

**PROPOSED RESIDENTIAL PLOTTED
COLONY UNDER DEEN DAYAL
JANAWAS YOJNA ON AN AREA
MEASURING 5.0125 ACRE
AT
SECTOR- 63A, GURUGRAM
(HARYANA)**

**SERVICE PLAN ESTIMATE
FOR
PUBLIC HEALTH ENGINEERING SERVICES WORK**

Client

MS. SIGNATURE GLOBAL INDIA PVT. LTD.

MEP Services Consultant

PARADISE CONSULTANTS

Plot No. 96, Pocket – 1, 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 PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JANAWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA

Gurgaon is located at 28°28'N 77°02'E/28.47°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.

PROPOSED RESIDENTIAL PLOTTED COLONY MEASURING 5.0125 ACRES is a residential proposed between **SECTOR - 63A AT GURUGRAM, HARYANA** for development by **MS. SIGNATURE GLOBAL INDIA PVT. LTD.**

1 Water Supply

The source of water supply shall be HUDA water supply connection. It has been proposed to construct underground tanks of capacity as per attached detailed 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 plot.

i.) 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 26000 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 02 Nos and the tubewells will be bored in tune with growth of demand to avoid absolence of the tubewells.

ii.) Design

The scheme has been designed for population of 1296 persons in 5.0125 Acre. The rate of water supply per head per day has been taken assumed as 172.5 litres per head per day as per HUDA norms. In addition to above necessary provision of water for Community building, Commercial building, parks etc. have been taken into account for calculating the maximum number of tubewell water required.

iii.) 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.

iv.) Under Ground Storage

Underground storage tank provision has been made, which caters for the present and a lot of future requirement as well as fire fighting requirement. The water for domestic water compartment shall over flow from the fire compartment so that the water in the fire compartment also remains fresh.



v.) **Boosting Station**

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

vi.) **Distribution System**

The distribution systems for this development are has been designed to supply @ 172.5 Litres per head per day @ 3 times the average rate of flow on 'Hazen Willima' formula with C-100. Necessary provision for laying D.I. pipes only conforming to relevant IS standards along with valves and specials has been made in this estimate. Minimum pipe diameters for distribution are kept as 100 dia.

vii.) **Rising Mains**

Rising mains from HUDA water main on sector road to water works have also been designed and provision for D.I. pipe line (dia as/design) has been made in this estimate.

2 **Sewerage**

This scheme is designed for sewer connecting to the proposed sewage treatment plant. 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.

3 **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 NP₃ pipe drain with minimum 400 mm dia is proposed in this area.

4 **Roads**

Cost of road has been taken in the estimate.

5 **Street Lighting**

Provision for street lighting on surrounding area has been made.

5 **Horticulture**

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



7 Specifications :

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

8 Rates

Estimates for providing services in this site has been prepared on the recent HUDA rates.

9 Cost

The total cost of development in this Project including various PH & B & R services works out to **Rs. 524.80** ~~433.35~~ lacs which includes 3% contingency and PE charges and 49% departmental charges also.

The cost per gross acre for this phase works out to **Rs. 104.70** ~~86.45~~ 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.

MS. SIGNATURE GLOBAL INDIA PVT. LTD.

Authorised Signatory



**PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN
AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA**

DESIGN CALCULATION

1 Plots

Total No. of Plots	72 Nos.
Population per plot	18.0 persons
Therefore population	1296 persons
SAY	1296 persons

Water requirement for plots (General)	@	172.50 Lpd.	
		Domestic @ 65 %	Flushing @ 35 %
Water requirement for plots (General)	@	113.00	59.50 Lpd.
		146448	77112 Lpd.
	or	146.45	77.11 Kld.

2 ~~Visitors @ 10%~~

Water requirement	@	15.00 Lpd.	
		Domestic	Flushing
Water requirement	@	5.00	10.00 Lpd.
		650	1300 Lpd.
	or	0.65	1.30 Kld.

②-3 Commercial (0.201 Acres)

	811.40	sq.m	
	@		3 sq.m/per
Total Population	270		
Staff @ 10%	27	-	- Person
Visitors @ 90%	243	-	- Person
Per Person Water Requirement		Domestic	Flushing
Staff	45.00	25.00	20.00 Lpd.
Visitors	15.00	5.00	10.00 Lpd.
Daily Water Requirement			
Staff	1217.10	676.17	540.93 Lpd.
Visitors	3651.30	1217.10	2434.20 Lpd.
		1.89	2.98 Kld.

③-4 Common facility (0.501 Acres)

	2028.49	sq.m	
	@		1.8 sq.m/per
Population	1127		
Staff @ 10%	113	-	- Person
Visitors @ 90%	1014	-	- Person
Per Person Water Requirement		Domestic	Flushing
Staff	45.00	25.00	20.00 Lpd.
Visitors	15.00	5.00	10.00 Lpd.
Daily Water Requirement			
Staff	5071.22	2817.34	2253.87 Lpd.
Visitors	15213.65	5071.22	10142.43 Lpd.
		7.89	12.40 Kld.



④	5	Filter backwash (Assumed Lumsum)	@	10.00	0.00 Kld.
⑤	6	Total water Requirement (1+2+3+4+5)	Total	166.23 166.88	92.49 93.78 Kld.
⑥	7	Green area	1899.64 Sq.m		
		Daily water requirement	@	-	1899.640 Sqm.
				-	6.00 Ltr./Sqm.
				-	11397.84 Lpd.
				-	11397.84 Lpd.
				0.00	11.40 Kld.
⑦	8	Area under undetermined use	0.00		
		Daily water requirement	@	-	0 Lpd.
				0.00	0 Lpd.
			Total	0.00	0.00 Kld.
		(7+8)	Total	0.00	11.40 Kld.
	I	Total Daily Requirement		166.23 166.88	92.49 93.78 Kld.
		a) For Domestic+Flushing use (1+2+3+4+5)			
		b) Under Road+ Parks (7+8)		0.00	11.40 Kld.
		Total Daily Requirement		166.23 166.88	103.89 105.18 Kld.
			SAY	170.00	110.00 Kld. 105.00
	II	Tubewell			
		Assuming working hours of tubewells			8 Hours
		Assuming discharge/hour of each tubewell			26 KL/Hours
		Total domestic demand		166.23 166.88	166.88 Kld.
		No. of tubewells required		166.88 / 26/8 Say	0.80 1.00 Nos.
	III	Pumping machinery for tubewell			
		Gross working load	=		45.00 Mtr.
		Average fall in SL	=		3.05 Mtr.
		Depression head	=		6.10 Mtr.
		Friction loss in main	=		2.50 Mtr.
			=		56.65 Mtr.
			Say	=	60.00 Mtr.
		BHP = $26000 \times 60 \times 1 / 60 / 60 / 75 / 0.6$	=		9.63 HP
		With 60% efficiency	Say	=	10.00 HP
	IV	Underground Tank			166.23
		Daily requirement for domestic use	=		166.88 Kld.
		Capacity of under ground tank		166.23 @ 60% = 99.74 KLD $166.88 \times 12 / 24$	83.44 Kld.
		12 hours storage			
			Say	=	100 - 90.00 Kld.
		Fire Tank Capacity As/NBC Code $100 \sqrt{P} = 100 \sqrt{4.784}$		$2.693 \times 100 = 54.70 KL$	113.84 KLD
			Say	=	100 120.00 KLD



	TOTAL	200.00 210.00 KLD
It is proposed to provide under ground tank of capacity <u>200 KL</u> which also includes <u>100 KL</u> capacity for fire fighting.		
Both tanks will have four compartments, two for fire, one for raw and the other one 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.		
• <u>Flushing Tank = 105 X 60% = 63 KL Say 70 KL as STP site.</u>		
It is proposed to provide the under ground tank of following capacity:		
Capacity of Fire Water Tank-01		60.00 Kld.
Capacity of Fire Water Tank-02		60.00 Kld.
Capacity of Raw Water Tank-01		45.00 Kld.
Capacity of Raw Water Tank-02		- Kld.
Capacity of Domestic Water Tank-01		45.00 Kld.
Capacity of Domestic Water Tank-02		- Kld.
		UGT
V BOOSTING MACHINERY		
U.G. Tank		
Daily requirement for domestic use	=	166.23
Assuming 6 hours pumping	=	166.88 Kld.
Discharge/hour	1 pumps (with one standby) 166.88 / 6 =	27.71 KL/Hours or 461.75 LPM Say 470 LPM
Head of pump		
i) Suction lifts	=	0.0 Mtr.
ii) Friction loss in M<main & specials	=	5.0 Mtr.
iii) Clear head	=	17.0 Mtr.
iv) Residual head	=	5.0 Mtr.
	=	27.0 Mtr.
BHP of motor	<u>470 X 27 = 4.70</u> <u>60 X 75 X 0.60</u>	4.70 2.3 HP 5.00 3.0 HP
Gen Set	Nos.	HP
Pumps for U.G. Tank (Dom & Flushing) I+I	2	30
Tubewell	1	10.0
Lighting		=
		8.00 6 HP 10 HP 25 HP 43 4 HP
	or	41 x 0.746 x 1.5
	Say	48.12 45.88 KVA 50.00 KVA
VI Sewage Treatment Plant Capacity (STP.)		
Gross Domestic+Flushing water requirement / day		258.72 KL 260.66 Kld.
Sewage flow 80% of total load		206.98 KL 208.53 Kld.
Proposed STP. Capacity	Add 5% marginal factor →	217.33 KL 210.00 Kld. STP

(vii) Boosting Machinery for Flushing Tank (UGT) Say 220 KL

- Daily water demand = 105 KL
- Assuming 6 Hour Pumping
- Discharge / Hour = 105 / 6 = 17.5 KL or 291.67 LPM
Say 300 LPM

Head 27 Mtr

BHP of Motor = $\frac{300 \times 27}{60 \times 75 \times 0.60} = 3.00 \text{ HP}$
Say 3.00 HP

(I W + I SB)



Estimate for Providing in Internal Development works for
MS. SIGNATURE GLOBAL INDIA PVT. LTD.

Description	Amount (Lacs.)
Sub Work - I Water Supply System	103.51
Sub Work - II Sewerage System	45.90
Sub Work - III Storm Water Drainage System	28.95
Sub Work - IV Roads & Footpath	135.92
Sub Work - V Street Lighting	7.69
Sub Work - VI - Horticulture	9.99
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)	101.39

Total 433.35

(RUPEES FOUR CRORES THIRTY THREE LACS THIRTY FIVE THOUSAND ONLY)

COST PER ACRE $524.80 \text{ Lakh} / 5.0125 = 104.70 \text{ Lakh}$
MS. SIGNATURE GLOBAL INDIA PVT. LTD.

Checked subject to comments
in forwarding letter No. 20047
Dt. 07.02.2022 and notes
attached with the estimate

Authorized Signatory

Additional Chief Engineer (HQ)
for Chief Engineer-I, HSVP
Panchkula

Executive Engineer
HSVP Division No. VI
Gurugram

MS. SIGNATURE GLOBAL INDIA PVT. LTD.
PARADISE CONSULTANTS

Director General
Town & Country Planning
Haryana, Chandigarh

Superintending Engineer,
HSVP, Circle, Gurugram.

FINAL ABSTRACT OF REVISED COST		Amount (Lacs.)
Description		
Sub Head - (I) Head Works		25.50 16.40
Sub Head - (II) Pumping Machinery		17.50 17.21
Sub Head - (III) Distribution System		29.64 30.80
Sub Head - (IV) Irrigation Scheme		4.10 3.04
	Total	76.64 67.45
Add 3% Contingencies		2.02 2.30
	Total	69.47 78.94
Add 49% Departmental Charges		34.04 38.68
	Grand Total	103.51 117.62
(CO to final abstract of cost)	Say	117.62 103.51 Lakh

Executive Engineer
HSVP Division No. VI
Gurugram

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Sub Work I				Water Supply	
Sub Head No. I				Head Works	
S. No.	Description	Unit	Qty	Rate (Rs.)	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.	1	1000000.00 1000000/-	1.00 10.00
2	Constructing pump chambers as per standard design of PWD PH/HUDA of size 1.50x1.50 m.	Nos.	1	100000.00	1.00
1	Construction of boosting chambers of suitable size along with under ground tank & pumping machinery and generating set etc. complete in all respects.				
	Details of boosting station				
i)	construction of boosting chambers	Nos.	1	300000.00	3.00
ii)	construction of UG tank	KL	200 90	60000.00 4500/-	5.40 9.00
4	Provision for carriage of material and other unforeseen items.	LS	-	-	0.50 1.50
5	Provision for facilities staff for Maintenance	LS	-	-	2.00 1.50
	(C.O. to abstract of cost of Sub-work No.I)				25.50 16.40 Lacs
				Say	25.50 16.40 Lacs



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Sub Work I				Water Supply	
Sub Head No. II				Pumping Machinery	
S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (in Lakhs)
1	Providing and installing electricity driven electro or submersible pumping set capable of delivering about 26 KL water per hour against a total head of 60 M complete with motor and other accessories.	Nos.	1	2,00,000/- 130000.00	2.00 1.30
2	Providing & installing electricity driven pumping set capable of delivering 240 LPM of water against a total head of 27 m complete with motor and other accessories (For Domestic - 3.0 HP) S.W 81P	Nos.	2	1,50,000/- 100000.00	3.00 3.00
3	Pump for Flushing, 300 LPM, 27M Head, 3HP	Nos.	2	1,00,000/-	2.00
i)	50 KVA	Nos.	1	500000.00	5.00
4	Provision for diesel engine genset stand bye arrangements for Tubewells.	Nos.	1	125000.00	1.25
5	Provision for cheap pressure type chlorination plant complete.	Nos.	1	L.S. 15500.00	1.00 0.16
6	Provision for making foundations & erection of pumping machinery.	LS	1	L.S.	1.00 2.00
7	Provision for pipes, valves & specials inside the pump chamber.	LS	-	-	1.00 1.50
8	Provision for electric services connection including electric fittings for tubewells chambers complete including cost of transformer.	LS	-	-	1.00 1.50
9	Provision for fire Hydrants	LS	L.S.	-	0.75
10	Provision for carriage for materials and other unforeseen items.	LS	-	-	0.75 1.50
(C.O. to abstract of cost of Sub-work No.1)				Total	17.50 17.21
				Say	17.50 17.21 Lakh



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Sub Work I		Water Supply			
Sub Head No. III		Distribution System/Rising Main			
S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing, laying, jointing & testing D.I. K-7 pipes including cost of excavation complete as per ISI marked. (For Domestic & Tube Well water supply line)		1928	1250/-	2410000/-
i)	100 mm dia	M	1704	1150.00	1959600.00
ii)	150 mm dia	M	0	1575.00	0.00
2	Providing, laying and jointing GI pipes and fittings conforming to IS:1239 (heavy class) complete with GI fittings (union and clamps including cutting holes in wall and making good the same in cement mortar 1 : 2 including pipe supports with walls and ceilings including pipe supports with galvanised MS slotted angle iron angles, clamps, nuts, bolts complete including cutting and making good the floors and walls where required complete of outer diameter.				
i)	40mm dia nominal bore	M	112	650.00	29900.00
ii)	50mm dia nominal bore	M	112	750.00	60750.00
iii)	65mm dia nominal bore	M	0	900.00	58500.00
iv)	80mm dia nominal bore	M	0	1150.00	94300.00
3	Providing, fixing & Testing butterfly valves including cost of complete in all respects.			12000/-	120000/-
i)	100 mm i/d	Nos.	10	10000.00	100000.00
ii)	150 mm i/d	Nos.	0	15000.00	0.00
4	Providing, fixing & Testing Non Return valves (NRV) including cost of complete in all respects.				28000/-
i)	100 mm i/d	Nos.	2	14000.00	42000.00
5	Providing and fixing air valves and scour valves including cost of complete in all respects.				20,000/-
		Nos.	2	10000.00	50000.00
6	Providing and fixing indicating plates for sluice valve, air valve etc.				14000/-
		Nos.	14	1000.00	18000.00
7	Provision for carriage of material	L.S.	-	-	50,000/-
					150000.00
8	Provision for cutting the roads and making to its original conditions.	L.S.	-	-	1,00,000/-
					200000.00
9	Making water supply connection. from 2150	L.S.	-	-	1,00,000/-
					200000.00
10	Provision for rising main from HUDA water supply line to UG Tank.				
i)	65 mm i/d	M	180	675/-	121500/-
				650.00	117000.00
(C.O. to abstract of cost of Sub-work No.I)				Total	2963500/-
				Say	3080050.00
					29.6430.80 Lacs



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Sub Work I					Water Supply
Sub Head No. IV					Irrigation
S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing, laying, jointing & testing uPVC pipe line confirming to IS 4985 including cost of Excavation etc. complete in all respect.				
i)	90 OD	M	94	900 650.00	84600/- 61100.00
ii)	75 OD	M	198	800 400.00	158400/- 79200.00
iii)	40 OD	M	0	400 310.00	0.00
iv)	32 OD	M	98	350 260.00	34300/- 25480.00
v)	25 OD	M	54	300 210.00	16200/- 11340.00
2	Providing and fixing 20 mm PVC RQRC hydrant valve with PVC lid complete in all respect. <i>including cost of PVC keys</i>	Nos.	10	3500/- 1200.00	35000/- 12000.00
3	Providing & fixing 20 mm PVC Keys for hydrant valve complete in all respects.	Nos.	10	400.00	4000.00
4	Providing, fixing & Testing Butter fly valves including cost of complete in all respects.				
i)	80 mm i/d	Nos.	1	5000/- 4750.00	5000/- 4750.00
5	Providing and fixing air valves and scour valves including cost of complete in all respects.	Nos.	1	4500.00	4500.00 ✓
6	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	2	1000.00	2000.00 ✓
7	Provision for carriage of materials etc. and other unforeseen charges.	LS	-	-	30,000/- 50000.00
8	Provision for cutting of roads & making good to its in original condition.	LS	-	-	3,0000/- 50000.00
				Total	4,00,000/- 304370.00
				Say	4.00 - 3.04 Lacs



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Sub Work II				Sewerage Scheme	
S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing, lowering, jointing, cutting SW/ RCC NP ₃ pipes and specials into trenches including cost of excavation, bed concrete lot of manholes complete.				
i)	200 mm i/d			1250/-	265000/-
a)	Average depth 0.0 m to 1.5 m	M	212	1050.00	222600.00
b)	Average depth 1.5 m to 4.5 m	M	162	1200.00	194400.00
				1500/-	243000/-
ii)	250 mm i/d				
a)	Average depth 0.0 m to 1.5 m	M	0	1200.00	0.00
b)	Average depth 1.5 m to 4.5 m	M	124	1400.00	173600.00
				1800/-	223200/-
ii)	300 mm i/d				
a)	Average depth 1.5 m to 4.5 m	M	0	1690.00	0.00
ii)	400 mm i/d				
a)	Average depth 1.5 m to 4.5 m	M	0	2100.00	0.00
2	Provision for lighting, watching and temporary diversion of traffic, <i>timbering & shoring etc.</i>	LS	-	-	100000.00 ✓
3	Provision for cutting of roads and carriage of materials etc. and other unforeseen charges.	LS	-	-	100000.00 ✓
4	Provision for connection with HUDA.	LS	-	-	100000.00 ✓
5	Cost of 220 Kld Sewerage Treatment Plant, include <i>KL</i> cost of flushing Tank of 70 KL	LS	220 KL	16000/-	3520000/- 2100000.00
6	Provision for CI / DI pipe from STP. To Huda Main Line.				
i)	150 mm dia pipe.	M	0	1575.00	0.00
					4551200/- 2990000.00
	Add 3% contingencies				136536/- 89718
					3080318.00
	Add 49% Deptt. Charges				4687736/-
					4509355.82
				Total	2296991/- 4589673.82
	(C.O. to abstract of cost of Sub-work No. 1)			Say	69.8545.90 Lacs



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Sub Work - III				Storm Water Drain	
S. No.	Description	Unit	Qty	Rate (Rs.)	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)	400 mm i/d			2500/-	772500/-
a)	Average depth upto 1.5 m	M	309	1900.00	587100.00
b)	Average depth 1.5 m to 4.5 m	M	170	2100.00	357000.00
				2600/-	442000/-
2	Provision for Road Gully & Drain.	LS	-	-	200000.00
3	Provision for cutting of roads and carriage of materials etc. and other unforeseen items	LS	-	-	1,00,000/- 200000.00
4	Provision for disposal arrangements Recharge Pit.	Nos	3	2,50,000/- 200000.00	7,50,000/- 400000.00
5	Provision for lighting, watching and temporary diversion of traffic	LS	-	-	100000.00
6	Provision for connection with HUDA. with existg system	L.S		2600/-	1,00,000/- 52000/-
⑦	400 mm i/d (Average depth 1.5 m to 4.5 m)	M	20	2100.00	42000.00
				Total	2516500/- 1886100.00
	Add 3% contingencies				56583.00 75495/-
					259199.5/-
	Add 49% Deptt. Charges				1942683.00 1270078/-
					951914.67
					3862073/-
				Total	2894597.67
				SAY	38.62-28.95 Lacs
	(C.O. to abstract of cost of Sub-work No. 1				



PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT SECTOR- 63A,
GURUGRAM (HARYANA)

Sub Work IV				Road Work	
S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Provision for leveling & earth filling as per site condition 5.0125 acre @ 100000/acre <i>150,000/-</i>	Acres	5.0125	<i>150,000/-</i> 100000	<i>751875/-</i> 501250.00
2	Construction of road by:- i) Providing GSB 300 mm thick. ii) 250 mm thick W.M.M. stone aggregate. iii) 50 mm thick B.M. <i>DBM</i> iv) 20 mm thick M.S.S. complete in all respect. <i>25 mm B.C.</i>	Sq. mtr.	4183.0	<i>1250/-</i> 800	<i>5019600/-</i> 3346400.00
3	Provision for making approach and pavement to building block by providing concrete pavement or tiles. Etc.	Sq. mtr.	<i>L.S</i> 836.60	650	<i>2,00,000/-</i> 543700.00
4	Provision for parking arrangement @ 500 / sqm	Sq. mtr.		500	0.00
5	<i>2 channel</i> Provision for kerb stone with complete specification. <i>both side 671 X 2 = 1342 mtr</i>	mtr.	<i>1342</i> 8366.0	<i>600/-</i> 450	<i>805200/-</i> 3764700.00
6	Provision for Carriage of material	L.S.		<i>L.S</i> 500000.00	<i>1,00,000/-</i> 500000.00
⑦	<i>Provision of footpath on both side</i>				
⑦	<i>with 80 mm thick paver block in cc</i>		<i>2013</i>	<i>750/-</i>	<i>1509750/-</i>
⑧	Provision for traffic lighting and guide map/ indicators	L.S.	<i>sqm</i> 200000.00	200000.00	200000.00
				Total	<i>8586425/-</i> 8856140.00
Add 3% contingencies					<i>257593/-</i> 265684.20
					<i>8844018/-</i>
				Total	9121824.20
					<i>88.44</i> Lacs
Add 49 % department charges					<i>43.34</i> Lacs
				SAY	<i>131.78</i> 135.92 Lacs



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GURUGRAM (HARYANA)

Sub Work V					Street Lighting
S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing street lighting on internal roads as per standard specifications of HVPNL with CFL	per acre	5.0125	250,000/- 100000.00	1253125/- 501250.00
	Add 3% contingencies				37594/- 15037.50
				Total	1290719/- 516287.50
	Add 49% Deptt. Charges				632452/- 252980.88
				Total	1923171/- 769268.00
				SAY	19.23 7.69 Lacs



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GURUGRAM (HARYANA)

Sub Work VI		Horticulture			
S. No.	Description	Unit	Qty	Rate (Rs.)	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 proper level by filling with earth mixed with manure before & after flooding 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)				
	Green area = 1899.64 sqm				
	Free plantation = 0.47 Acre		0.47	150,000/-	70,500/-
	5.0125 acres @ Rs. 1.0 lacs		5.0125	100000.00	5,01,250
	12-200 trees @ Rs. 750/- each				1,50,000
	1300/-				14,5600/-
	Add 3% contingency charges				19537.50
				Total	670787.50
	Add 49% Deptt. Charges				328685.88
				Total	999473.38
				Say	3.32 9.99 Lacs



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GURUGRAM (HARYANA)

Sub Work VII					Maintenance Charges & Resurfacing of Roads
S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Provision for maintenance charges for water supply, sewerage, storm water drainage, roads, street light, horticulture etc. complete including operation & establishments charges as per HUDA norms after completion & resurfacing of roads after 10 years or 1st phase.				
	5.0125 acres @ 7.50 lacs per acre	per acre	5.0125	750,000/- 400000.00	3759375 2005000
2	Provision for resurfacing & strengthening of road after five years of 1st phase @ 500/- per sqm	Sq. mtr.	4183.0	600/- 500	2509800/- 2091500.00
	50 mm BM & 25 mm premix carpet				
3	Provision for resurfacing & strengthening of road after ten years of 2 nd phase @ 600/- per sqm	Sq. mtr.	4183.0	750/- 600	3137250/- 2509800.00
	50 mm BM & 25 mm premix carpet				
				Total	9406425/- 6606300.00
	Add 3% contingency & PE charges				282193/- 498189.00
				Total	6804489.00
	Add 49% Departmental charges				3334199.61
				Total	10138688.61
		say		14436	101.39 Lacs



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PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT
SECTOR- 63A, GURUGRAM (HARYANA)

WATER SUPPLY QUANTITY SHEET				
DOMESTIC WATER SUPPLY QUANTITY SHEET				
S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mtr.
1	U.G.T	D1	6.0	100
2.	D1	D2	19.0	100
3.	D2	D3	38.0	100
4.	D3	D4	77.0	100
5.	D4	D5	55.0	100
6.	D5	D5a	112.0	50
7.	D2	D6	24.0	100
8.	D6	D6a	115.0	100
9.	D6a	D7a	9.0	100
10.	D7a	D7	115.0	100
11.	D6	D7	9.0	100
12.	D7	D8	86.0	100
13.	D8	D9	9.0	100
14.	D9	D3a	155.0	100
15.	D3a	D3	9.0	100
16.	D3a	D5	98.0	100
			936 mtr	



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PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT
SECTOR- 63A, GURUGRAM (HARYANA)

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mtr.
FLUSHING WATER SUPPLY QUANTITY SHEET				
1	S.T.P	F1	3.0	100
2.	F1	F2	82.0	100
3.	F2	F3	63.0	100
4.	F3	F4	77.0	100
5.	F4	F5	55.0	100
6.	F5	F5a	112.0	40
7.	F1	F6a	35.0	100
8.	F6a	F7a	9.0	100
9.	F7a	F7	115.0	100
10.	F2	F7	9.0	100
11.	F7	F8	86.0	100
12.	F8	F9	9.0	100
13.	F9	F3a	155.0	100
14.	F3a	F3	9.0	100
15.	F3a	F5	98.0	100
			917 mtr	
TUBE WELL WATER SUPPLY QUANTITY SHEET				
1	Tube Well	UGT.	75.0 ✓	100
HUDA WATER SUPPLY QUANTITY SHEET				
1	HUDA Water Supply	UGT	180.0 ✓	65
Description			Length in (MTR)	Pipe Dia (MM)
Domestic, Flushing & Tube Well Water Supply line			1928 1704.0	100
Domestic, Flushing & Tube Well Water Supply line			112.0	50
Domestic, Flushing & Tube Well Water Supply line			112.0	40
0.1 pipe line from HSUB			180	65 mm

PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT
SECTOR- 63A, GURUGRAM (HARYANA)

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mtr.
Description			Length in (MTR)	Pipe Dia (MM)
HUDA Water Supply line			180.0	65
100 Dia Valve			10	Nos.
150 Dia Valve			0	Nos.
100 Dia Non Return Valve			3	Nos.
Air Valve			5	Nos.



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IRRIGATION WATER SUPPLY QUANTITY SHEET				
S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	OD
1	S.T.P	G1	10.0	90
2.	G1	G1a	53.0	32
3.	G1	G2	84.0	90
4.	G2	G3	18.0	75
5.	G3	G4	60.0	75
6.	G4	G5	30.0	75
7.	G3	G5	90.0	75
8.	G2	G6	45.0	32
9.	G6	G7	54.0	25
Irrigation Water Supply line			94.0	90
Irrigation Water Supply line			198.0	75
Irrigation Water Supply line			0.0	40
Irrigation Water Supply line			98.0	32
Irrigation Water Supply line			54.0	25
Garden Hydrant			10	Nos.
80 Dia Valve			1	Nos.
Air Valve			1	Nos.



PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT
SECTOR- 63A, GURUGRAM (HARYANA)

TITLE - SEWERAGE QUANTITY SHEET												
S.No.	Line No.		Length	Pipe Dia		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.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)
1	S1	S2	40.0	200	0.200	1.10	1.60	1.35	40.0	0.0	0.0	0.0
2	S2	S3	65.0	200	0.200	1.60	2.52	2.06	0.0	65.0	0.0	0.0
3	S3a	S3	44.0	200	0.200	1.10	1.42	1.26	44.0	0.0	0.0	0.0
4	S3	S4	19.0	200	0.200	2.52	2.66	2.59	0.0	19.0	0.0	0.0
5	S4a	S4	38.0	200	0.200	1.10	1.38	1.24	38.0	0.0	0.0	0.0
6	S4	S5	17.0	200	0.200	2.66	2.79	2.73	0.0	17.0	0.0	0.0
7	S5	S6	61.0	200	0.200	2.79	3.23	3.01	0.0	0.0	61.0	0.0
8	S6a	S6	90.0	200	0.200	1.10	1.75	1.43	90.0	0.0	0.0	0.0
9	S6	S7	122.0	250	0.250	3.28	3.93	3.61	0.0	0.0	122.0	0.0
10	S7	S.T.P	2.0	250	0.250	3.93	3.95	3.94	0.0	0.0	2.0	0.0
Total			498.0						212.0	101.0	185.0	0.0
Excavation Depth												
Description			(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)	(4.5 - 6.0)						
200 mm Dia pipe			212.0	101.0	61.0	0.0						
250 mm Dia pipe			0.0	0.0	124.0	0.0						
300 mm Dia pipe			0.0	0.0	0.0	0.0						
400 mm Dia pipe			0.0	0.0	0.0	0.0						

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TITLE : STORM WATER QUANTITY SHEET											
S.No.	Line No.		Length	Size of Pipe		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.)	(mtr.)	(mtr.)	(mtr.)
1	A1	A2	83.0	400	0.400	1.30	1.45	1.38	83.0	0.0	0.0
2.	A2a	A2	114.0	400	0.400	1.30	1.50	1.40	114.0	0.0	0.0
3.	A2	A3	24.0	400	0.400	1.50	1.55	1.53	0.0	24.0	0.0
4.	A3	D.C.-01	3.0	400	0.400	1.55	1.56	1.56	0.0	3.0	0.0
5.	D.C.-01	R.P.-01	2.0	400	0.400	1.56	1.57	1.57	0.0	2.0	0.0
6.	R.P.-01	A4	4.0	400	0.400	1.57	1.58	1.58	0.0	4.0	0.0
7.	A4	A5	36.0	400	0.400	1.58	1.65	1.62	0.0	36.0	0.0
8.	A5a	A5	31.0	400	0.400	1.30	1.36	1.33	31.0	0.0	0.0
9.	A5	A6	19.0	400	0.400	1.65	1.69	1.67	0.0	19.0	0.0
10.	A6a	A6	53.0	400	0.400	1.30	1.40	1.35	53.0	0.0	0.0
11.	A6	A7	74.0	400	0.400	1.69	1.82	1.76	0.0	74.0	0.0
12.	A7	D.C.-02	2.0	400	0.400	1.82	1.83	1.83	0.0	2.0	0.0
13.	D.C.-02	R.P.-02	2.0	400	0.400	1.83	1.84	1.84	0.0	2.0	0.0
14.	R.P.-02	TO HUDA DRAIN	4.0	400	0.400	1.84	1.40	1.62	0.0	4.0	0.0
15.	A8	A9	24.0	400	0.400	1.30	1.35	1.33	24.0	0.0	0.0
16.	A9	TO EXT.	4.0	400	0.400	1.35	1.36	1.36	4.0	0.0	0.0
Total			479.0						309.0	170.0	0.0
Excavation Depth											
Description			(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)						
400 mm Dia pipe			309.0	170.0	0.0						



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TITLE : ROAD QUANTITY SHEET					
AREA OF METALLED ROAD (A)					
S.NO.	ROAD NO.	LENGTH	WIDTH	-	TOTAL AREA
-	-	(In Rm. Mt.)	(In Rm. Mt.)	-	(In Sq. Mt.)
1	R-1	114.00	5.40		615.60
2.	R-2	155.00	5.40		837.00
3.	R-3	112.00	5.40		604.80
4.	R-4	58.00	5.40		313.20
	Service Road	170.45	8.40		1431.78
TOTAL		609.45			3802.38
ADD 10% FOR CURVES		60.945			380.24
TOTAL		670.40			4182.62
SAY		671.00			4183.00

- * Kurb & channel on both side of roads = $671 \times 2 = 1342 \text{ mtr}$
- * Footpath = $(671 \times 1.50) \times 2 = 2013 \text{ sqm}$
1.5 m wide



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PROJECT : PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA										
S.No.	Line No.		Average Demand	Peak Demand @ 1.5 Times	Flow Rate	Length	Head Loss	Total Head Loss	Velocity	Pipe Dia
-	From	To	lph.	lph.	lpm.	mtr.	mtr./ mtr.	mtr.	m/sec	mm
1	Tube Well 01	UGT.	20.86	31.29	521.50	75.0	0.024	1.79	1.106	100



PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA

TITLE : HYDRAULIC DESIGN CHART FOR MUNICIPAL WATER SUPPLY CONNECTION LINE FROM HUDA

S.No	Line No.		Average Demand		Peak Demand @ 1.5 Times	Flow Rate	Pipe Length	Head Loss	Total Head Loss	Velocity	Pipe Dia
-	From	To	kld.	kl/hr.	klph.	lpm.	mtr.	mtr./ mtr.	mtr.	m/sec	mm
1	HUDA	UGT.	166.88	7.6	11.4	189.6	180.0	0.030	5.38	0.952	65

Note : HUDA supply line calculation has been done as / 22 hours.



PROJECT : PROPOSED AFFORDABLE GROUP HOUSING COLONY FOR AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA
TITLE : DOMESTIC WATER SUPPLY HYDRAULIC CHART

S.No.	Line No		Nos.		Population @ 18 persons / Plot.	Water Requirement /day/person @	Plots (EWS)		Water Req. for Non Resi. Plots.		Total water Requirement		Domestic Water Req. @ 65 %		Average Demand @ 3 Times	Peak Demand @ 3 Times	Flow Rate	Length of Pipe	Head Loss	Total Head Loss	Velocity	Dia of Pipe
	From	To					Nos.	Pop. @ 9 persons / Plot	Water Req./day/person @	Type of Building	Basis of Water Requirement	Residential & Non Residential Building	Residential & Non Residential Building	Residential & Non Residential Building								
-	-	-	-	-	18.0	172.5	-	9	172.5	-	Lumpsum	lpd.	lpd.	lpd.	kld.	kld.	lpm.	mtr.	mtr./mtr.	mtr.	mtr./sec	mtr.
1	U.G.T	D1	0	0	0	0	0	0	0	-	0	0	0	0	0.00	0	0	6.0	0.000	0.00	0.000	100
2.	D1	D2	0	0	0	0	0	0	0	-	0	0	0	0	0.00	0	0	19.0	0.000	0.00	0.000	100
3.	D2	D3	2	36	6210	0	0	0	0	-	0	6210	4037	4037	4.04	12	8	38.0	0.000	0.00	0.018	100
4.	D3	D4	8	144	24840	0	0	0	0	-	0	24840	16146	16146	16.15	48	34	77.0	0.000	0.01	0.071	100
5.	D4	D5	5	90	15525	0	0	0	0	-	0	15525	10091	10091	10.09	30	21	55.0	0.000	0.00	0.045	100
6.	D5	D5a	3	54	9315	0	0	0	0	Commercial (0.201 Acre)	4870	14185	9220	9220	9.22	28	19	112.0	0.001	0.12	0.163	50
7.	D2	D6	0	0	0	0	0	0	0	-	0	0	0	0	0.00	0	0	24.0	0.000	0.00	0.000	100
8.	D6	D6a	8	144	24840	0	0	0	0	-	0	24840	16146	16146	16.15	48	34	115.0	0.000	0.01	0.071	100
9.	D6a	D7a	0	0	0	0	0	0	0	-	0	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
10.	D7a	D7	13	234	40365	0	0	0	0	-	0	40365	26237	26237	26.24	79	55	115.0	0.000	0.03	0.116	100
11.	D6	D7	0	0	0	0	0	0	0	-	0	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
12.	D7	D8	10	180	31050	0	0	0	0	-	0	31050	20183	20183	20.18	61	42	86.0	0.000	0.01	0.089	100
13.	D8	D9	0	0	0	0	0	0	0	-	0	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
14.	D9	D3a	17	306	52785	0	0	0	0	-	0	52785	34310	34310	34.31	103	71	155.0	0.000	0.07	0.152	100
15.	D3a	D3	0	0	0	0	0	0	0	-	0	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
16.	D3a	D5	6	108	18630	0	0	0	0	Community Facility (0.501 Acre)	20280	38910	25292	25292	25.29	76	53	98.0	0.000	0.02	0.112	100



PROJECT : PROPOSED AFFORDABLE GROUP HOUSING COLONY FOR AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA																				
TITLE : FLUSHING WATER SUPPLY HYDRAULIC CHART																				
S.No.	Line No		Plots (LWS)				Water Req. for Non Resi. Plots.		Total water Requirement		Flushing Water Req. @ 35 %		Average Demand @ 3 Times	Peak Demand @ 3 Times	Flow Rate	Length of Pipe	Head Loss	Total Head Loss	Velocity	Dia of Pipe
	From	To	Nos.	Population @ 18 persons / Plot.	Water Requirement /day/person @	Nos.	Pop. @ 9 persons / Plot	Water Req./day/person @	Type of Building	Basis of Water Requirement	Residential & Non Residential Building	Residential & Non Residential Building								
1	-	-	-	18.0	172.5	-	9	172.5	-	0	0	0	0.00	0	0	3.0	0.000	0.00	0.000	100
2.	F1	F2	9	162	27945	0	0	0	-	0	27945	9781	9.78	29	20	82.0	0.000	0.00	0.043	100
3.	F2	F3	2	36	6210	0	0	0	-	0	6210	2174	2.17	7	5	63.0	0.000	0.00	0.010	100
4.	F3	F4	8	144	24840	0	0	0	-	0	24840	8694	8.69	26	18	77.0	0.000	0.00	0.038	100
5.	F4	F5	5	90	15525	0	0	0	-	0	15525	5434	5.43	16	11	55.0	0.000	0.00	0.024	100
6.	F5	F5a	3	54	9315	0	0	0	Commercial (0.201 Acre)	4870	14185	4965	4.96	15	10	112.0	0.001	0.12	0.137	40
7.	F1	F6a	0	0	0	0	0	0	-	0	0	0	0.00	0	0	35.0	0.000	0.00	0.000	100
8.	F6a	F7a	0	0	0	0	0	0	-	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
9.	F7a	F7	13	234	40365	0	0	0	-	0	40365	14128	14.13	42	29	115.0	0.000	0.01	0.062	100
10.	F2	F7	0	0	0	0	0	0	-	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
11.	F7	F8	9	162	27945	0	0	0	-	0	27945	9781	9.78	29	20	86.0	0.000	0.00	0.043	100
12.	F8	F9	0	0	0	0	0	0	-	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
13.	F9	F3a	17	306	52785	0	0	0	-	0	52785	18475	18.47	55	38	155.0	0.000	0.02	0.082	100
14.	F3a	F3	0	0	0	0	0	0	-	0	0	0	0.00	0	0	9.0	0.000	0.00	0.000	100
15.	F3a	F5	6	108	18630	0	0	0	Community Facility (0.501 Acre)	0	18630	6521	6.52	20	14	98.0	0.000	0.00	0.029	100



PROJECT : PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA
TITLE : HYDRAULIC SEWAGE DESIGN CHART

S.No.	Line No.	Gross Water Requirement (l load on line)	Sewage Flow (Self Load on Line) LPD	Sewage Flow (Self Load on Line) KLD	Previous Load	Progressive Discharge	Progressive Discharge (Average)	Progressive Discharge (Peak)	Infiltration @ 25% Av. Discharge	Total Discharge	Length	Pipe Size dia (mm)	Slope (1 in)	Fall (mtr.)	Velocity (m/s) (v)	Capacity of Pipe	Levels at start (mtr)		Levels at End (mtr)		Manhole Start Depth	Manhole End Depth	Average Depth
	From	To	lpd.	80%	100%	kld.	kld.	lps.	lps.	lps.	(mtr.)	(mm)	(mm)	(mtr.)	(m/s) (v)	lps.	FRL	IL	FSL	IL	(mtr)	(mtr)	(mtr)
1.	S1	S2	4870	3896	390	0.00	3.90	0.15	0.01	0.15	40.0	200	140	290	0.76	12.02	99.55	98.23	99.55	97.94	1.32	1.81	1.67
2.	S2	S3	9315	7452	745	3.90	11.35	0.43	0.03	0.43	65.0	200	140	470	0.76	12.02	99.55	98.15	99.55	97.68	1.60	2.52	2.06
3.	S3a	S3	31050	24840	2484	0.00	24.84	0.29	0.07	0.93	44.0	200	140	320	0.76	12.02	100.00	99.10	100.00	98.78	1.10	1.42	1.26
4.	S3	S4	15325	12420	1242	36.19	48.61	1.69	0.14	1.83	19.0	200	140	140	0.76	12.02	100.00	97.68	100.00	97.54	2.52	2.66	2.59
5.	S4a	S4	35805	28644	2864	0.00	28.64	0.33	0.08	1.08	38.0	200	140	280	0.76	12.02	100.00	99.10	100.00	98.82	1.10	1.38	1.24
6.	S4	S5	0	0	0.00	77.25	77.25	0.89	0.22	2.91	17.0	200	140	130	0.76	12.02	100.00	97.54	100.00	97.41	2.66	2.79	2.73
7.	S5	S6	27945	22356	2236	77.25	99.61	1.15	0.29	3.75	61.0	200	140	440	0.76	12.02	100.00	97.41	100.00	96.97	2.79	3.23	3.01
8.	S6a	S6	55890	44712	4471	0.00	44.71	0.52	0.13	1.68	90.0	200	140	650	0.76	12.02	100.00	99.10	100.00	98.45	1.10	1.75	1.43
9.	S6	S7	68310	54648	5465	144.32	198.97	2.30	0.58	7.48	122.0	250	190	650	0.76	18.70	100.00	96.97	100.00	96.32	3.28	3.93	3.61
10.	S7	S.T.P	0	0	0.00	198.97	198.97	2.30	0.58	7.48	2.0	250	190	20	0.76	18.70	100.00	96.32	100.00	96.30	3.93	3.95	3.94

Formula Used:

Velocity(m/s)=(1/n)s(A/P)^{2/3}(1/slope)⁻⁵

n=0.13 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(Sewer Line are designed to run half flow)

Abbreviation Used:

IL=Invert level of pipe

FSL=Full supply level

FRL=Formation Road Level

CL=Connection Level


 MS. SIGNATURE: 
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PROJECT : PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA														
LOAD ON SEWAGE LINES														
S.No.	Name of Sewer Line		Plots	Residential Sewage Load					Non Residential Load			Residential + Non Residential Load		
	From	To		Population for General Plots @ 18 persons	Water Requirement @ 172.50 LPD,	EWS	Population @ 9 persons / Unit	Water Requirement @ 172.50 LPD,	Amenity	Water Requirement @ Lumpsum/day	Gross Water Requirement (Load on Line)	Sewage Flow (Self Load on Line) lpd.	Sewage Flow (Self Load on Line) lpd.	
-			Unit	18	172.5	Unit	9	155.25	-	Lumpsum	lpd.	80%	1000	
1.	S1	S2	0	0	0	0	0	0	Commercial (0.201 Acres.)	4870.00	4870	3896	3.90	
2.	S2	S3	3	54	9315	0	0	0	-	0.00	9315	7452	7.45	
3.	S3a	S3	10	180	31050	0	0	0	-	0.00	31050	24840	24.84	
4.	S3	S4	5	90	15525	0	0	0	-	0.00	15525	12420	12.42	
5.	S4a	S4	5	90	15525	0	0	0	Common facility (0.501 Acres)	20280.00	35805	28644	28.64	
6.	S4	S5	0	0	0	0	0	0	-	0.00	0	0	0.00	
7.	S5	S6	9	162	27945	0	0	0	-	0.00	27945	22356	22.36	
8.	S6a	S6	18	324	55890	0	0	0	-	0.00	55890	44712	44.71	
9.	S6	S7	22	396	68310	0	0	0	-	0.00	68310	54648	54.65	
10.	S7	S.T.P	0	0	0	0	0	0	-	0.00	0	0	0.00	
			72	1296	223560	0	0	0	-	25150.00	248710.00	198968.00	198.97	



PROJECT : PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA ON AN AREA MEASURING 5.0125 ACRE AT SECTOR - 63A AT GURUGRAM, HARYANA
TITLE : HYDRAULIC STORM WATER DESIGN CHART

S.No.	Lane No.		Length (mtr.)	Catchment Area (Sq.m.)			Discharge @ 6.25 mm/hr rainfall (60% runoff) (lps)	Pipe dia (mm)	Slope 1 in (mm)	Velocity m/sec. m/sec.	Capacity of pipe lps.	Fall in line mm	Levels at start (mtr)			Levels at End (mtr)			Manhole Depth		
	From	To		Self	Progge.	Total							FRL	FSL	IL	FRL	FSL	IL	Start	End	Avg.
1.	A1	A2	83.0	3750.0	0.0	3750.0	3.91	400	570	0.60	75.63	150.0	100.00	99.10	98.70	100.00	98.95	98.55	1.30	1.45	1.38
2.	A2a	A2	114.0	5140.0	0.0	5140.0	5.35	400	570	0.60	75.63	200.0	100.00	99.10	98.70	100.00	98.90	98.50	1.30	1.50	1.40
3.	A2	A3	24.0	1090.0	8890.0	9980.0	10.40	400	570	0.60	75.63	50.0	100.00	98.90	98.50	100.00	98.85	98.45	1.50	1.55	1.53
4.	A3	D.C.-01	3.0	140.0	9980.0	10120.0	10.54	400	570	0.60	75.63	10.0	100.00	98.85	98.45	100.00	98.84	98.44	1.55	1.56	1.56
5.	D.C.-01	R.P.-01	2.0	0.0	10120.0	10120.0	10.54	400	570	0.60	75.63	10.0	100.00	98.84	98.44	100.00	98.83	98.43	1.56	1.57	1.57
6.	R.P.-01	A4	4.0	0.0	5060.0	5060.0	5.27	400	570	0.60	75.63	10.0	100.00	98.83	98.43	100.00	98.82	98.42	1.57	1.58	1.58
7.	A4	A5	36.0	1630.0	5060.0	6690.0	6.97	400	570	0.60	75.63	70.0	100.00	98.82	98.42	100.00	98.75	98.35	1.58	1.65	1.62
8.	A5a	A5	31.0	1400.0	0.0	1400.0	1.46	400	570	0.60	75.63	60.0	100.00	99.10	98.70	100.00	99.04	98.64	1.30	1.36	1.33
9.	A5	A6	19.0	860.0	8090.0	8950.0	9.32	400	570	0.60	75.63	40.0	100.00	98.75	98.35	100.00	98.71	98.31	1.65	1.69	1.67
10.	A6a	A6	53.0	2390.0	0.0	2390.0	2.49	400	570	0.60	75.63	100.0	100.00	99.10	98.70	100.00	99.00	98.60	1.30	1.40	1.35
11.	A6	A7	74.0	3340.0	11340.0	14680.0	15.29	400	570	0.60	75.63	130.0	100.00	98.71	98.31	100.00	98.58	98.18	1.69	1.82	1.76
12.	A7	D.C.-02	2.0	100.0	14680.0	14780.0	15.40	400	570	0.60	75.63	10.0	100.00	98.58	98.18	100.00	98.57	98.17	1.82	1.83	1.83
13.	D.C.-02	R.P.-02	2.0	0.0	14780.0	14780.0	15.40	400	570	0.60	75.63	10.0	100.00	98.57	98.17	100.00	98.56	98.16	1.83	1.84	1.84
14.	R.P.-02	TO HUDA DRAIN	4.0	0.0	7390.0	7390.0	7.70	400	570	0.60	75.63	10.0	100.00	98.56	98.16	99.55	98.55	98.15	1.84	1.40	1.62
15.	A8	A9	24.0	540.0	0.0	540.0	0.56	400	570	0.60	75.63	50.0	99.55	98.65	98.25	99.55	98.60	98.20	1.30	1.35	1.33
16.	A9	TO EXT.	4.0	50.0	540.0	590.0	0.61	400	570	0.60	75.63	10.0	99.55	98.60	98.20	99.55	98.59	98.19	1.35	1.36	1.36

20430.0

Formula Used:

Velocity(m/s) = $(1/n) \times (A/P)^{(2/3)} \times (1/\text{slope})^{0.5}$

n = 0.15 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 x 1000x1/2(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



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