.0	0.003	0.17	0.597	200

PROJECT : GROUP HOUSING SECTOR-77, GURGOAN, HARYANA

(Pump Riser Calculation Sheet)

Domestic Water Supply Design Calculation For PART- I Towers & N. School

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	Maximum Tower Height From Pump Room To OHT
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pump Room - D1	19.690	**200**	0.004	25.0	5	1.25	26.25	0.097	0.097	0.626	53.00	52.90	-	-
D1 - D2	10.671	**150**	0.005	87.0	5	4.35	91.35	0.443	0.540	0.604	52.90	52.36	11.36	41.00
D2 - D3	9.606	**150**	0.004	145.0	5	7.25	152.25	0.607	1.147	0.543	52.36	51.22	16.22	35.00
D3 - D5	6.967	**150**	0.002	80.0	5	4.00	84.00	0.185	1.332	0.394	51.22	49.88	14.88	35.00
D3 - D4	3.587	**100**	0.005	106.0	5	5.30	111.30	0.516	1.664	0.457	51.22	49.55	11.55	38.00
D4 - D5	2.337	**100**	0.002	23.0	5	1.15	24.15	0.051	1.714	0.297	49.55	47.84	-	-
D5 - D6	6.365	**150**	0.002	131.0	5	6.55	137.55	0.256	1.970	0.360	47.84	45.87	7.87	38.00
D6- D7	2.790	**150**	0.000	16.0	5	0.80	16.80	0.007	0.007	0.158	45.87	45.86	7.86	38.00
D1 - D8	9.020	**150**	0.004	47.0	5	2.35	49.35	0.175	0.273	0.510	52.90	52.63	11.63	41.00
D8 - D9	8.587	**150**	0.003	65.0	5	3.25	68.25	0.221	0.494	0.486	52.63	52.14	17.14	35.00
D9 - D2	7.893	**150**	0.003	70.0	5	3.50	73.50	0.204	0.698	0.446	52.14	51.44	10.44	41.00
D9 - D10	6.504	**150**	0.002	125.0	5	6.25	131.25	0.254	0.748	0.368	52.14	51.39	10.39	41.00
D10 - D11	4.652	**150**	0.001	27.0	5	1.35	28.35	0.030	0.778	0.263	51.39	50.61	-	38.00
D11 - D7	2.780	**150**	0.000	105.0	5	5.25	110.25	0.044	0.822	0.157	50.61	49.79	11.79	38.00
D11 - D6	1.402	**100**	0.001	74.0	5	3.70	77.70	0.063	0.841	0.178	50.61	49.77	8.77	41.00
	Flow Rate			**19.690**	lps									
				1181.4	**LPM**									
	(2 W + 1 S)			**590.7**	**LPM**									
	Maximum Building Height			32	m									
	Pump Head			**53.00**	m									
	Pump HP			11.6	HP									
	Say			**12.5**	**HP**									

Flushing Water Supply Design Calculation For PART- I Towers & N. School

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	Maximum Tower Height From Pump Room To OHT
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
STP - F1	10.353	**150**	0.005	25.0	5	1.25	26.25	0.120	0.120	0.586	53.00	52.88	-	-
F1 - F2	5.694	**150**	0.002	87.0	5	4.35	91.35	0.138	0.259	0.322	52.88	52.62	11.62	41.00
F2 - F3	4.884	**100**	0.008	145.0	5	7.25	152.25	1.250	1.509	0.621	52.62	51.11	16.11	35.00
F3 - F5	2.800	**100**	0.003	80.0	5	4.00	84.00	0.246	1.755	0.356	51.11	49.36	14.36	35.00
F3 - F4	2.106	**100**	0.002	106.0	5	5.30	111.30	0.192	1.701	0.268	51.11	49.41	11.41	38.00
F4 - F5	1.411	**100**	0.001	23.0	5	1.15	24.15	0.020	1.721	0.180	49.41	47.69	-	-
F5 - F6	3.495	**100**	0.004	131.0	5	6.55	137.55	0.608	2.329	0.445	47.69	45.36	7.36	38.00
F6 - F7	1.633	**100**	0.001	16.0	5	0.80	16.80	0.018	2.347	0.208	45.36	43.01	5.01	38.00
F1 - F8	4.659	**100**	0.008	47.0	5	2.35	49.35	0.371	0.492	0.593	52.88	52.39	11.39	41.00
F8 - F9	4.189	**100**	0.006	65.0	5	3.25	68.25	0.422	0.914	0.533	52.39	51.47	16.47	35.00
F9 - F2	3.726	**100**	0.005	70.0	5	3.50	73.50	0.366	1.279	0.474	51.47	50.20	9.20	41.00
F9 - F10	3.495	**100**	0.004	125.0	5	6.25	131.25	0.580	1.493	0.445	51.47	49.98	8.98	41.00
F10 - F11	2.800	**100**	0.003	27.0	5	1.35	28.35	0.083	1.577	0.356	49.98	48.40	10.40	38.00
F11 - F7	1.530	**100**	0.001	105.0	5	5.25	110.25	0.105	1.682	0.195	48.40	46.72	8.72	38.00
F11 - F6	0.753	**100**	0.000	74.0	5	3.70	77.70	0.020	1.597	0.096	48.40	46.81	5.81	41.00

Flow Rate	**10.353**	lps	
	621.2	**LPM**	
(2 W + 1 S)	**310.6**	**LPM**	
Maximum Building Height	32	m	
Pump Head	**53.00**	m	
Pump HP	6.1	HP	
Say	**7.5**	**HP**	

Domestic Water Supply Design Calculation For PART- II Towers, EWS, Community Building, Shopping, MLCP & Primery Schools

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	Maximum Tower Height From Pump Room To OHT
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pump Room - DD1	30.903	200	0.009	25.0	5	1.25	26.25	0.225	0.225	0.983	97.00	96.78	-	-
DD1 - DD2	18.478	150	0.013	13.0	5	0.65	13.65	0.183	0.407	1.045	96.78	96.37	7.37	89.00
DD2 - DD2a	6.365	150	0.002	76.0	5	3.80	79.80	0.149	0.556	0.360	96.37	95.81	48.81 Used PRV	47.00
DD2 - DD3	12.113	150	0.006	54.0	5	2.70	56.70	0.347	0.755	0.685	96.37	95.61	45.61 Used PRV	50.00
DD3 - DD3a	5.347	150	0.001	31.0	5	1.55	32.55	0.044	0.799	0.302	95.61	94.81	53.81 Used PRV	41.00
DD3a - DD3b	1.643	150	0.000	51.0	5	2.55	53.55	0.008	0.807	0.093	94.81	94.01	53.01 Used PRV	41.00
DD3a - DD4	3.723	100	0.005	162.0	5	8.10	170.10	0.845	1.644	0.474	94.81	93.17	49.17 Used PRV	44.00
DD3 - DD4	6.273	150	0.002	110.0	5	5.50	115.50	0.209	0.964	0.355	95.61	94.65	44.65 Used PRV	50.00
DD4 - DD5	2.337	100	0.002	130.0	5	6.50	136.50	0.286	1.250	0.297	94.65	93.40	78.40 Used PRV	15.00
DD2a - DD3b	3.495	100	0.004	52.0	5	2.60	54.60	0.241	0.797	0.445	95.81	95.02	-	-
DD3b - DD5	2.778	100	0.003	163.0	5	8.15	171.15	0.494	1.291	0.353	95.02	93.72	43.72 Used PRV	50.00
DD2a - DD7	3.251	100	0.004	113.0	5	5.65	118.65	0.459	1.014	0.414	95.81	94.80	53.80 Used PRV	41.00
DD1 - DD6	12.425	150	0.006	104.0	5	5.20	109.20	0.702	0.926	0.703	96.78	95.85	-	89.00
DD6 - DD7	5.828	100	0.011	95.0	5	4.75	99.75	1.136	2.062	0.742	95.85	93.79	4.79	89.00
DD7 - DD8	3.297	100	0.004	68.0	5	3.40	71.40	0.283	2.346	0.420	93.79	91.44	40.44 Used PRV	51.00
	Flow Rate			**30.903**	lps									
				1854.2	**LPM**									
	(5 W + 1 S)			**370.8**	**LPM**									
	Maximum Building Height			89	m									
	Pump Head			**97.00**	m									
	Pump HP			13.3	HP									
	Say			**15.0**	**HP**									

Flushing Water Supply Design Calculation For PART- II Towers, EWS, Community Building, Shopping, MLCP & Primery Schools

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	Maximum Tower Height From Pump Room To OHT
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
STP - FF1	16.142	150	0.010	25.0	5	1.25	26.25	0.274	0.274	0.913	100.00	99.73	-	-
FF1 - FF2	6.968	150	0.002	132.0	5	6.60	138.60	0.305	0.579	0.394	99.73	99.15	55.15	44.00
													Used PRV	
FF2 - FF3	4.294	150	0.001	31.0	5	1.55	32.55	0.029	0.608	0.243	99.15	98.54	57.54	41.00
													Used PRV	
FF2 - FF2a	3.276	100	0.004	51.0	5	2.55	53.55	0.210	0.789	0.417	99.15	98.36	57.36	41.00
													Used PRV	
FF2a - FF9	0.948	100	0.000	163.0	5	8.15	171.15	0.068	0.856	0.121	98.36	97.50	47.50	50.00
													Used PRV	
FF2a - FF4a	2.800	100	0.003	52.0	5	2.60	54.60	0.160	0.949	0.356	98.36	97.41	-	-
FF4a - FF6	2.566	100	0.002	113.0	5	5.65	118.65	0.296	1.245	0.327	97.41	96.17	55.17	41.00
													Used PRV	
FF1 - FF8	9.173	150	0.004	29.0	5	1.45	30.45	0.112	0.690	0.519	99.15	98.46	-	-
FF8 - FF9	1.180	100	0.001	130.0	5	6.50	136.50	0.081	0.771	0.150	98.46	97.69	82.69	15.00
													Used PRV	
FF8 - FF3	7.883	150	0.003	110.0	5	5.50	115.50	0.320	1.010	0.446	98.46	97.45	47.45	50.00
													Used PRV	
FF3 - FF4	6.726	150	0.002	54.0	5	2.70	56.70	0.117	1.127	0.380	97.45	96.32	46.32	50.00
													Used PRV	
FF4 - FF4a	1.874	100	0.001	76.0	5	3.80	79.80	0.111	1.238	0.239	96.32	95.08	48.08	47.00
													Used PRV	
FF4 - FF5	4.874	150	0.001	118.0	5	5.90	123.90	0.141	1.267	0.276	96.32	95.05	6.05	89.00
FF5 - FF6	2.682	100	0.003	95.0	5	4.75	99.75	0.270	1.537	0.341	95.05	93.52	4.52	89.00
FF6 - FF7	1.525	100	0.001	68.0	5	3.40	71.40	0.068	1.605	0.194	93.52	91.91	40.91	51.00
													Used PRV	
	Flow Rate			**16.142**	lps									
				968.5	**LPM**									
	(3 W + 1 S)			**322.8**	**LPM**									
	Maximum Building Height			89	m									
	Pump Head			**100.00**	m									
	Pump HP			12.0	HP									
	Say			**12.5**	HP									

PROJECT : PROPOSED BUILDIND PLAN FOR GROUP HOUSING COLONY AREA MEASURING 29.34675 ACRE.

TITLE : HYDRAULIC SEWAGE 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)	Infilteration @ 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	110400	88320	88.32	0.00	88.32	1.02	3.07	0.26	3.32	151.0	200	70	2.16	1.08	16.99	229.100	227.90	227.025	225.74	1.20	1.28	1.24
2.	S2	S3	55200	44160	44.16	88.32	132.48	1.53	4.60	0.38	4.98	95.0	200	140	0.68	0.76	12.02	227.025	225.74	226.400	225.06	1.28	1.34	1.31
3.	S3	S4	0	0	0.00	132.48	132.48	1.53	4.60	0.38	4.98	47.0	200	140	0.34	0.76	12.02	226.400	225.06	226.100	224.73	1.34	1.37	1.35
4.	S4a	S4	36225	28980	28.98	0.00	28.98	0.34	1.01	0.08	1.09	55.0	200	140	0.39	0.76	12.02	226.100	224.90	226.100	224.51	1.20	1.59	1.40
5.	S4	S5	48300	38640	38.64	161.46	200.10	2.32	6.95	0.58	7.53	116.0	250	190	0.61	0.76	18.70	226.100	224.51	225.100	223.90	1.59	1.20	1.40
6.	S7	S8	69000	55200	55.20	0.00	55.20	0.64	1.92	0.16	2.08	140.0	200	110	1.27	0.86	13.56	229.100	227.90	227.850	226.63	1.20	1.22	1.21
7.	S8a	S8	46575	37260	37.26	0.00	37.26	0.43	1.29	0.11	1.40	68.0	200	55	1.24	1.22	19.17	229.065	227.87	227.850	226.63	1.20	1.22	1.21
8.	S8	S9	0	0	0.00	92.46	92.46	1.07	3.21	0.27	3.48	47.0	200	45	1.04	1.35	21.20	227.850	226.63	226.850	225.58	1.22	1.27	1.24
9.	S9a	S9b	46575	37260	37.26	0.00	37.26	0.43	1.29	0.11	1.40	88.0	200	60	1.47	1.17	18.36	228.500	227.30	227.060	225.83	1.20	1.23	1.21
10.	S9c	S9b	15525	12420	12.42	0.00	12.42	0.14	0.43	0.04	0.47	11.0	200	140	0.08	0.76	12.02	227.060	225.86	227.060	225.78	1.20	1.28	1.24
11.	S9d	S9b	15525	12420	12.42	0.00	12.42	0.14	0.43	0.04	0.47	23.0	200	140	0.16	0.76	12.02	227.060	225.86	227.060	225.70	1.20	1.36	1.28
12.	S9b	S9	0	0	0.00	62.10	62.10	0.72	2.16	0.18	2.34	21.0	200	140	0.15	0.76	12.02	227.060	225.70	226.850	225.55	1.36	1.30	1.33
13.	S9	S10	0	0	0.00	154.56	154.56	1.79	5.37	0.45	5.81	37.0	200	140	0.26	0.76	12.02	226.850	225.55	226.850	225.28	1.30	1.57	1.44
14.	S10a	S10	2588	2070	2.07	0.00	2.07	0.02	0.07	0.01	0.08	6.0	200	140	0.04	0.76	12.02	226.850	225.65	226.850	225.61	1.20	1.24	1.22
15.	S10	S11	20700	16560	16.56	156.63	173.19	2.00	6.01	0.50	6.51	48.0	200	110	0.44	0.86	13.56	226.850	225.28	226.060	224.85	1.57	1.21	1.39
16.	S11a	S11	36225	28980	28.98	0.00	28.98	0.34	1.01	0.08	1.09	64.0	200	80	0.80	1.01	15.90	226.850	225.65	226.060	224.85	1.20	1.21	1.21
17.	S11	S12	12075	9660	9.66	202.17	211.83	2.45	7.36	0.61	7.97	12.0	250	60	0.20	1.36	33.28	226.060	224.85	225.850	224.65	1.21	1.20	1.21
18.	S12a	S12	37950	30360	30.36	0.00	30.36	0.35	1.05	0.09	1.14	54.0	200	140	0.39	0.76	12.02	225.850	224.65	225.850	224.26	1.20	1.59	1.39
19.	S12	S13	0	0	0.00	242.19	242.19	2.80	8.41	0.70	9.11	22.0	250	190	0.12	0.76	18.70	225.850	224.26	226.050	224.15	1.59	1.90	1.74
20.	S13a	S13	10000	8000	8.00	0.00	8.00	0.09	0.28	0.02	0.30	15.0	200	140	0.11	0.76	12.02	226.050	224.85	226.050	224.74	1.20	1.31	1.25
21.	S13	S14	38813	31050	31.05	250.19	281.24	3.26	9.77	0.81	10.58	74.0	300	250	0.30	0.75	26.51	226.050	224.15	225.100	223.85	1.90	1.25	1.57
22.	S14a	S14	34500	27600	27.60	0.00	27.60	0.32	0.96	0.08	1.04	74.0	200	90	0.82	0.95	14.99	225.850	224.65	225.100	223.83	1.20	1.27	1.24
23.	S14	S15	0	0	0.00	308.84	308.84	3.57	10.72	0.89	11.62	16.0	300	250	0.06	0.75	26.51	225.100	223.83	225.100	223.76	1.27	1.34	1.30
24.	S15a	S15b	44678	35742	35.74	0.00	35.74	0.41	1.24	0.10	1.34	90.0	200	65	1.38	1.12	17.64	227.450	226.25	226.100	224.87	1.20	1.23	1.22
25.	S15c	S15b	23288	18630	18.63	0.00	18.63	0.22	0.65	0.05	0.70	31.0	200	40	0.78	1.43	22.48	226.850	225.65	226.100	224.88	1.20	1.22	1.21
26.	S15b	S15	63825	51060	51.06	54.37	105.43	1.22	3.66	0.31	3.97	121.0	200	120	1.01	0.83	12.98	226.100	224.87	225.100	223.86	1.23	1.24	1.24
27.	S15	S5	0	0	0.00	414.27	414.27	4.79	14.38	1.20	15.58	26.0	400	370	0.07	0.75	46.93	225.100	223.76	225.100	223.69	1.34	1.41	1.37

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)	Infilteration @ 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.)
28.	S5	S6	30000	24000	24.00	614.37	638.37	7.39	22.17	1.85	24.01	68.0	400	370	0.18	0.75	46.93	225.100	223.69	224.900	223.51	1.41	1.39	1.40
29.	S16	S17	34500	27600	27.60	0.00	27.60	0.32	0.96	0.08	1.04	64.0	200	60	1.07	1.17	18.36	227.850	226.65	226.850	225.58	1.20	1.27	1.23
30.	S17a	S17	31050	24840	24.84	0.00	24.84	0.29	0.86	0.07	0.93	44.0	200	140	0.31	0.76	12.02	226.850	225.65	226.850	225.34	1.20	1.51	1.36
31.	S17b	S17	15525	12420	12.42	0.00	12.42	0.14	0.43	0.04	0.47	20.0	200	140	0.14	0.76	12.02	226.850	225.65	226.850	225.51	1.20	1.34	1.27
32.	S17	S18	120750	96600	96.60	64.86	161.46	1.87	5.61	0.47	6.07	160.0	200	95	1.68	0.93	14.59	226.850	225.34	224.900	223.65	1.51	1.25	1.38
33.	S19	S20	123850	99080	99.08	0.00	99.08	1.15	3.44	0.29	3.73	60.0	200	140	0.43	0.76	12.02	229.300	228.10	229.300	227.67	1.20	1.63	1.41
34.	S20a	S20	116438	93150	93.15	0.00	93.15	1.08	3.23	0.27	3.50	44.0	200	140	0.31	0.76	12.02	229.300	228.10	229.300	227.79	1.20	1.51	1.36
35.	S20	S21	15000	12000	12.00	192.23	204.23	2.36	7.09	0.59	7.68	117.0	250	190	0.62	0.76	18.70	229.300	227.67	229.065	227.06	1.63	2.01	1.82
36.	S21	S22	95388	76310	76.31	204.23	280.54	3.25	9.74	0.81	10.55	136.0	300	250	0.54	0.75	26.51	229.065	227.06	229.065	226.51	2.01	2.55	2.28
37.	S22	S23	170775	136620	136.62	280.54	417.16	4.83	14.48	1.21	15.69	133.0	400	120	1.11	1.31	82.41	229.065	226.51	226.850	225.40	2.55	1.45	2.00
38.	S23	S24	105915	84732	84.73	417.16	501.89	5.81	17.43	1.45	18.88	182.0	400	100	1.82	1.44	90.28	226.850	225.40	224.900	223.58	1.45	1.32	1.38
39.	S24a	S24	37950	30360	30.36	0.00	30.36	0.35	1.05	0.09	1.14	43.0	200	140	0.31	0.76	12.02	225.000	223.80	224.900	223.49	1.20	1.41	1.30
40.	S24	S18	0	0	0.00	532.25	532.25	6.16	18.48	1.54	20.02	43.0	400	370	0.12	0.75	46.93	224.900	223.49	224.900	223.38	1.41	1.52	1.47
41.	S18	S6	1665105	1332084	1332.08	693.71	2025.80	23.45	70.34	5.86	76.20	36.0	700	700	0.05	0.79	151.76	224.900	223.38	224.900	223.33	1.52	1.57	1.55
42.	S6	***S.T.P***	0	0	0.00	2664.17	2664.17	30.84	92.51	7.71	100.21	5.0	700	700	0.01	0.79	151.76	224.900	223.33	224.900	223.32	1.57	1.58	1.58

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 BUILDIND PLAN FOR GROUP HOUSING COLONY AREA MEASURING 29.34675 ACRE
LOAD ON SEWAGE LINES

			Residential Sewage Load						Non Residential Sewage Load		Residential + Non Residential Load		
S.No.	Name of Sewer Line		Main & EWS Apartment	Population @ 5 persons / Unit	Water Reuirement @ 172.5 Ltr/day/Person	Service Person	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.
-	From	To	-	5	172.5	-	2	172.5	-	-	-	80%	1000
1.	S1	S2	128	640	110400	0	0	0	-	0	110400	88320	88.32
2.	S2	S3	64	320	55200	0	0	0	-	0	55200	44160	44.16
3.	S3	S4	0	0	0	0	0	0	-	0	0	0	0.00
4.	S4a	S4	42	210	36225	0	0	0	-	0	36225	28980	28.98
5.	S4	S5	56	280	48300	0	0	0	-	0	48300	38640	38.64
6.	S7	S8	80	400	69000	0	0	0	-	0	69000	55200	55.20
7.	S8a	S8	54	270	46575	0	0	0	-	0	46575	37260	37.26
8.	S8	S9	0	0	0	0	0	0	-	0	0	0	0.00
9.	S9a	S9b	54	270	46575	0	0	0	-	0	46575	37260	37.26
10.	S9c	S9b	18	90	15525	0	0	0	-	0	15525	12420	12.42
11.	S9d	S9b	18	90	15525	0	0	0	-	0	15525	12420	12.42
12.	S9b	S9	0	0	0	0	0	0	-	0	0	0	0.00
13.	S9	S10	0	0	0	0	0	0	-	0	0	0	0.00
14.	S10a	S10	3	15	2587.5	0	0	0	-	0	2588	2070	2.07
15.	S10	S11	24	120	20700	0	0	0	-	0	20700	16560	16.56
16.	S11a	S11	42	210	36225	0	0	0	-	0	36225	28980	28.98
17.	S11	S12	14	70	12075	0	0	0	-	0	12075	9660	9.66
18.	S12a	S12	44	220	37950	0	0	0	-	0	37950	30360	30.36
19.	S12	S13	0	0	0	0	0	0	-	0	0	0	0.00
20.	S13a	S13	0	0	0	0	0	0	Nursary School	10000	10000	8000	8.00
21.	S13	S14	45	225	38812.5	0	0	0	-	0	38813	31050	31.05
22.	S14a	S14	40	200	34500	0	0	0	-	0	34500	27600	27.60

S.No.	Name of Sewer Line		Residential Sewage Load						Non Residential Sewage Load		Residential + Non Residential Load		
			Main & EWS Apartment	Population @ 5 persons / Unit	Water Reuirement @ 172.5 Ltr/day/Person	Service Person	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.**
-	From	To	-	5	172.5	-	2	172.5	-	-	-	80%	1000
23.	S14	S15	0	0	0	0	0	0	-	0	0	0	0.00
24.	S15a	S15b	49	245	42262.5	7	14	2415	-	0	44678	35742	35.74
25.	S15c	S15b	27	135	23287.5	0	0	0	-	0	23288	18630	18.63
26.	S15b	S15	74	370	63825	0	0	0	-	0	63825	51060	51.06
27.	S15	S5	0	0	0	0	0	0	-	0	0	0	0.00
28.	S5	S6	0	0	0	0	0	0	Community Building + Shopping	30000	30000	24000	24.00
29.	S16	S17	40	200	34500	0	0	0	-	0	34500	27600	27.60
30.	S17a	S17	36	180	31050	0	0	0	-	0	31050	24840	24.84
31.	S17b	S17	18	90	15525	0	0	0	-	0	15525	12420	12.42
32.	S17	S18	100	500	86250	100	200	34500	-	0	120750	96600	96.60
33.	S19	S20	132	660	113850	0	0	0	Primary School -01	10000	123850	99080	99.08
34.	S20a	S20	135	675	116437.5	0	0	0	-	0	116438	93150	93.15
35.	S20	S21	0	0	0	0	0	0	MLCP	15000	15000	12000	12.00
36.	S21	S22	99	495	85387.5	0	0	0	Primary School -02	10000	95388	76310	76.31
37.	S22	S23	198	990	170775	0	0	0	-	0	170775	136620	136.62
38.	S23	S24	102	510	87975	52	104	17940	-	0	105915	84732	84.73
39.	S24a	S24	44	220	37950	0	0	0	-	0	37950	30360	30.36
40.	S24	S18	0	0	0	0	0	0	-	0	0	0	0.00
41.	S18	S6	0	0	0	0	0	0	-	0	0	0	0.00
42.	S6	***S.T.P***	0	0	0	0	0	0	-	0	0	0	0.00
			1780	**8900**	**1535250**	**159**	**318**	**54855**		**75000.00**	**1665105.00**	**1332084.00**	**1332.08**

PROJECT :- PROPOSED BUILDIND PLAN FOR GROUP HOUSING COLONY AREA MEASURING 29.34675 ACRE

TITLE :- HYDRAULIC SEWAGE 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	***R.P.01***	57.0	2020.0	0.0	2020.0	2.10	400	570	0.60	75.63	0.10	229.100	228.00	227.60	229.100	227.90	227.50	1.50	1.60	1.55
2.	***R.P.01***	A2	19.0	680.0	2020.0	2700.0	2.81	400	570	0.60	75.63	0.03	229.100	227.90	227.50	229.100	227.87	227.47	1.60	1.63	1.62
3.	A2	***R.P.02***	81.0	2860.0	2700.0	5560.0	5.79	400	45	2.14	269.16	1.80	229.100	227.87	227.47	227.200	226.07	225.67	1.63	1.53	1.58
4.	***R.P.02***	A3	15.0	530.0	5560.0	6090.0	6.34	400	570	0.60	75.63	0.03	227.200	226.07	225.67	227.200	226.04	225.64	1.53	1.56	1.55
5.	A3	***R.P.03***	70.0	2480.0	6090.0	8570.0	8.93	400	90	1.51	190.32	0.78	227.200	226.04	225.64	226.400	225.26	224.86	1.56	1.54	1.55
6.	***R.P.03***	A4	19.0	680.0	8570.0	9250.0	9.64	400	570	0.60	75.63	0.03	226.400	225.26	224.86	226.400	225.23	224.83	1.54	1.57	1.55
7.	A4	A5	14.0	500.0	9250.0	9750.0	10.16	400	570	0.60	75.63	0.02	226.400	225.23	224.83	226.400	225.20	224.80	1.57	1.60	1.58
8.	A5	***D.C 01***	3.0	0.0	9750.0	9750.0	10.16	400	570	0.60	75.63	0.01	226.400	225.20	224.80	226.400	225.20	224.80	1.60	1.60	1.60
9.	***D.C 01***	***R.P.04***	2.0	0.0	9750.0	9750.0	10.16	400	570	0.60	75.63	0.00	226.400	225.20	224.80	226.400	225.20	224.80	1.60	1.60	1.60
10.	***R.P.04***	A6	2.0	0.0	9750.0	9750.0	10.16	400	570	0.60	75.63	0.00	226.400	225.30	224.90	226.400	225.30	224.90	1.50	1.50	1.50
11.	A6	A7	17.0	600.0	9750.0	10350.0	10.78	400	100	1.44	180.56	0.17	226.400	225.30	224.90	226.225	225.13	224.73	1.50	1.50	1.50
12.	A18	A19	79	2790.0	0.0	2790.0	2.91	400	570	0.60	75.63	0.14	229.100	228.00	227.60	229.100	227.86	227.46	1.50	1.64	1.57
13.	A19	***R.P.05***	19.0	680.0	2790.0	3470.0	3.61	400	40	2.27	285.48	0.48	229.100	227.86	227.46	228.500	227.39	226.99	1.64	1.51	1.58
14.	***R.P.05***	A20	19.0	680.0	3470.0	4150.0	4.32	400	570	0.60	75.63	0.03	228.500	227.39	226.99	228.500	227.35	226.95	1.51	1.55	1.53
15.	A20	A21	41.0	1450.0	4150.0	5600.0	5.83	400	30	2.62	329.65	1.37	228.500	227.35	226.95	227.100	225.99	225.59	1.55	1.51	1.53
16.	A21	***D.C 02***	14.0	0.0	5600.0	5600.0	5.83	400	570	0.60	75.63	0.02	227.100	225.99	225.59	227.100	225.96	225.56	1.51	1.54	1.53
17.	***D.C 02***	***R.P.06***	2.0	0.0	5600.0	5600.0	5.83	400	570	0.60	75.63	0.00	227.100	225.96	225.56	227.100	225.96	225.56	1.54	1.54	1.54
18.	***R.P.06***	A22	2.0	0.0	5600.0	5600.0	5.83	400	570	0.60	75.63	0.00	227.100	226.00	225.60	227.100	226.00	225.60	1.50	1.50	1.50
19.	A22	A7	70.0	2480.0	5600.0	8080.0	8.42	400	80	1.61	201.87	0.88	227.100	226.00	225.60	226.225	225.12	224.72	1.50	1.50	1.50
20.	A7	A8	11.0	390.0	18430.0	18820.0	19.60	400	90	1.51	190.32	0.12	226.225	225.12	224.72	226.100	225.00	224.60	1.50	1.50	1.50
21.	A23	A24	40.0	1420.0	0.0	1420.0	1.48	400	40	2.27	285.48	1.00	227.100	226.00	225.60	226.100	225.00	224.60	1.50	1.50	1.50
22.	A24	***R.P.07***	17.0	600.0	1420.0	2020.0	2.10	400	570	0.60	75.63	0.03	226.100	225.00	224.60	226.100	224.97	224.57	1.50	1.53	1.51

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.	***R.P.07***	A8	11.0	390.0	2020.0	2410.0	2.51	400	570	0.60	75.63	0.02	226.100	224.97	224.57	226.100	224.95	224.55	1.53	1.55	1.54
24.	A8	A9	44.0	1560.0	21230.0	22790.0	23.74	400	570	0.60	75.63	0.08	226.100	224.95	224.55	226.100	224.87	224.47	1.55	1.63	1.59
25.	A9	***D.C 03***	2.0	0.0	22790.0	22790.0	23.74	400	570	0.60	75.63	0.00	226.100	224.87	224.47	226.100	224.87	224.47	1.63	1.63	1.63
26.	***D.C 03***	***R.P.08***	2.0	0.0	22790.0	22790.0	23.74	400	570	0.60	75.63	0.00	226.100	224.87	224.47	226.100	224.87	224.47	1.63	1.63	1.63
27.	***R.P.08***	A10	2.0	0.0	22790.0	22790.0	23.74	400	570	0.60	75.63	0.00	226.100	225.00	224.60	226.100	225.00	224.60	1.50	1.50	1.50
28.	A10	A11	57.0	2020.0	22790.0	24810.0	25.84	400	55	1.94	243.46	1.04	226.100	225.00	224.60	225.100	223.96	223.56	1.50	1.54	1.52
29.	A25	A26	10.0	2860.0	0.0	2860.0	2.98	400	570	0.60	75.63	0.02	229.300	228.20	227.80	229.300	228.18	227.78	1.50	1.52	1.51
30.	A26	***D.C 04***	5.0	0.0	2860.0	2860.0	2.98	400	570	0.60	75.63	0.01	229.300	228.18	227.78	229.300	228.17	227.77	1.52	1.53	1.52
31.	***D.C 04***	***R.P.09***	2.0	0.0	2860.0	2860.0	2.98	400	570	0.60	75.63	0.00	229.300	228.17	227.77	229.300	228.17	227.77	1.53	1.53	1.53
32.	***R.P.09***	A27	6.0	0.0	2860.0	2860.0	2.98	400	570	0.60	75.63	0.01	229.300	228.20	227.80	229.300	228.19	227.79	1.50	1.51	1.51
33.	A27	A28	115.0	2560.0	2860.0	5420.0	5.65	400	180	1.07	134.58	0.64	229.300	228.19	227.79	228.650	227.55	227.15	1.51	1.50	1.50
34.	A36	A37	117.0	2630.0	0.0	2630.0	2.74	400	110	1.37	172.15	1.06	229.100	228.00	227.60	228.065	226.94	226.54	1.50	1.53	1.51
35.	A37	***D.C 05***	2.0	0.0	2630.0	2630.0	2.74	400	570	0.60	75.63	0.00	228.065	226.94	226.54	228.065	226.93	226.53	1.53	1.53	1.53
36.	***D.C 05***	***R.P.10***	2.0	0.0	2630.0	2630.0	2.74	400	570	0.60	75.63	0.00	228.065	226.93	226.53	228.065	226.93	226.53	1.53	1.54	1.53
37.	***R.P.10***	A28	4.0	0.0	2630.0	2630.0	2.74	400	570	0.60	75.63	0.01	228.065	226.97	226.57	228.065	226.96	226.56	1.50	1.51	1.50
38.	A28	A29	21.0	750.0	8050.0	8800.0	9.17	400	100	1.44	180.56	0.21	228.065	226.96	226.56	227.850	226.75	226.35	1.51	1.50	1.50
39.	A29a	A29	102.0	3600.0	0.0	3600.0	3.75	400	80	1.61	201.87	1.28	229.065	227.97	227.57	227.850	226.69	226.29	1.50	1.56	1.53
40.	A29	***R.P.11***	10.0	360.0	12400.0	12760.0	13.29	400	570	0.60	75.63	0.02	227.850	226.69	226.29	227.850	226.67	226.27	1.56	1.58	1.57
41.	***R.P.11***	A30	7.0	250.0	12760.0	13010.0	13.55	400	570	0.60	75.63	0.01	227.850	226.67	226.27	227.850	226.66	226.26	1.58	1.59	1.58
42.	A30	A31	55.0	1950.0	13010.0	14960.0	15.58	400	60	1.85	233.10	0.92	227.850	226.66	226.26	226.850	225.74	225.34	1.59	1.51	1.55
43.	A31	***R.P.12***	9.0	320.0	14960.0	15280.0	15.92	400	570	0.60	75.63	0.02	226.850	225.74	225.34	226.850	225.73	225.33	1.51	1.52	1.51
44.	***R.P.12***	A32	19.0	680.0	15280.0	15960.0	16.63	400	18	3.38	425.57	1.06	226.850	225.73	225.33	225.850	224.67	224.27	1.52	1.58	1.55
45.	A38	A39	63.0	2230.0	0.0	2230.0	2.32	400	65	1.78	223.95	0.97	228.800	227.70	227.30	227.850	226.73	226.33	1.50	1.52	1.51

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.	A39a	A39	20.0	710.0	0.0	710.0	0.74	400	570	0.60	75.63	0.04	227.850	226.75	226.35	227.850	226.71	226.31	1.50	1.54	1.52
47.	A39	A40	16.0	570.0	2940.0	3510.0	3.66	400	570	0.60	75.63	0.03	227.850	226.71	226.31	227.850	226.69	226.29	1.54	1.56	1.55
48.	A40a	A40	68.0	2400.0	0.0	2400.0	2.50	400	70	1.72	215.81	0.97	228.800	227.70	227.30	227.850	226.73	226.33	1.50	1.52	1.51
49.	A40	***R.P.13***	6.0	220.0	5910.0	6130.0	6.39	400	570	0.60	75.63	0.01	227.850	226.69	226.29	227.850	226.68	226.28	1.56	1.57	1.57
50.	***R.P.13***	A41	24.0	850.0	6130.0	6980.0	7.27	400	100	1.44	180.56	0.24	227.850	226.68	226.28	227.545	226.44	226.04	1.57	1.51	1.54
51.	A41a	A41	71.0	2510.0	0.0	2510.0	2.61	400	70	1.72	215.81	1.01	228.500	227.40	227.00	227.545	226.39	225.99	1.50	1.56	1.53
52.	A41	A42	24.0	850.0	9490.0	10340.0	10.77	400	15	3.71	466.19	1.60	227.545	226.39	225.99	226.060	224.79	224.39	1.56	1.67	1.62
53.	A42	***D.C 06***	2.0	0.0	10340.0	10340.0	10.77	400	570	0.60	75.63	0.00	226.060	224.79	224.39	226.060	224.78	224.38	1.67	1.68	1.68
54.	***D.C 06***	***R.P.14***	3.0	0.0	10340.0	10340.0	10.77	400	570	0.60	75.63	0.01	226.060	224.78	224.38	226.060	224.78	224.38	1.68	1.68	1.68
55.	***R.P.14***	A43	5.0	0.0	10340.0	10340.0	10.77	400	570	0.60	75.63	0.01	226.060	224.96	224.56	226.060	224.95	224.55	1.50	1.51	1.50
56.	A43a	A43	53.0	1880.0	0.0	1880.0	1.96	400	35	2.43	305.20	1.51	227.450	226.35	225.95	226.060	224.84	224.44	1.50	1.62	1.56
57.	A43	A32	29.0	1030.0	12220.0	13250.0	13.80	400	350	0.77	96.51	0.08	226.060	224.84	224.44	225.850	224.75	224.35	1.62	1.50	1.56
58.	A32	A33	9.0	320.0	29210.0	29530.0	30.76	400	570	0.60	75.63	0.02	225.850	224.75	224.35	225.850	224.74	224.34	1.50	1.51	1.51
59.	A33	***R.P.15***	6.0	220.0	29530.0	29750.0	30.99	400	570	0.60	75.63	0.01	225.850	224.74	224.34	225.850	224.73	224.33	1.51	1.52	1.52
60.	***R.P.15***	A34	12.0	430.0	29750.0	30180.0	31.44	400	570	0.60	75.63	0.02	225.850	224.73	224.33	225.850	224.71	224.31	1.52	1.54	1.53
61.	A34	A35	56.0	1980.0	30180.0	32160.0	33.50	400	75	1.66	208.49	0.75	225.850	224.71	224.31	225.100	223.96	223.56	1.54	1.54	1.54
62.	A35a	A35	123.0	4350.0	0.0	4350.0	4.53	400	570	0.60	75.63	0.22	225.100	224.00	223.60	225.100	223.78	223.38	1.50	1.72	1.61
63.	A44	A45	70.0	2480.0	0.0	2480.0	2.58	400	60	1.85	233.10	1.17	226.400	225.30	224.90	225.300	224.13	223.73	1.50	1.57	1.53
64.	A45	***D.C 07***	5.0	0.0	2480.0	2480.0	2.58	400	570	0.60	75.63	0.01	225.300	224.13	223.73	225.300	224.12	223.72	1.57	1.58	1.57
65.	***D.C 07***	***R.P.16***	2.0	0.0	2480.0	2480.0	2.58	400	570	0.60	75.63	0.00	225.300	224.12	223.72	225.300	224.12	223.72	1.58	1.58	1.58
66.	***R.P.16***	A46	2.0	0.0	2480.0	2480.0	2.58	400	570	0.60	75.63	0.00	225.300	224.20	223.80	225.300	224.20	223.80	1.50	1.50	1.50
67.	A46a	A46	67.0	2370.0	0.0	2370.0	2.47	400	85	1.56	195.84	0.79	226.050	224.95	224.55	225.300	224.16	223.76	1.50	1.54	1.52
68.	A46	A35	26.0	920.0	4850.0	5770.0	6.01	400	150	1.17	147.42	0.17	225.300	224.16	223.76	225.100	223.99	223.59	1.54	1.51	1.52

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
69.	A35	***R.P.17***	23.0	820.0	42280.0	43100.0	44.90	400	570	0.60	75.63	0.04	225.100	223.78	223.38	225.100	223.74	223.34	1.72	1.76	1.74
70.	A47	A48	77.0	2720.0	0.0	2720.0	2.83	400	55	1.94	243.46	1.40	227.450	226.35	225.95	226.100	224.95	224.55	1.50	1.55	1.53
71.	A48	***R.P.18***	9.0	320.0	2720.0	3040.0	3.17	400	570	0.60	75.63	0.02	226.100	224.95	224.55	226.100	224.93	224.53	1.55	1.57	1.56
72.	***R.P.18***	A49	7.0	250.0	3040.0	3290.0	3.43	400	570	0.60	75.63	0.01	226.100	224.93	224.53	226.100	224.92	224.52	1.57	1.58	1.57
73.	A49	A50	25.0	890.0	3290.0	4180.0	4.35	400	570	0.60	75.63	0.04	226.100	224.92	224.52	226.100	224.88	224.48	1.58	1.62	1.60
74.	A50	***R.P.19***	19.0	680.0	4180.0	4860.0	5.06	400	570	0.60	75.63	0.03	226.100	224.88	224.48	226.100	224.84	224.44	1.62	1.66	1.64
75.	***R.P.19***	A51	19.0	680.0	4860.0	5540.0	5.77	400	20	3.21	403.74	0.95	226.100	224.84	224.44	225.100	223.89	223.49	1.66	1.61	1.63
76.	A51	***R.P.17***	24.0	850.0	5540.0	6390.0	6.66	400	570	0.60	75.63	0.04	225.100	223.89	223.49	225.100	223.85	223.45	1.61	1.65	1.63
77.	***R.P.17***	A11	31.0	1100.0	49490.0	50590.0	52.70	400	570	0.60	75.63	0.05	225.100	223.85	223.45	225.100	223.80	223.40	1.65	1.70	1.67
78.	A11	***D.C 08***	2.0	0.0	75400.0	75400.0	78.54	500	770	0.60	117.98	0.00	225.100	223.80	223.30	225.100	223.80	223.30	1.80	1.80	1.80
79.	***D.C 08***	***R.P.20***	3.0	0.0	75400.0	75400.0	78.54	500	770	0.60	117.98	0.00	225.100	223.80	223.30	225.100	223.79	223.29	1.80	1.81	1.81
80.	***R.P.20***	A12	10.0	0.0	75400.0	75400.0	78.54	500	770	0.60	117.98	0.01	225.100	224.00	223.50	225.100	223.99	223.49	1.60	1.61	1.61
81.	A12	A13	67.0	2370.0	75400.0	77770.0	81.01	500	770	0.60	117.98	0.09	225.100	223.99	223.49	224.900	223.90	223.40	1.61	1.50	1.56
82.	A13a	A13	13.0	460.0	0.0	460.0	0.48	400	570	0.60	75.63	0.02	224.900	223.80	223.40	224.900	223.78	223.38	1.50	1.52	1.51
83.	A13	A14	36.0	1280.0	78230.0	79510.0	82.82	500	770	0.60	117.98	0.05	224.900	223.78	223.28	224.900	223.73	223.23	1.62	1.67	1.65
84.	A52	A53	64.0	2260.0	0.0	2260.0	2.35	400	40	2.27	285.48	1.60	226.850	225.75	225.35	225.350	224.15	223.75	1.50	1.60	1.55
85.	A53	***D.C 09***	5.0	0.0	2260.0	2260.0	2.35	400	570	0.60	75.63	0.01	225.350	224.15	223.75	225.350	224.14	223.74	1.60	1.61	1.60
86.	***D.C 09***	***R.P.21***	2.0	0.0	2260.0	2260.0	2.35	400	570	0.60	75.63	0.00	225.350	224.14	223.74	225.350	224.14	223.74	1.61	1.61	1.61
87.	***R.P.21***	A54	9.0	0.0	2260.0	2260.0	2.35	400	570	0.60	75.63	0.02	225.350	224.25	223.85	225.350	224.23	223.83	1.50	1.52	1.51
88.	A54	A14	28.0	990.0	2260.0	3250.0	3.39	400	60	1.85	233.10	0.47	225.350	224.23	223.83	224.900	223.77	223.37	1.52	1.53	1.52
89.	A14	A15	11.0	390.0	82760.0	83150.0	86.61	500	770	0.60	117.98	0.01	224.900	223.73	223.23	224.900	223.72	223.22	1.67	1.68	1.68
90.	A55	A56	65.0	2300.0	0.0	2300.0	2.40	400	65	1.78	223.95	1.00	227.850	226.75	226.35	226.850	225.75	225.35	1.50	1.50	1.50
91.	A56a	A56	17.0	600.0	0.0	600.0	0.63	400	570	0.60	75.63	0.03	226.850	225.75	225.35	226.850	225.72	225.32	1.50	1.53	1.51

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
92.	A56	***D.C 10***	3.0	0.0	2900.0	2900.0	3.02	400	570	0.60	75.63	0.01	226.850	225.72	225.32	226.850	225.71	225.31	1.53	1.54	1.53
93.	***D.C 10***	***R.P.22***	2.0	0.0	2900.0	2900.0	3.02	400	570	0.60	75.63	0.00	226.850	225.71	225.31	226.850	225.71	225.31	1.54	1.54	1.54
94.	***R.P.22***	A57	5.0	0.0	2900.0	2900.0	3.02	400	570	0.60	75.63	0.01	226.850	225.75	225.35	226.850	225.74	225.34	1.50	1.51	1.50
95.	A57	A58	35.0	1240.0	2900.0	4140.0	4.31	400	20	3.21	403.74	1.75	226.850	225.74	225.34	225.100	223.99	223.59	1.51	1.51	1.51
96.	A61	A62	48.0	1700.0	0.0	1700.0	1.77	400	130	1.26	158.36	0.37	226.850	225.75	225.35	226.500	225.38	224.98	1.50	1.52	1.51
97.	A62	***R.P.23***	15.0	530.0	1700.0	2230.0	2.32	400	570	0.60	75.63	0.03	226.500	225.38	224.98	226.500	225.35	224.95	1.52	1.55	1.53
98.	***R.P.23***	A58	15.0	530.0	2230.0	2760.0	2.88	400	10	4.54	570.97	1.50	226.500	225.35	224.95	225.100	223.85	223.45	1.55	1.65	1.60
99.	A58	A59	35.0	1240.0	6900.0	8140.0	8.48	400	570	0.60	75.63	0.06	225.100	223.85	223.45	225.000	223.79	223.39	1.65	1.61	1.63
100.	A59	***R.P.24***	9.0	320.0	8140.0	8460.0	8.81	400	570	0.60	75.63	0.02	225.000	223.79	223.39	225.000	223.78	223.38	1.61	1.62	1.61
101.	***R.P.24***	A60	7.0	250.0	8460.0	8710.0	9.07	400	570	0.60	75.63	0.01	225.000	223.78	223.38	225.000	223.76	223.36	1.62	1.64	1.63
102.	A60	A15	50.0	1770.0	8710.0	10480.0	10.92	400	570	0.60	75.63	0.09	225.000	223.76	223.36	224.900	223.68	223.28	1.64	1.62	1.63
103.	A15	***D.C 11***	9.0	0.0	93630.0	93630.0	97.53	500	770	0.60	117.98	0.01	224.900	223.68	223.18	224.900	223.67	223.17	1.72	1.73	1.73
104.	***D.C 11***	***R.P.25***	2.0	0.0	93630.0	93630.0	97.53	500	770	0.60	117.98	0.00	224.900	223.67	223.17	224.900	223.66	223.16	1.73	1.74	1.74
105.	***R.P.25***	A16	2.0	0.0	93630.0	93630.0	97.53	500	770	0.60	117.98	0.00	224.900	223.80	223.30	224.900	223.80	223.30	1.60	1.60	1.60
106.	A16	A17	16.0	570.0	93630.0	94200.0	98.13	500	770	0.60	117.98	0.02	224.900	223.80	223.30	224.900	223.78	223.28	1.60	1.62	1.61
107.	A63	A64	24.0	3350.0	0.0	3350.0	3.49	400	570	0.60	75.63	0.04	229.300	228.20	227.80	229.300	228.16	227.76	1.50	1.54	1.52
108.	A64	***D.C 12***	2.0	0.0	3350.0	3350.0	3.49	400	570	0.60	75.63	0.00	229.300	228.16	227.76	229.300	228.15	227.75	1.54	1.55	1.54
109.	***D.C 12***	***R.P.26***	2.0	0.0	3350.0	3350.0	3.49	400	570	0.60	75.63	0.00	229.300	228.15	227.75	229.300	228.15	227.75	1.55	1.55	1.55
110.	***R.P.26***	A65	3.0	0.0	3350.0	3350.0	3.49	400	570	0.60	75.63	0.01	229.300	228.20	227.80	229.300	228.19	227.79	1.50	1.51	1.50
111.	A65	A66	110.0	5090.0	3350.0	8440.0	8.79	400	450	0.68	85.11	0.24	229.300	228.19	227.79	229.065	227.95	227.55	1.51	1.51	1.51
112.	A66	***D.C 13***	5.0	0.0	8440.0	8440.0	8.79	400	570	0.60	75.63	0.01	229.065	227.95	227.55	229.065	227.94	227.54	1.51	1.52	1.52
113.	***D.C 13***	***R.P.27***	2.0	0.0	8440.0	8440.0	8.79	400	570	0.60	75.63	0.00	229.065	227.94	227.54	229.065	227.94	227.54	1.52	1.53	1.53
114.	***R.P.27***	A67	5.0	0.0	8440.0	8440.0	8.79	400	570	0.60	75.63	0.01	229.065	227.97	227.57	229.065	227.96	227.56	1.50	1.51	1.50

C.E. No. 25134
Dated 15/7/16

Annexure-A

SUB:- Approval of service plan /estimate for Residential Group Housing Colony on the land measuring 29.34675 acres area (License No. 56 of 2009 dated 31.8.2009 and No. 62 of2013 dated 5.8.2013) in Sec-77 Gurgaon being developed by Sh. Sanjay passi and Others in collaboration with M/S. Emmar MGF land Ltd.

Technical note and comments:-

1. All detailed working drawings would have to be prepared by the colonizer for Integrating the internal services proposals with the master proposals of town.
2. The correctness of the levels will be the sole, responsibility of the colonizer for the integration of internal proposals, with the master proposals, of town and will be got confirmed before execution.
3. The material to be used shall the same specifications as are being adopted by HUDA and further shall also confirm to such directions, as issued by Chief Engineer, HUDA from time to time.
4. The work shall be carried out according to Haryana PWD specification or such specifications as are being followed by HUDA. Further it shall also confirm to such other directions, as are issued by Chief Engineer, HUDA from time to time.

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EE(W)
15/7/16

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.

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
115.	A67	A68	136.0	4800.0	8440.0	13240.0	13.79	400	570	0.60	75.63	0.24	229.065	227.96	227.56	229.065	227.72	227.32	1.51	1.75	1.63
116.	A68	***D.C 14***	3.0	0.0	13240.0	13240.0	13.79	400	570	0.60	75.63	0.01	229.065	227.72	227.32	229.065	227.71	227.31	1.75	1.75	1.75
117.	***D.C 14***	***R.P.28***	2.0	0.0	13240.0	13240.0	13.79	400	570	0.60	75.63	0.00	229.065	227.71	227.31	229.065	227.71	227.31	1.75	1.76	1.75
118.	***R.P.28***	A69	4.0	0.0	13240.0	13240.0	13.79	400	570	0.60	75.63	0.01	229.065	227.97	227.57	229.065	227.96	227.56	1.50	1.51	1.50
119.	A69	A70	129.0	4560.0	13240.0	17800.0	18.54	400	55	1.94	243.46	2.35	229.065	227.96	227.56	226.850	225.61	225.21	1.51	1.64	1.57
120.	A70	***D.C 15***	8.0	0.0	17800.0	17800.0	18.54	400	570	0.60	75.63	0.01	226.850	225.61	225.21	226.850	225.60	225.20	1.64	1.65	1.64
121.	***D.C 15***	***R.P.29***	2.0	0.0	17800.0	17800.0	18.54	400	570	0.60	75.63	0.00	226.850	225.60	225.20	226.850	225.59	225.19	1.65	1.66	1.65
122.	***R.P.29***	A71	7.0	0.0	17800.0	17800.0	18.54	400	570	0.60	75.63	0.01	226.850	225.75	225.35	226.850	225.74	225.34	1.50	1.51	1.51
123.	A71	A17	127.0	4490.0	17800.0	22290.0	23.22	400	65	1.78	223.95	1.95	226.850	225.74	225.34	224.900	223.78	223.38	1.51	1.52	1.51
124.	A17	***D.C 16***	2.0	0.0	116490.0	116490.0	121.34	600	1000	0.60	168.34	0.00	224.900	223.78	223.18	224.900	223.77	223.17	1.72	1.73	1.72
125.	***D.C 16***	***R.P.30***	2.0	0.0	116490.0	116490.0	121.34	600	1000	0.60	168.34	0.00	224.900	223.77	223.17	224.900	223.77	223.17	1.73	1.73	1.73
126.	***R.P.30***	***To Huda Drain***	20.0	0.0	116490.0	116490.0	121.34	600	1000	0.60	168.34	0.02	224.900	223.80	223.20	224.500	223.78	223.18	1.70	1.32	1.51

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)

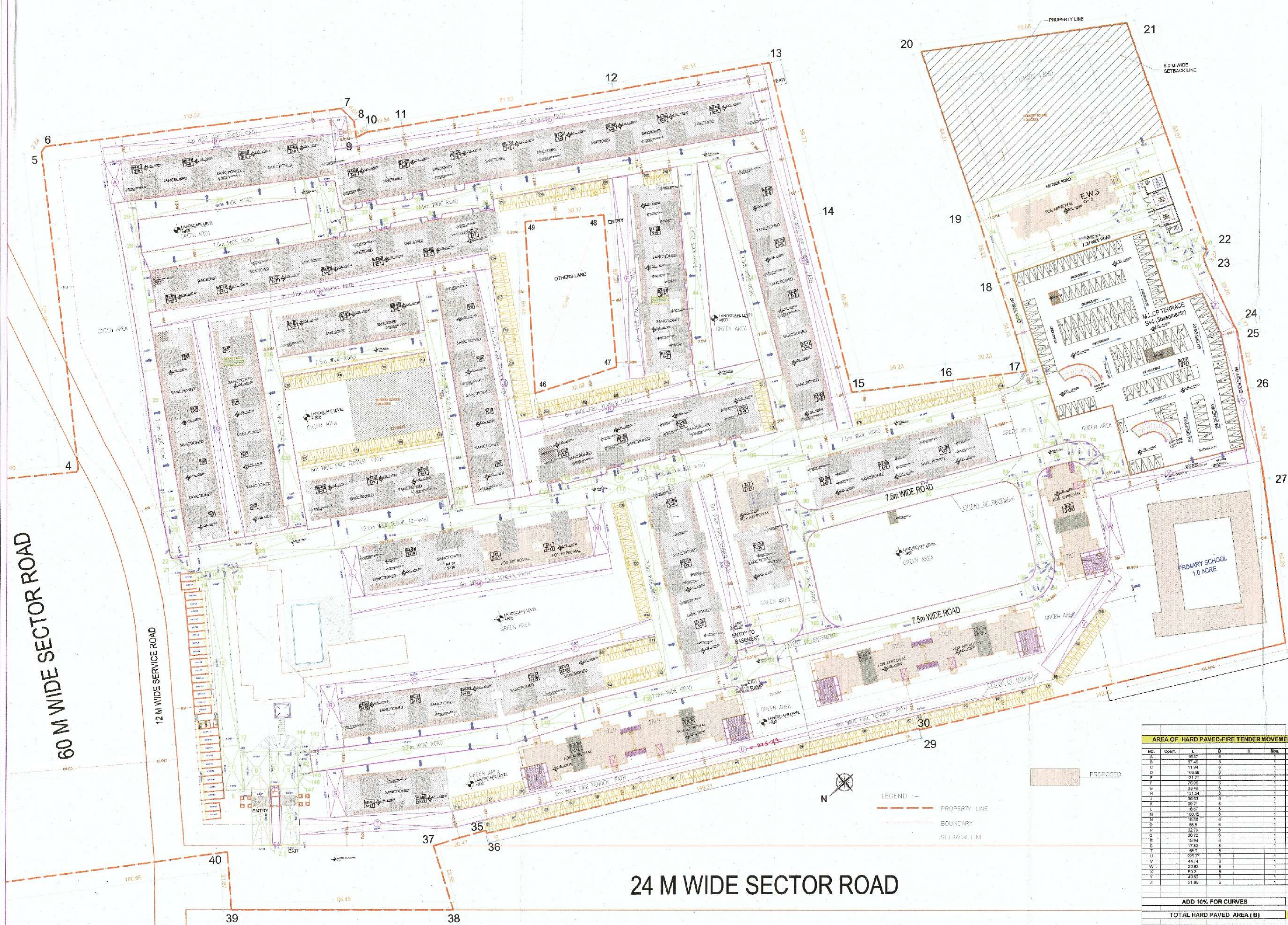
Abbreviation Used:

IL=Invert level of pipe

FSL=Full supply level

FRL=Formation Road Level

CL=Connection Level



ROAD AREA CALCULATION-FOR METALLED ROAD (A)

NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
1	0.5		0.22	6.71	1	0.74
2	0.5		0.57	6.54	1	1.86
3	0.5		0.37	6.54	1	1.21
4		21.15	6.53		1	138.11
5		14.04	7.04		1	98.84
6		12.93	3.65		1	47.19
7		21.12	6.68		1	141.08
8		14.19	9.46		1	133.95
9	0.5		0.46	14.13	1	3.25
10	0.5		1.23	14.13	1	8.69
11		16.57	7.29		1	120.80
12		63.23	6.84		1	432.49
13	0.5		0.94	0.11	1	0.05
14	0.5		2	0.4	1	0.40
15	0.5		2.81	0.59	1	0.83
16	0.5		1.9	3.74	1	3.55
17	0.5		6.85	0.56	1	1.92
18		6.86	3.06		1	20.99
19	0.5		1.55	3.05	1	2.36
20	0.5		2.09	0.49	1	0.51
21	0.5		9.69	1.09	1	0.00
22	0.5		7.19	9.07	1	32.61
23		17.65	7.23		1	127.61
24	0.5		1.4	44.32	1	31.02
25		51.73	6.3		1	325.90
26		15.53	2.86		1	44.42
27		64.2	6.12		1	392.90
28	0.5		0.96	19.89	1	9.55
29	0.5		1.79	19.81	1	17.73
30		64.75	7.5		1	485.63
31		66.39	7.5		1	497.93
32		23.57	5.85		1	137.88
33		6.66	1.10		1	7.08
34		18.48	5.95		1	109.96
35		4.22	1.79		1	7.55
36		7.9	1.5		1	11.85
37		5.34	2.25		2	24.03
38		5.34	1.74		3	27.87
39		56.69	7.5		1	425.18
40		9.35	2.25		1	21.04
41		105.31	7.5		1	789.83
42		5.75	6.41		1	36.86
43		78.37	7.5		1	587.78
44		77.41	7.5		1	580.58
45	0.5		1.42	7.5	1	5.33
46		24.83	7.5		1	186.23
47		20.65	7.5		1	154.88
48		14.24	1.85		1	26.34
49		96.66	7.5		1	724.95
50	0.5		13.09	1.53	1	10.01
51	0.5		8.17	3.55	1	14.50
52	0.5		6.36	4.56	1	14.48
53		36.4	6		1	218.40
54		29.93	6		1	179.58
55		66.42	6		1	398.52
56		7.9	18.6		1	146.94
57	0.5		2.76	6.14	1	8.47
58	0.5		1.65	4.02	1	3.32
59	0.5		1.365	3.85	1	2.63
60		59.44	6		1	356.64
61		6.04	6.73		1	40.65
62	0.5		2.31	1.72	1	1.99
63	0.5		3.94	4.95	1	9.75
64	-	9.51	4.95		1	47.07
65	0.5		6.86	4.43	1	15.19
66	0.5		3.32	2.62	1	4.35
67		6	7.25		1	43.50
68	0.5		1.85	3.46	1	3.20
69		5.5	10.19		1	56.05
70		8.83	9.67		1	85.39
71		5.98	7.45		1	44.55
72	0.5		2.33	5.96	1	6.94
73	0.5		3.9	5.21	1	10.16
74	0.5		4.19	5.88	1	12.32
75	0.5		2.33	7.15	1	8.33
76	0.5		2.08	7.23	1	7.52
77	0.5		8.23	7.53	1	30.99
78	0.5		3.9	8.27	1	16.13
79		10.2	7.23		1	73.75
80		7.5	2.59		1	19.43
81		7.5	16.32		1	122.40
82		1.83	6.75		1	12.35
83		7.5	6.28		1	47.10
84	0.5		3.19	4.29	1	6.84
85		87.47	7.5		1	656.03
86	0.5		4.68	3.15	1	7.37
87		5.85	7.92		1	46.33
88	0.5		3.78	3.59	1	6.79
89	0.5		3.78	3.59	1	6.79
90		26.79	7.5		1	200.93
91	0.5		6.82	3.35	1	11.42
92	0.5		5.53	3.34	1	9.24
93	0.5		2.59	8.14	1	10.54
94	0.5		2.59	6.4	1	8.29
95	0.5		7.59	12.39	1	47.02
96	0.5		2.32	7.59	1	8.80
97	0.5		3.48	8.12	1	14.13
98	0.5		3.3	7.4	1	12.21
99		92.65	7.5		1	694.88
100	0.5		1.82	7.77	1	7.07
101	0.5		4.58	5.52	1	12.92
102		7.59	7.77		1	58.97
103	0.5		1.68	7.81	1	6.56
104	0.5		8.23	7.81	1	32.14
105		24.19	7.59		1	183.60
106		19.1	7.5		1	143.25
107		5.86	6.62		1	38.79
108		7.5	7.09		1	53.18
109		43.39	10.86		1	471.22
110		5.43	1.42		1	7.71
111		5.43	1.42		1	7.71
112		15.86	9.78		1	155.11
113		3	1.64		1	4.92
114	0.5		8.21	1.38	1	5.66
115	0.5		9.24	0.86	1	3.97
116		5.29	1.96		1	10.37
117		21.35	10.26		1	219.05
118	0.5		11.31	2.72	1	15.38
119	0.5		11.31	2.03	1	11.48
120		5.34	3.19		1	17.03
121		1.88	1.58		1	2.97
122		0.87	5.29		1	4.60
123		86.64	7.5		1	649.80
124		57.07	7.5		1	428.03
125		31.65	7.5		1	237.38
126		43.02	7.5		1	322.65
127		6.42	8.85		1	56.82
128		45.63	1.39		1	63.84
129		54.96	8.92		1	490.24
130		45.34	12		1	544.08
131		54.97	7.5		1	412.28
132		69.79	12		1	837.48
133		19.32	1066		1	20595.12
134	0.5		1.67	5.86	1	4.91
135	0.5		8.65	1.48	1	6.40
136	0.5		4.48	3.96	1	8.87
137		4.48	6.69		1	29.97
138		3.02	1.03		1	3.11
139		57.82	6.69		1	386.82
140		29.04	7.4		1	214.90
141		75.51	7.5		1	566.33
142		7.44	4.8		1	35.71
143	0.5		5.98	0.67	1	2.00
144	0.5		4.73	1.25	1	2.96
145	0.5		5.7	0.94	1	2.68
146	0.5		3.72	1.02	1	1.90
147	0.5		4.7	0.85	1	2.00
						38189.32
ADD 10% FOR CURVES						3818.93
TOTAL METALLED ROAD AREA (A)						42008.25

AREA OF HARD PAVED-FIRE TENDER MOVEMENT (B)

NO.	Coeff.	L	B	H	Nos.	AREA(Sq M)
A		15.37	6		1	92.22
B		87.45	6		1	524.70
C		11.94	6		1	71.64
D		166.66	6		1	999.96
E		131.77	6		1	790.62
F		75.96	6		1	455.76
G		83.49	6		1	500.94
H		131.54	6		1	789.24
J		86.63	6		1	519.78
K		69.71	6		1	418.26
L		18.87	6		1	113.22
M		100.45	6		1	602.70
N		18.86	6		1	113.16
O		65.5	6		1	393.00
P		62.79	6		1	376.74
Q		60.72	6		1	364.32
R		15.94	6		1	95.64
S		17.82	6		1	106.92
T		58.7	6		1	352.20
U		225.77	6		1	1354.62
V		44.74	6		1	268.44
W		22.62	6		1	135.72
X		59.21	6		1	355.26
Y		49.52	6		1	297.12
Z		21.06	6		1	126.36
						10218.54
ADD 10% FOR CURVES						1021.85
TOTAL HARD PAVED AREA (B)						11240.39

AREA UNDER CAR PARKING (C)

NO OF CAR PARK =283 NOS	
AREA UNDER CAR PARK 5 MX 2.5 MX 283NOS =283NOS	3537.50
TOTAL AREA OF A + B + C =	56786.14

KEY PLAN

Architects:-
Arcop Associates Pvt. Ltd.
Plot No-38, Sector-32, Gurgaon
Montreal, Toronto, New Delhi, Boston

Clients :-
M/S ROBIN SOFTWARE LLP AND OTHER'S
SH. SANJAY PASSI

Checked subject to comments in forwarding letter No. ... Dt. ... and notes attached with the estimate

Architect's Signature:
Anoop Kr. Sharma, Council of Architecture Registration No. CA/...

Executive Engineer for Chief Engineer HUDA Panchkula

Owners' Signature:

PROJECT Title
Approval of revised building plans of Group Housing colony measuring 20.34675 (license no 58 of 2009 dated 31.08.2009 and 62 of 2013)in sector 77 Gurgaon Manesar urban complex being developed SH Sanjay Passi,Robin software LLP, Neemran developers pvt ltd c/o Emaar Mgf LAND LTD.

Drawing Title
MASTER PLAN
ROAD AREA CALCULATION

Superintending Engineer HUDA Circle-II, Gurgaon
For Service Plan Estimate Only

Drawing No.
AMP-01

Drawn	Checked
HEMANT	SANJAY
Date	Scale
20.08.2013	1:500

Executive Engineer HUDA Divn. No. VI Gurgaon

D.T.P. (HQ) Member Secretary B.P.C.
S.T.P. (G) Member B.P.C.
C.T.P. (Hr.) Chairman B.P.C.
PA ATP

SANCTIONED

AREA AND POPULATION STATEMENT

POPULATION

		Permissible		Proposed	
Population of Main Units	@	5	person per unit	7565	persons
Population of EWS units	@	2	person per unit	534	persons
Population of Service units	@	2	person per unit	318	persons
TOTAL POPULATION	=			8417	persons
TOTAL DENSITY	=	100 PPA (minimum) to PPA 300 (maximum)		288.81	PPA

INFRASTUCTURE

	Permissible	Proposed	
Convenient shopping @ 0.5% of the total area site	593.82 sqm	592.976	sqm

PARKING

		Required		Proposed	
Parking in MLCP	@	30 Sq.mt. Per ECS		859	ECS
Parking in STILTS †	@	30 Sq.mt. Per ECS		585	ECS
PARKING IN BASEMENT	@	35 Sq.mt. Per ECS		677	ECS
Parking on SURFACE	@	25 Sq.mt. Per ECS		234	ECS
TOTAL PARKING	=	2270	ECS	2352	ECS
		(1.5 ECS per Main Unit) *			
PARKING RESERVED FOR EWS (5%)		MLCP AT G.Floor (1 to 114)		113.5	ECS

GREEN AREA

		Required	Proposed
Total Maintained Green Area Required	@	15% of the total site area	17.51% of the total site area
		17814.48 Sq.mt.	20798.80 Sq.mt.

† Refer. earlier approved building plans for parking under stilts. (559 ECS approved earlier) (Additional 26 provided under tower B-12, B-13, B-14, B-15-01, B-15-02, B-16-01, B-16-02 & B-17)

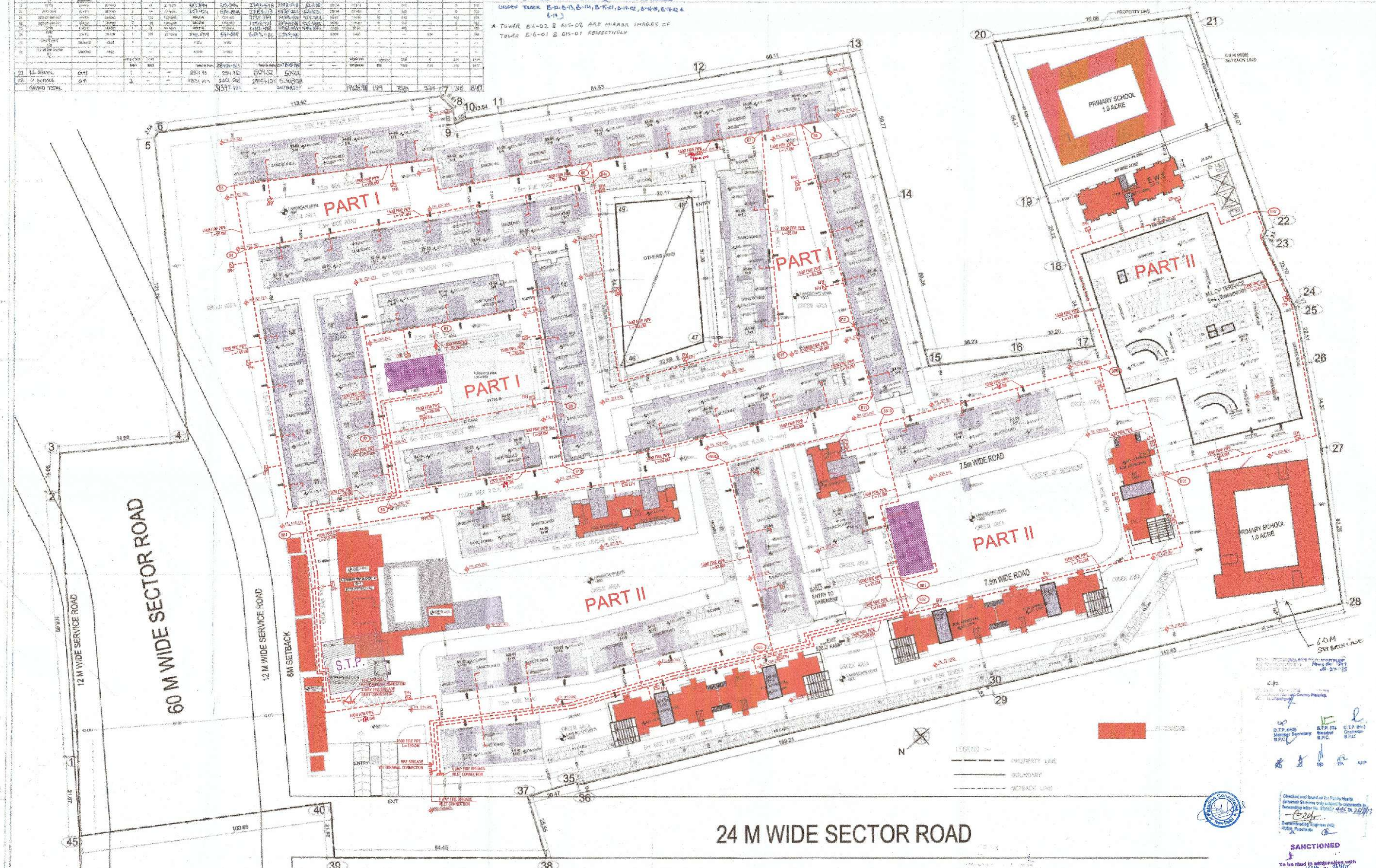
* Tower B16-02 & B15-02 are mirror images of tower B16-01 & B15-01 respectively

ABSTRACT

TOTAL SITE AREA		= 29.34673	ACRES	118763.20	sq.m	
PARAMETERS FOR HOUSING		PERMISSIBLE			PROPOSED	
F.A.R.	Effective Site (@ 1.750)	= 207,835.60	sq.m		134,271.7	
		=	sq.m		207,821.257	sq.m
	TOTAL FAR	207,835.60	sq.m		(includes shopping)	
GROUND COVERAGE		= 35.00%		=	26.385%	
		= 41,567.12	sq.m	=	31317.93	sq.m
No. of UNITS (Main)					1513	units
No. of UNITS (EWS)		267.00			267	units
		= 17.65%	of TOTAL UNITS (Including EWS)		17.65%	
No. of SERVENT ROOMS		151			159	units
		= 10.00%	of TOTAL UNITS		10.51%	

FIRE LEGEND:-

- - - - - -	EXTERNAL FIRE HYDRANT LINE
EFH	EXTERNAL FIRE HYDRANT

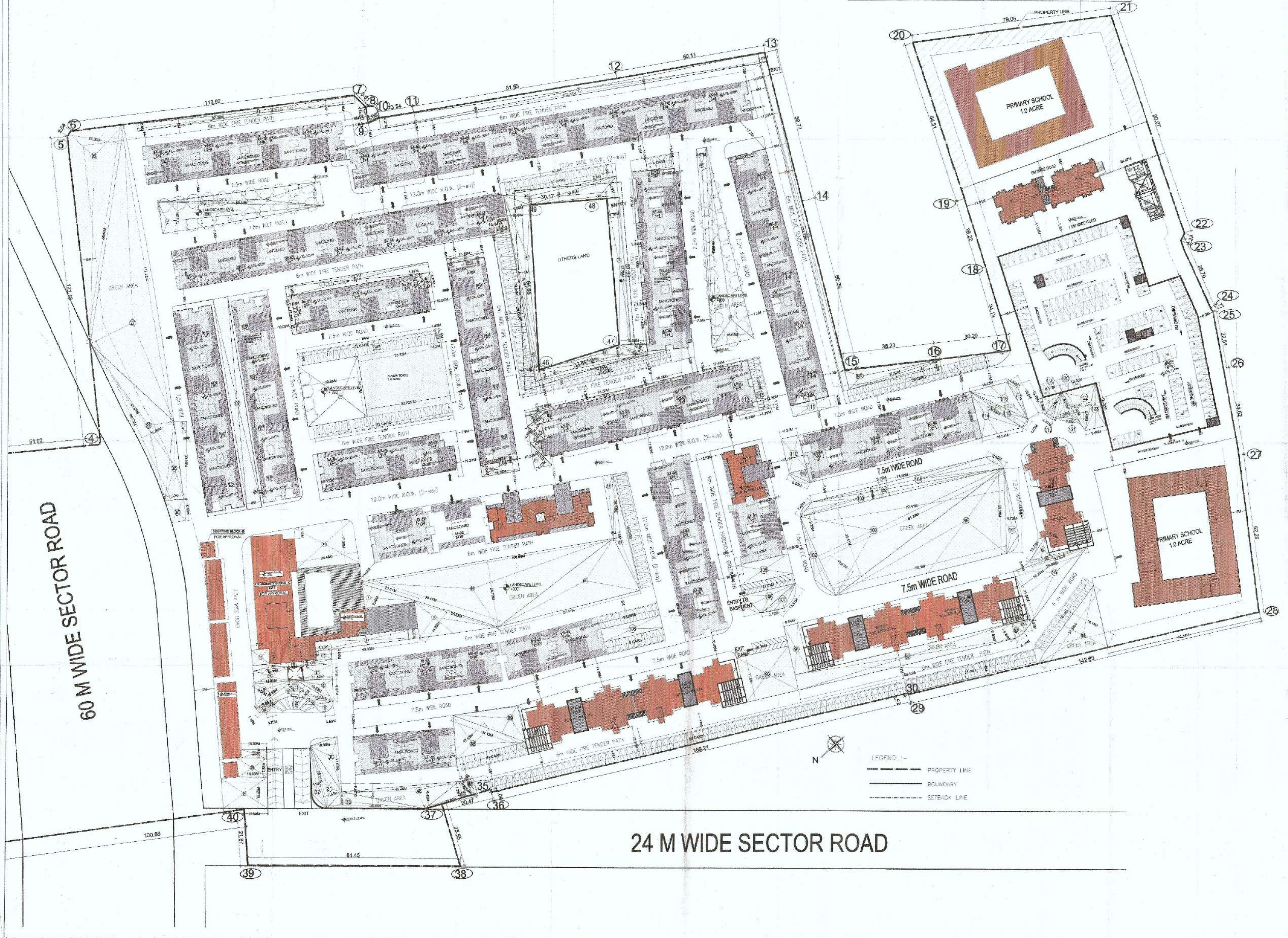


MASTER PLAN
FIRE LAYOUT

SANCTIONED

PLANT SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	PLANT QUANTITIES	COMMENTS: EVERGREEN/ POTS/SUN/SHADE ETC.
	Nerium oleander 'pink'	Nerium oleander 'pink'	195	TREE, DECIDUDOUS
	DELONIX REGIA	GUL MOHUR TREE	193	TREE
	CASSIA FISTULA	INDIAN LABURUM (AMALTAS)	47	TREE, EVERGREEN



ORGANISED GREEN AREA CALCULATIONS

No.	Coeff.	LENGTH (m)	BREADTH (m)	Nos/Qty.	AREA (sqm)
	A	L	B	Q	[A*L*B*Q]
1	1	23.850	24.070	1	574.070
2	1	6.000	80.000	1	480.000
3	0.5	25.160	3.180	1	39.989
4	0.5	46.760	5.460	1	127.655
5	0.5	57.410	22.340	1	641.270
6	0.5	102.380	26.780	1	1368.520
7	0.5	22.810	8.960	1	102.189
8	0.5	35.020	14.280	1	250.043
9	1	40.930	3.830	1	156.762
10	1	24.460	17.380	1	425.115
14	1	7.200	5.900	1	42.480
15	1	3.860	6.230	1	24.048
16	1	1.630	15.860	2	51.704
17	1	5.940	14.050	1	83.457
18	0.5	9.060	18.390	1	83.307
19	0.5	4.420	18.390	1	40.642
20	0.5	16.530	8.880	1	73.393
21	0.5	16.520	5.360	1	44.300
22	0.5	86.660	21.380	1	926.395
23	1	10.320	3.390	1	34.985
24	0.5	10.230	2.150	1	10.997
25	1.67	3.760	3.750	1	22.078
26	1.67	3.660	3.660	1	21.031
27	0.5	117.720	28.140	1	1656.320
28	0.5	68.230	15.650	1	533.900
29	1	11.690	7.530	1	88.026
30	0.5	21.620	10.960	1	118.478
31	0.5	25.210	7.550	1	95.168
32	0.5	25.210	4.110	1	51.807
33	0.5	38.480	6.490	1	124.868
34	1	18.040	12.230	1	220.629
35	0.5	7.390	30.660	1	113.289
36	1	7.390	8.580	1	63.406
39	1	3.540	5.760	1	20.390
41	1	87.290	2.800	1	244.412
42	0.5	88.550	16.650	1	737.179
43	0.5	86.550	4.070	1	180.199
44	1	2.180	1.670	1	3.423
45	0.5	35.550	8.080	1	143.622
46	0.5	35.550	5.490	1	97.585
47	0.5	69.600	9.560	1	332.688
48	0.5	48.350	9.420	1	227.776
49	0.5	74.040	2.190	1	81.074
50	0.5	52.540	4.170	1	109.546
51	1	16.480	1.340	3	66.250
52	0.5	66.450	9.350	1	310.654
53	0.5	66.450	12.580	1	417.971
54	1	152.430	4.720	1	719.470
56	1	57.100	3.980	1	227.258
62	1	17.410	1.340	3	69.988
63	0.5	21.690	7.290	3	237.180
67	0.5	37.850	7.610	1	144.019
68	0.5	37.850	2.430	1	45.988
69	1	15.160	1.960	1	29.714
76	1	57.790	4.180	1	241.562
82	1	132.810	3.030	1	402.414
83	0.5	11.920	3.680	1	21.933
84	0.5	42.810	5.480	1	117.299
85	0.5	9.340	4.660	1	21.762
88	0.5	31.130	17.650	1	274.722
89	0.5	31.130	12.490	1	194.407
90	1	20.760	17.900	1	371.604
91	1	5.640	19.400	1	109.416
92	1	88.150	6.030	1	531.545
93	0.5	4.160	5.640	1	11.731
94	0.5	6.600	4.530	1	14.949
95	0.5	21.240	29.980	1	318.388
96	0.5	2.050	22.530	1	23.093
97	0.5	5.380	10.780	1	28.998
98	0.5	37.580	19.140	1	359.641
99	0.5	70.100	33.140	1	1161.557
100	0.5	33.920	81.370	1	1380.055
101	0.5	4.730	33.140	1	78.376
102	0.5	10.410	29.410	1	153.079
103	0.5	7.490	77.410	1	289.900
104	0.5	8.490	74.260	1	315.234
105	1	21.030	7.860	1	165.296
106	0.5	8.330	21.030	1	87.590
107	0.5	9.120	13.310	1	60.694
108	1	23.690	5.130	1	121.530
109	0.5	8.960	5.500	1	24.613
110	1	6.770	13.740	1	93.020
111	1	15.290	4.390	1	67.123
112	1	8.140	2.050	1	16.687
113	1	4.790	1.110	1	5.317
114	0.5	16.310	18.560	1	151.357
115	0.5	4.030	24.960	1	50.294
116	0.5	15.230	16.500	1	125.409
117	0.5	4.980	13.760	1	34.262
118	0.5	5.960	8.170	1	24.347
119	0.5	4.570	10.000	1	22.850
120	0.5	7.380	8.950	1	33.026
121	0.5	6.600	2.490	1	8.217
122	0.5	17.450	13.350	1	116.478
123	0.5	8.480	17.020	1	72.165
SUBTOTAL					20840.630
SUBTRACTIONS					
G1	1	4.690	8.920	1	41.835
G2	1	3.160	4.855	1	15.342
SUBTOTAL					41.835
TOTAL GREEN AREA (SQM)					20798.795
SITE AREA (ACRE)					29.347
SITE AREA (SQM)					118763.200
TOTAL GREEN (%)					17.513%

Notes:

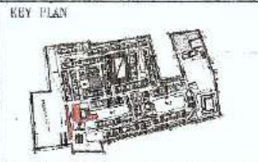
No.	Date	By	Description

Issues

No.	Date	By	Description

Revisions

KEY PLAN



Architects:-

Arcop Associates Pvt. Ltd
Plot No-36, Sector-32, Gurgaon.
Ph. 4506410, 4506412
Montreal, Toronto, New Delhi, Boston

Clients :-

M/S ROBIN SOFTWARE LLP AND OTHER'S
SH. SANJAY PASSI

Architect's Signature:
Aroop Kr. Sharma, Architect
Council of Architecture
Registration No. CA/95/18844

Owners' Signature:

PROJECT Title
Approval of revised building plans of Group Housing colony measuring 29.34675 (license no 56 of 2009 dated 31.08.2009 and 62 of 2013)in sector 77 Gurgaon Manesar urban complex being developed SH Sanjay Passi,Robin software LLP, Neemran developers pvt ltd c/o Emaar Mgf LAND LTD.

Drawing Title
MASTER LANDSCAPE PLAN
GREEN AREA CALCULATION

Drawing No.
AMP-02

Drawn: HEMANT
Checked: SANJAY
Date
Scale: 1:500
Revisions

This is a "PROVISIONAL APPROVED LAYOUT PLAN" only for purpose of inviting objection from the general public. Memo No. 1547 dt. 27.1.15

District Town Planner (HQ)
Directorate of Town and Country Planning,
Haryana, Chandigarh

D.T.P. (HQ) Member Secretary B.P.C.
S.T.P. (G) Member B.P.C.
C.T.P. (Hr.) Chairman B.P.C.

AD JD SD PA ATP

SANCTIONED
To be read in conjunction with Memo No. 16319 Dt. 28.8.15

Superintending Engineer
HUDA Circle-II Gurgaon

For Service Plan Estimate Only

Executive Engineer
HUDA Divn. No. VI
Gurgaon

Checked subject to comments in forwarding letter No.______ Dt.______ and notes attached with the estimate

Checked subject to comments in forwarding letter No.______ Dt.______ and notes attached with the estimate

AREA AND POPULATION STATEMENT

S.No.	Bldg Type	Description		No. of Bldgs.	No. of Apartments		Ground Coverage in Sqm		FAR in Sqm	
	ALREADY APPROVED BUILDINGS									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
							Total in Sqm	28430.463	Total in Sqm	207835
22	N. SCHOOL	G+1		1	–	–	254.46	254.46	509.52	
28	P. SCHOOL	G+1		2	–	–	1324.104	2662.28	2658.109	530
	GRAND TOTAL							31347.051	–	3078

POPULATION

			Permissible		Proposed
Population of Main Units	@	5	person per unit		7565 persons
Population of EWS units	@	2	person per unit		534 persons
Population of Service units	@	2	person per unit		318 persons
TOTAL POPULATION	=				8417 persons
TOTAL DENSITY	=	100 PPA (minimum)			286.81 PPA
		to PPA 300 (maximum)			

INFRASTUCTURE

	Permissible		Proposed	
Convenient shopping	593.82 sqm.	592.976		sqm
@ 0.5% of the total area site				

PARKING

		Required		Proposed	
Parking in MLCP	@	30 Sq.mt. Per ECS		800	ECS
Parking in STILTS *	@	30 Sq.mt. Per ECS		585	ECS
PARKING IN BASEMENT	@	35 Sq.mt. Per ECS		677	ECS
Parking on SURFACE	@	25 Sq.mt. Per ECS		294	ECS
TOTAL PARKING	=	2270	ECS	2356	ECS
		(1.5 ECS per Main Unit)			
PARKING RESERVED FOR EWS(5%)		MLCP AT STILT (1 to 114)		113.5 ECS	

GREEN AREA

		Required	Proposed
Total Maintained Green Area Required	@	15% of the total site area	17.51% of the total site area
		17814.48 Sq.mt.	20708.80 Sq.mt.

* Refer earlier approved building plans for parking under stilts. (559 ECS approved earlier & additional 26 provided under tower B-12, B-13, B-14, B-15-01, B-15-02, B-16-01, B-16-02 & B-17)

* TOWER B16-02 & B15-02 ARE MIRROR IMAGES OF TOWER B16-01 & B15-01 RESPECTIVELY

ABSTRACT

TOTAL SITE AREA		=	29.3467	ACRES	118763.20	sq.m
PARAMETERS FOR HOUSING			PERMISSIBLE		PROPOSED	
F.A.R.	Effective Site (@ 1.750)	=	207,835.60	sq.m	174...	
		=		sq.m	207,901.157	sq.m
	TOTAL FAR		207,835.60	sq.m	(includes shopping)	
GROUND COVERAGE		=	35.00%	=	26.395%	
		=	41,567.12	sq.m =	31347.051	sq.m
No. of UNITS (Main)					1513	units
No. of UNITS (EWS)			267.00		267	units
		=	17.65%	of TOTAL UNITS (including EWS)	17.65%	
No. of SERVENT ROOMS			151		159	units
		=	10.00%	of TOTAL UNITS	10.51%	

PLUMBING LEGEND:-

🟩 – – –	IRRIGATION WATER SUPPLY LINE
⊗ GH	GARDEN HYDRANT

Notes:

KEY PLAN

Architects :-

Areop Associates Pvt. Ltd.

Client :-

M/S ROBIN SOFTWARE LLP AND OTHERS
SH. SANJAY PASSI

Architect's Signature

Owners Signature

Rameshwar Lal Rameshwar Lal

PROJECT TITLE

Approval of revised building plans of Group Housing colony measuring 29.34673 (license no 56 of 2009 dated 31.08.2009 and 97 of 2010) in sector 77 Gurgaon, Haryana being developed by Sh Sanjay Passi, Robin software LLP, Northern developers pvt ltd c/o Sanjay Mal Lakh LTD.

Drawing title

MASTER PLAN

IRRIGATION WATER SUPPLY LAYOUT

Drawing No.	
AMP-01D	
Drawn	Checked
HEMANT	SANJAY
Date	

C.T.P. (HQ) Member Secretary B.P.C.

S.T.P. (G) Member B.P.C.

C.T.P. (HQ) Chairman B.P.C.

ATP

Checked and found ok for Public Health (Internal) Services only subject to comments in forwarding letter No. ___ Dt. ___

Superintending Engineer (HQ) HUDA, Panchkula

SANCTIONED

To be read in conjunction with Memo No. ___ Dt. ___

Superintending Engineer HUDA Circle-II, Gurgaon

For Service Plan Estimate Only

Executive Engineer HUDA Divn. No. VI Gurgaon

Checked subject to comments in forwarding letter No. 2129 Dt. 15/7/16 and notes attached with the estimate

15/7/16

Executive Engineer (W) for Chief Engineer HUDA Panchkula

15/7/16

Town & Country Planning, Haryana, Chandigarh


PRIMARY SCHOOL
1.0 ACRE
Primary School
1 Acre
24 M WIDE SECTOR ROAD
200 M WIDE
INSTITUTIONAL BELT
LEGEND
L3 SINGLE ARM POLE LIGHT 4.5M -5.0M HEIGHT
L4 BOLLARD LIGHT
L5 BADMINTON COURT LIGHT
L6 TENNIS COURT LIGHT
SANCTIONED
ISSUES
Revisions
Aroop Associates Pvt. Ltd.
MASTER PLAN
LIGHTING PLAN
ANP-01


PART I
PART I
PART I
PART II
PART II
PART II
60 M WIDE SECTOR ROAD
12 M WIDE SERVICE ROAD
12 M WIDE SERVICE ROAD
24 M WIDE SECTOR ROAD
PRIMARY SCHOOL 1.5 ACRE
PRIMARY SCHOOL 1.5 ACRE
SEWER LAYOUT
SANCTIONED

24 M WIDE SECTOR ROAD
60 M WIDE SECTOR ROAD
12 M WIDE SERVICE ROAD
6M SETBACK
PART I
PART II
S.T.P.
7.5M WIDE ROAD
PRIMARY SCHOOL
EXTERNAL STORM WATER LINE
CATCH BASIN (500X500)mm
STORM WATER MANHOLE WITH SOBD PERFORATED MANHOLE COVER
R.P. RECHARGE PIT
D.C. DESILTING CHAMBER
STORM LAYOUT
SANCTIONED


PART I
PART I
PART I
PART II
PART II
PART II
60 M WIDE SECTOR ROAD
12.19 WIDE SERVICE ROAD
12 M WIDE SERVICE ROAD
24 M WIDE SECTOR ROAD
7.5m WIDE ROAD
7.5m WIDE ROAD
S.T.P
PRIMARY SCHOOL 1.8 ACRE
PRIMARY SCHOOL 1.8 ACRE
SANCTIONED