AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES FALLING IN THE REVENUE ESTATE OF VILLAGE WAZIRPUR, SECTOR-92, GURUGRAM, HARYANA

DEVELOPED BY SH. TILAK RAJ S/O RISAL SINGH IN COLLABORATION WITH M/S GLS INFRAPROJECTS PVT LTD.

ESTIMATE FOR PROVIDING WATER SUPPLY.SEWERAGE. STORM WATER DRAINAGE, ROADS,STREET LIGHTING AND HORTICULTURE IN AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES FALLING IN THE REVENUE ESTATE OF VILLAGE WAZIRPUR, SECTOR-92, GURUGRAM, HARYANA.

Gurugram is a town and municipal corporation in the Gurugram district of the state of Haryana, India. It is a part of the National Capital Region (NCR) of Delhi. Its proximity to the burgeoning city of Gurgaon has in recent years caused its character and demographics to change dramatically. It has many factories, offices, hotels, IT parks and educational institutes. There are several sightseeing spots around the area, some overlapping with Gurgaon. Sohna is 41 kilometres from Indira Gandhi International Airport and is located on National Highway 48, making it well connected with Delhi, Gurgaon, Rewari, Dharuhera, Jaipur, Ahmedabad and Mumbai.

PROJECT REPORT/ESTIMATE FOR PROVIDING WATER SUPPLY, SEWERAGE, STROM WATER DRAINAGE, ROADS, STREET LIGHTING AND HORTICULURE IN AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES FALLING IN THE REVENUE ESTATE OF VILLAGE WAZIRPUR, SECTOR-92, GURUGRAM, HARYANA.

The Haryana Government has prepared a master plan for development of Residential/Industrial/ Commercial urban estate Gurugram. Project is doveloped by Rishal Singh S/O- Risal Singh in collaboration with M/S GLS Infraprojects Private Limited. They have decided to develop the area in this master plan as a plotted residential colony and has named this part as Proposed Affordable residential plotted Colony for an area measuring 5.04514 Acres Falling in the revenue estate of Village Wazirpur, Sector-92, Gurugram, Haryana.

Water Supply

1 Source

The source of water supply in this area is from **HSVP** how ever tubewells shall be proposed for Emergency if permission will get from CGWA. At present water supply is from HSVP municipal supply and tanker supply is sweet and fit for human consumption. However in borewell water is available at reasonable depth. The average yield of tubewell with 40-45 ft strainers will be about 20,000 litre per hour. The recharging of underground 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 and the tubewells will be bored after the permission from CGWA in tune with growth of demand. The ultimate requirement of tubewells includes provisions of 10% stand by. Ultimately, water shall be supplied to the Project by **HARYANA SHAHARI VIKAS PRADHIKARAN, GURUGRAM, HARYANA**.

2 Design

The scheme has been designed for approved population of **1422 persons in 5.04514 acres**. The rate of water supply per head per day has been taken as 172.5 litres (150+15%) as per NBC 2016 / HSVP norms. in addition to above necessary provision of water for community area, coomercial area, parks etc. have been taken into account for calculating the maximum quantity of water requirement.

3 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.

4 Under Ground Storage

Underground storage tank provision has been made for **160KL** capacity. in 4 compartments, which caters for the raw, domestic as well as for firefighting requirement. The water from fire compartment shall overflow to the raw water compartment so that the water in the fire compartment always remain fresh.

5 Boosting Station

A boosting station having monoblock centrifugal pump set is planned near under ground reservior to pump water from domestic/ treated under ground water tank to over head water tank provided at individual plot terrace.

6 Distribution System

The distribution system for this development has been designed to supply @ 172.5 litre per head her day @ 2.5 times the average rate of flow on 'Hazen william' formula with C-140. Necessary provision for laying D.I. pipe K-7 conforming to relevent IS standards along with valves and specials has been made in the project. The minimum terminal head at any point will be more than 30.00 meters so thet it can serve the stilt and four floors stories construction envisaged in the plan. Minimum pipe dia for distribution is kept as 100 mm dia for domestic water supply.

7 Rising Mains

Rising mains from HSVP water main or sector road to water works have also been designed and provision for 100 mm dia D.I. pipe line (dia as/ design) has been made in this estimate.

8 Sewerage

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

The sewer lines have been designed for 3 times average DWF in relation to the water supply demand assuming that 80% of water supply shall find its way into the propoesd sewer. DWC HDPE SN8 pipe sewers have been proposed and designed to run half full. The sewers have been designed on 0.75 M per second minimum velocity i.e. self cleansing velocity Necessary provision for laying DWC HDPE SN8 pipes and manholes etc. has been made in this estimate.

Size/ Shape of Manholes

As per IS 4111:1986 "Circular type of manholes are much stronger than rectangular and arch type manholes thus these type of manholes are preferred over rectangular as well as arch type manholes. However both rectangular and circular type of manholes are propsed to be provided. The brick masonary rectangular manhole is proposed to be provided for depth upto 0.9m.

The brick masonry/ concrete circular manholes are proposed to be provided for all depth exceeding 0.9 m upwards. Circular manholes are strsaight down in lower portion and slanting on top portion so as to narrow down the top opening equal to internal dia of manhole cover.

Depending on the depth of manhole, brick circular manhole of dia 910, 1220, 1520, 1820 mm dia are proposed to be provided.

9 Storm Water Drainage

The storm water is designed to carry 6.25 mm rainfall per hour or 0.123 cusecs per acre as discharge. Also suitable provisions are contemplated in our scheme to ensure better recarging of underground water table in the area. Underground R.C.C. pipe drain with minimum 400 mm dia are proposed to be provided in this area with circular manhole.

Necessary design statement for entire storm water system has been prepared and attached with estiamte.

10 Rain Water Harvesting

The main emphasis on recharging the underground aquifers and safe disposal of storm water with flooding the site has been laid in designing/ planning of storm water drainage system. Modular type rain water harvesting are proposed to be provided.

11 Roads

The roads are proposed to be provided in the plotted development in such a way that main 9 m wide colony road connects with 24 m sector road. Internal service of the roads of the colony 9m wide provide approach for construction of roads to the plots. Detailed calculation of the various item of works have been made on the basis of the detail design of the roads as approved by Chief Engineer HSVP, Gurugram.

12 Street Lighting

Street lighting system has been designed to provide illumination of 15 to 20 lux on roads. Street lights are provided on 6 m high steel tubular poles are located on one side of 9.0 m wide road. Luminaries with 65 watts LED lights are proposed to be provided for achieving the desired illumination.

13 Horticulture

Provision of road side plantation of trees with tree guards has been made for all roads.The parks shall be developed by providing lawns & ornamental trees with tree guards.

14 Specifications :

The work will be carried out in accordance with the standard sprcification of P.H. Department as laid down by HSVP & Haryana Government.

15 Rates

Estimate for providing services in this pocket has been prepared on the recent HSVP rates.

16 Cost

The total cost of development in this project including various P.H. and B & R services works out to **Rs. 539.09 Lacs** which includes 3% contingency and PE charges and 49% departmental charges also.

The cost per gross acre for this phase works out to App. **Rs. 106.85 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.

	DESIGN CALCULATION	**For 5.04514 Acres**	**Unit**
	Daily water requirement	**Acres**	
	Total No. of Plots (General)	79	Nos
	Total No. of Plots (EWS)	0	Nos
	Population per plot (General)	18	Person/Plot
	Population per plot (EWS)	9	Person/Plot
1	Therefore population (General)	1422	Persons
	Therefore population(EWS)	0	Persons
	Total Population	1422	Persons

		SAY	1422	Persons	
	Total daily Water requirement for plots (150 LPCD + 15%)	@	172.5	LPCD	
			Domestic @ 65%	Flushing @ 35%	
			159441.75	85853.25	LPD
		Or Say	**159.50**	**85.90**	**KLD (1)**
2	**Non Residential building water requirement**				
a	No. of commercial area		2	No.	
	Daily water requirement	@	32000	Ltrs/Acre/day	
	Area of commercial		0.1028	Acre	
	Daily water requirement	@	20800	11200	Ltrs/Acre/day
	Therefore daily water requirement		2138.24	1151.36	lit/day
		Or Say	**2.14**	**1.15**	KLD
b	No. of community center		1	No.	
	Area of community center		0.5045	Acre	
	Daily water requirement	@	25000	lit/acre/day	
	Daily water requirement		8198.125	4414.375	lit/day
		Or Say	**8.20**	**4.41**	KLD
c	No. of milk booth		1	No.	
	Daily water requirement	@	1000	lit/acre/day	
	Daily water requirement		650	350	lit/day
		Or Say	**0.65**	**0.35**	KLD
	Total 2 (a+b+c)		**10.99**	**5.92**	**KLD (2)**
3	Area under Parks		0.3784	Acre	
	Daily water requirement	@	25000	lit/acre/day	
	Therefore daily water requirement			9460	lit/day

				9.46	KLD
4	Area under Roads		1.3934	Acre	
	Daily water requirement	@	5000	lit/acre/day	
	Therefore daily water requirement			6967	lit/day
				6.97	KLD
		Total		**16.43**	**KLD**
I	**Total daily requirement**				
a)	For (1+2)		170.49	91.82	KLD
b)	Under Road+ Parks (3+4)		0.00	16.43	KLD
	Total Daily Requirement		170.49	108.24	KLD
		Or Say	**171.00**	**109.00**	**KLD**
II	**Tubewell**				
	Assuming working hours of tubewells		**12**	hours	
	Assuming discharge/hour of each tubewell		**20**	KL/hours	
	Total domestic water requirment		**171**	**KLD**	
	No. of tubewells required		0.71	Nos.	
	Add 10% standby		0.07		
		Total	0.78	Nos.	
		Proposed	**1.0**	Nos.	

So It is proposed 1 nos of tubewell if permission will get from from CGWA. The provision of 1 no of tubewell has been made in the estimate because the water demand for flushing, horticulture and the road washing purpose is to be met from re circulated after treatment at STP and ultimate water supply is to be provided by HSVP.

III	**Pumping machinery for tubewell**			
a)	Gross working load	=	45.00	m
b)	Average Fall in S.L	=	3.05	m
c)	Depression head	=	6.10	m
d)	Friction loss	=	2.50	m

		=	56.65	m	
	Say	=	60.00	m	
BHP = (20x1000x60)/(60x60x75x0.6)		=	7.41	HP	
With 60% efficiency	**Proposed**		**7.50**	HP	

It is proposed to install **1 no. Submersible pumping set** with a discharge of **20000 ltr./hour (335 lpm) driven with 7.5 HP** electric motor.

IV Underground Tank

Daily requirement for domestic use and other except fire fighting		=	**170.49**	KLD	
Capacity of under ground tank 14 hr storage except fire fighting @ 60% storage requirement		=	**102.29**	KLD	
	Say	=	**110.00**	KLD	
Total Population in General plots		=	**1422**	Person	18 Person/plot
Total Population in Commercial area		=	**139**	Person	3 sqm/ Person
Total Population in community centre		=	**681**	Person	3 sqm/ Person
Fire Tank Capacity as 100 x [sqrt(2241) /1000] x 1/3		=	49.90	KLD	
	Say	**=**	**50.00**	KLD	
	Total		**160.00**	**KLD**	

It is proposed to provide 1 no. under ground tank of capacity **160 KL** which also includes **50 KL** capacity for **fire fighting**.

Tank will have four compartments, Two for fire, one for raw and one for domestic use. The water first enters the fire compartment, then over flows to the domestic water use compartment so that the water in the fire compartment shall remain fresh.

It is proposed to provide under ground tank of following capacity

a)	Capacity of Fire tank-1	**25.00**	KLD
b)	Capacity of Fire tank-2	**25.00**	KLD
c)	Capacity of Raw tank	**55.00**	KLD
d)	Capacity of Domestic tank	**55.00**	KLD

V	**BOOSTING MACHINERY (Drinking water)**			
	UG. Tank			
a)	**Filter Feed Pump**			
	Daily requirement for domestic use	=	170.49	KLD
	Assuming 10 hours running 1 pumps (with one standby)			
	Discharge/hour	=	17.05	KL/HR
			284.14	LPM
		Or Say	290.00	LPM
	Head of pump			
i)	Suction lifts	=	0.0	m
ii)	Friction loss in M<main & specials	=	0.0	m
iii)	Clear head	=	35.0	m
		=	35.0	m
	Say	=	35.0	m
	BHP of motor (290*35)/(60*75*0.6)	=	3.8	HP
		Or Say	5.0	HP
b)	**Domestic Water Transfer Pump**			
	Daily requirement for domestic use	=	170.49	KLD
	Assuming 6 hours running 2 pumps (with one standby)			
	Discharge/hour	=	14.21	KL/HR
			236.79	LPM
		Or Say	240.00	LPM
	Head of pump			
i)	Suction lifts	=	5.0	m
ii)	Friction loss in M<main & specials	=	10.0	m
iii)	Clear head	=	15.0	m
iv)	Residual head	=	15.0	m
		=	45.0	m
	Say	=	45.0	m

	BHP of motor (240*45)/(60*75*0.6)			=	4.00	HP	
				Or Say	5.0	HP	
VI	**Gen Set**	Nos.	HP				
a)	Raw Water Transfer Pump	1	5.0	=		5.0	HP
b)	Domestic Water Transfer Pump	2	5.0	=		10	HP
c)	Flushing Water Transfer Pump	2	2.5	=		5	HP
d)	Tubewell	1	7.5	=		7.5	HP
e)	Lighting	1	5.0	=		5	HP
						32.5	HP
		or 32.5 x 0.746 x 1.50				36.4	KVA
			Say			**40**	KVA
5	**Sewage Treatment Plant capacity**						
	Gross domestic + Flushing water requirement/day				262.3	KLD	
	Sewage flow will be 80% of total load				209.8	KLD	
	STP Capacity required at 5% extra margin				**220.33**	**KLD**	

	STP Capacity (Or Say)			**220.00**	**KLD**
VII	**STP Treated Tank**				
	Daily requirement for flushing, horticulture, road washing	=		**108.24**	KLD
	Capacity of under ground tank 14 hr storage @60% storage	=		**64.95**	KLD
	Say	=		**70.00**	KLD
VIII	**BOOSTING MACHINERY (Flushing water)**				
	STP				
	Daily requirement for Flushing & Horticulture use		=	101.28	KLD
	Assuming 6 hours running 2 pumps (with one standby)				
	Discharge/hour		=	8.44	KL/HR
				140.66	LPM
			Or Say	150.00	LPM
	Head of pump				
i)	Suction lifts		=	5.0	m
ii)	Friction loss in M<main & specials		=	10.0	m
iii)	Clear head		=	15.0	m
iv)	Residual head		=	15.0	m
			=	45.0	m
	Say		=	45.0	m
	BHP of motor (150*45)/(60*75*0.6)		=	2.50	HP
			Or Say	2.50	HP

FINAL ABSTRACT OF COST

	Amount (Lacs.) For 5.04514 Ac
Sub Work 1- Water Supply	**114.00**
Sub Work 2- Sewerage	**113.95**
Sub Work 3- S.W. Drainage	**59.10**
Sub Work 4- Roads	**115.94**
Sub Work 5- Street Lighting	**19.36**
Sub Work 6- Horticulture	**3.41**
Sub Work 7- Maintenance of services for 10 years including resurfacing of roads after 1st 5 years & II. Phase i.e. 10 years maintenance (as per HSVP norms)	**113.33**
TOTAL	**539.09**
COST / ACRE	**106.85**

WATER SUPPLY HEAD		Amount (Lacs.) For 5.04514 Ac
Sub Head 1- Head Works		**29.60**
Sub Head 2- Pumping Machinery		**22.60**
Sub Head 3- Distribution System		**21.68**
Sub Head 4- Irrigation scheme		**0.48**
Total		**74.36**
Add 3% Contingencies & PE Charge		**2.23**
		76.59
Add 49% Departmental Charges		**37.53**
	TOTAL	**114.12**
(CO to final abstract of cost)	**SAY**	**114.00**

Sub Head I **Water Supply**

Head Works

Rs.(lakhs)

S. No.	Description	Unit	Qty	Rate	Amount
1	Boring and installing 510 mm i/d tubewells with reverse/direct rotary rig complete with pipe strainer to a depth of about 80m. complete.	Nos.	1	1000000.00	10.00
2	Constructing pump chambers as per standard design of PWD PH/HSVP of size 1.50x1.50 m.	Nos.	1	100000.00	1.00
3	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 chamber			LS	5.00
ii)	construction of UG Tank	KL.	160	6000.00	9.60
4	Provision for carriage of material and other unforeseen items .	LS		LS	1.00
5	Provision for facilities staff for Maintenance.	LS		LS	3.00
	(C.O. to abstract of cost of Sub-work No.I)			**TOTAL**	**29.60**
				SAY	**29.60**

Sub Work I
Sub Head No. II

Water Supply
Pumping Machinery
Amount (Rs.)
(in Lakhs)

S. No.	Description	Unit	Qty	Rate	
1	Providing and installing electricity driven electro or submersible pumping set capable of delivering about 20 KL water per hour against a total head of 60 M complete with motor and other accessories.	Nos.	1	200000.00	2.00
2	Provision for cheap pressure type chlorination plant complete.			LS	1.00
3	Provision for making foundations & erection of pumping machinery.			LS	1.00
4	Provision for pipes, valves & specials inside the pump chamber.			LS	1.00
5	Provision for electric services connection including electric fittings for tubewells chambers complete. Including cost of trasfermer.			LS	2.00
6	Providing and installing electricity driven pumping set, capable of delivering 290 LPM of water at 35M head complete in all respects. (For Filter Feed Pump) (5HP)				
	(1 working + 1 standby)	Nos.	2	140000.00	2.80
7	Providing and installing electricity driven pumping set, capable of delivering 240 LPM of water at 45M head complete in all respects. (5 HP) (Domestic Water Transfer Pump)				
	(2 working + 1 standby)	Nos.	3	140000.00	4.20

8	Providing and installing electricity driven pumping set, capable of delivering 150 LPM of water at 45M head complete in all respects. (2.5 HP) (Flushing Water Transfer Pump)				
	(2 working + 1 standby)	Nos.	3	120000.00	3.60
9	Provision of diesel generator set of each for standby arrangements for booster pump complete with gear head arrangements of following capacities				
	40 KVA.			LS	4.00
10	Provision for carriage of materials and other unforeseen items.			LS	1.00
	(C.O. to abstract of cost of Sub-work No.I)			**TOTAL**	**22.60**
				SAY	**22.60**

Sub Work I — **Water Supply**
Sub Head No. III — **Distribution System/Rising Main**

S. No.	Description	Unit	Qty	Rate	IN LACS
1	Providing, laying, jointing & testing D.I. K-7 pipes including cost of excavation complete as per ISI marked. (For Domestic water supply line)				
i)	100 mm dia	M	570	1475.00	8.41
2	Providing, laying, jointing & testing D.I. K-7 pipes including cost of excavation complete as per ISI marked. (For borewell line)				
i)	100 mm dia	M	20	1475.00	0.30
3	Providing, laying, jointing & testing HDPE PE-80 pipes including cost of excavation complete as per ISI marked. (For Flushing water supply line)				
i)	80 mm dia	M	578	800.00	4.62
4	Providing and fixing sluice valves including cost brick masonary chambers complete in all respects.				
i)	100 mm i/d	Nos.	6	25000.00	1.50
5	Providing, fixing and testing butterfly valves including cost of valve chambers complete in all respects.				
i)	80 mm i/d	Nos.	6	15000.00	0.90
6	Providing and fixing 100 mm dia NRV including cost of valve chambers complete in all respects.				
i)	100 mmm dia	Nos.	1	25000.00	0.25
ii)	80 mmm dia	Nos.	1	20000.00	0.20

7	Providing and fixing air valves and scour valves including cost of valve chambers complete in all respects.	Nos.	4	10000.00	0.40
8	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	18	1000.00	0.18
9	Provision for carriage of material			LS	1.00
10	Provision for cutting the roads and making to its original condition			LS	1.00
11	Providing and fixing fire hydrants complete with masonary chambers.	Nos.	7	15000.00	1.05
12	Making water supply connection			LS	1.00
13	Provision for rising main from HSVP water supply line to UG Tank				
i)	100 mm dia (DI Pipe K-7)	M	59	1475.00	0.87
	(C.O. to abstract of cost of Sub-work No.I)			**TOTAL**	**21.68**
				SAY	**21.68**

Sub Work I **Water Supply**

Sub Head No. IV **Irrigation**

S. No.	Description	Unit	Qty	Rate	IN LACS
1	Providing, laying, jointing & testing HDPE PE-80 pipes including cost of excavation complete as per ISI marked.				
i)	25 mm dia	M	60	400.00	0.240
2	Providing & fixing 20 mm PVC Irrigation hydrant valve with PVC lid complete in all respect including cost of PVC keys	Nos.	4	3500.00	0.14
3	Provision for carriage of material	LS		10000.00	0.10
	(C.O. to abstract of cost of Sub-work No.I)			**TOTAL**	**0.48**
				SAY	**0.48**

Sub Work II **Sewerage Scheme**

S. No.	Description	Unit	Qty	Rate	in Lacs
1	Providing, lowering, jointing, cutting DWC HDPE SN8 pipes and specials into trenches including cost of excavation, bed concrete lot of manholes complete.				
i)	200 mm i/d				
a)	Average depth upto 1.5 m	M	91	2270.00	2.07
b)	Average depth 1.5 m to 4.5 m	M	519	2370.00	12.30
2	Provision for lighting, watching and temporary diversion traffic			LS	1.00
3	Provision for timbering & shoring			LS	1.00
4	Provision for cutting of roads and carriage of materials etc. and other unforsean charges			LS	1.00
5	Provision for connection with HSVP			LS	1.00
6	Providing and installation of STP 220 KL including civil tanks and all electro mechanical works. It also includes flushing tank.	KL	220	25000.00	55.0
7	Provision for DI K-7 pipe from S.T.P. to HSVP main line (Over flow line)				
i)	100 mm dia pipe	M	60	1475.00	0.89
					74.25

Add 3% contingencies & PE charges		2.23
		76.48
Add 49% Deptt. Charges		37.47
	TOTAL	**113.95**
(C.O. TO FINAL ABSTRACT OF COST SUB WORK - II)	**SAY**	**113.95**

	Sub Work III				Storm water drainage
S. No.	**Description**	**Unit**	**Qty**	**Rate**	In Lacs
1	Providing, lowering, jointing, cutting RCC NP2 pipes and specials into trenches including cost of excavation cost of manholes, ventilating chambers etc. complete in all respects.				
i)	400 mm i/d				
a)	Average depth upto 1.5 m	M	163	2950.00	4.81
b)	Average depth 1.5 m to 4.5 m	M	390	3050.00	11.90
2	Provision for road gully and drain.			LS	5.00
3	Provision for lighting, watching and temporary diversion of traffic.			LS	1.00
4	Provision for cutting of roads and carriage of materials etc. and other unforseen items.			LS	1.00
5	Construction of rain water harvesting pit as per details and specification given below and as per attached drawing including, cost of excavation of all ind soil foundation trenches of drain including dressing of sides of ramming and getting out excavtion of soil.	Nos	3	450000.00	13.50
6	Provision for connection with HSVP.				
	400 mm i/d (Average depth 1.5 m to 4.5 m)	M	10	3050	0.31
7	Provision for connection with HSVP line			LS	1.00

		38.51
Add 3% contingencies		1.16
		39.66
Add 49% Deptt. Charges		19.44
	TOTAL	**59.10**
(C.O. TO FINAL ABSTRACT OF COST SUB WORK - III)	**SAY**	**59.10**

Sub Work IV Road Work

S. No.	Description	Unit	Qty	Rate	In Lacs
1	Provision for levelling and earth filling as per site conditions.	Acre	5.04514	175000.00	8.83
2	Construction of road by- i) 150 mm thick W.B.M. stone aggregate layer ii) 100 mm thick PCC iii) 50 thick sand bed iv) 80 mm thick conc. pavers Total	Sq. M	2667	1500.00	40.01
3	Miscellaneous items				
(a)	Providing for Kerbs & Channels for 5.04514 ACRES Road 553 x 2 = 1106 RM	RMT	1106	600.00	6.64
(b)	Provision of foot path of precast conc. for 10.420139 acres Road 553 x 1.75x 2 = 1936 SQM	Sq. M	1936	750.00	14.51625
4	Provision for traffic lighting and guide map	LS		100000.00	1.00
5	Provision for carriage of material	LS		100000.00	1.00
6	Provision for plot indicator	LS		100000.00	1.00

7	Provision for demaracation & unfloreseen items	LS		100000.00	1.00
8	Provision for parking & pavement for commercial area @ 50% 415.96 = 207.98 sqm	sqm	207.98	750.00	1.56
					75.55
	Add 3% contingencies				2.27
					77.81
	Add 49% Deptt. Charges				**38.13**
				TOTAL	**115.94**
	(C.O. TO FINAL ABSTRACT OF COST SUB WORK - IV)			SAY	**115.94**

Sub Work V Street Lighting

S. No.	Description	Unit	Qty	Rate	In Lacs
1	Providing street lighting on internal roads as per standerd specification of HVPNL and CFL complete in all respect				
	Provision made on L.S. cost @ Rs.2,50,000.00 per acre	L.S.	5.04514	250000.00	12.61
					12.61
	Add 3% contingencies				0.38
					12.99
	Add 49% Deptt. Charges				6.37
				TOTAL	**19.36**
	(C.O. TO FINAL ABSTRACT OF COST SUB WORK - V)			**SAY**	**19.36**

Sub Work VI Horticulture

S. No.	Description	Unit	Qty	Rate	Amount
1	Development of lawn area				In Lacs
a)	Trenching the ordinary soil upto depth of 60 cm. including removal and apcking of servicable material and disposing at the lead of 50m and making upto the tranched area to prope level by filling with earth mixed with manure before and after flooding trenches with water including cost of imported earth and manure.				
b)	Rough dressing of trenched area.				
c)	Grassing with including watering and maintenance of lawns free from weds and fit for moving in rows including for hedges, shrubs and green belt (as per HSVP Norms)	Per acre	0.378	150000.00	0.57
2	Planting of trees with tree guards on roads at 12 m intervals				
	Total length of roads = 553 mtr				
	No of trees @ 12m c/c = 553x2/12 = 92.16 nos				
	say = 92 nos				
	Cost of the tree @ 1800/- each	Nos.	92	1800.00	1.66
	TOTAL				**2.22**
	Add 3% contingencies				0.07
					2.29
	Add 49% Deptt. Charges				1.12
				TOTAL	**3.41**
	(C.O. TO FINAL ABSTRACT OF COST SUB WORK - VI)			**SAY**	**3.41**

Sub Work VII Maintenance

S. No.	Description	Unit	Qty	Rate	In Lacs
1	Provision for maintenance charges for water supply, sewerage, storm water drainage, roads, street light, horticulture etc. complete including operation and establishment charges as per HSVP norms after completion and resurfacing of roads after 10 years or 1st phase.	Acre	5.04514	750000.00	37.84
2	Provision for resurfacing and strengthening of roads after 1st five years of 1st phase with 80 mm thick concrete pavers @ 600 / sqm	Sq. M	2667	600.00	16.00
3	Provision for resurfacing and strengthening of road after 10 years of 2nd phase with 80 mm thick concrete pavers @ 600 / sqm	Sq. M	2667	750.00	20.00
					73.84
	Add 3% contingencies				2.22
					76.06
	Add 49% Deptt. Charges				37.27
				TOTAL	**113.33**
	(C.O. TO FINAL ABSTRACT OF COST SUB WORK - VII)			SAY	**113.33**

PROJECT :- PROPOSED "AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES SEC-92, GURUGRAM HARYANA"

TITLE :- STORM WATER DRAINAGE - HYDRAULIC DESIGN CHART.

																		Manhole De	
S.No	Line No.		Length in mtr.	self area in sqmtr.	Self Area (Hec)	previous area in hec.	Total Area (Hec)	Rain Fall mm/hr	Discharge @12.15 lps/Hec	Pipe dia (mm)	Slope (mm) 1 in	Velocity m/sec.	Cap of pipe in lps.	Fall in line mtr.	Road level at Start	Invert Level at Start	Road level at End	Invert Level at End	Depth at Start	Depth at End
1	R-01	R-03	34	2670	0.267	0.000	0.267	6.25	3.24	400	450	0.923	116.07	0.08	100.00	98.60	100.00	98.52	1.40	1.48
2	R-02	R-03	13	485	0.049	0.000	0.049	6.25	0.59	400	450	0.923	116.07	0.03	100.00	98.60	100.00	98.57	1.40	1.43
3	R-03	OUT	117	4087	0.409	0.316	0.724	6.25	8.80	400	450	0.923	116.07	0.26	100.00	98.52	100.00	98.26	1.48	1.74
4	R-04	OUT	79	1853	0.185	0.000	0.185	6.25	2.25	400	450	0.923	116.07	0.18	100.00	98.60	100.00	98.42	1.40	1.58
5	R-05	R-07	97	3663	0.366	0.000	0.366	6.25	4.45	400	450	0.923	116.07	0.22	100.00	98.60	100.00	98.38	1.40	1.62
6	R-06	R-07	11	378	0.038	0.000	0.038	6.25	0.46	400	450	0.923	116.07	0.02	100.00	98.60	100.00	98.58	1.40	1.42
7	R-07	R-09	44	1009	0.101	0.404	0.505	6.25	6.14	400	450	0.923	116.07	0.10	100.00	98.38	100.00	98.29	1.62	1.71
8	R-08	R-09	26	1294	0.129	0.000	0.129	6.25	1.57	400	450	0.923	116.07	0.06	100.00	98.60	100.00	98.54	1.40	1.46
9	R-09	OUT	132	3203	0.320	0.634	0.955	6.25	11.60	400	450	0.923	116.07	0.29	100.00	98.29	100.00	97.99	1.71	2.01

epth		Manhole Type			
Average Depth	No. of Manhole	910 Dia upto 1.67m Type-A	1220 Dia upto 2.29m Type-B	1520 Dia From 2.29 to 4.18m	1820 Dia Above 4.19m
1.44	2	2	0	0	0
1.41	1	1	0	0	0
1.61	8	8	0	0	0
1.49	5	5	0	0	0
1.51	7	7	0	0	0
1.41	1	1	0	0	0
1.66	3	3	0	0	0
1.43	2	2	0	0	0
1.86	9	0	9	0	0

PROJECT : PROPOSED "AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES SEC 92, GURUGRAM HARYANA"

HYDRAULIC SEWER DESIGN SHEET

S.No.	Line No.		Number of Plots	Population @ 18 persons / Plot.	Water Reuirement @ 172.5 Ltr/ head / day	Type of Building	Water Requirement	Gross Water Requirement (Load on Line)	Sewage Flow (Self Load on Line) LPD	Sewage Flow (Self Load on Line) KLD	Previous Load	Prog-ressive Discharge	Prog-ressive Discharge (Average)	Prog-ressive Discharge (Peak)	Infilteration @ 25% Av. Discharge	Total Dis-charge	Length
			Nos.	Nos.	lpd.												
	From	To		18	172.5		lpd	lpd.	80%	1000	Kld.	Kld.	lps.	lps.	lps.	lps.	(mtr.)
1	S-01	S-03	5	90	15525	COMMERCIAL +MB	4290	19815	15852	15.85	0.00	15.85	0.18	0.55	0.05	0.60	39.0
2	S-02	S-03	3	54	9315	PLOTS	0	9315	7452	7.45	0.00	7.45	0.09	0.26	0.02	0.28	18.0
3	S-03	S-05	11	198	34155	PLOTS	0	34155	27324	27.32	23.30	50.63	0.59	1.76	0.15	1.90	123.0
4	S-04	S-05	26	468	80730	PLOTS	0	80730	64584	64.58	0.00	64.58	0.75	2.24	0.19	2.43	117.0
5	S-05	S-11	0	0	0	PLOTS	0	0	0	0.00	115.21	115.21	1.33	4.00	0.33	4.33	5.5
6	S-06	S-08	2	36	6210	PLOTS	0	6210	4968	4.97	0.00	4.97	0.06	0.17	0.01	0.19	13.0
7	S-07	S-08	2	36	6210	COMMUNITY CENTRE	12613	18823	15058	15.06	0.00	15.06	0.17	0.52	0.04	0.57	21.0
8	S-08	S-10	21	378	65205	PLOTS	0	65205	52164	52.16	20.03	72.19	0.84	2.51	0.21	2.72	112.0
9	S-09	S-10	9	162	27945	PLOTS	0	27945	22356	22.36	0.00	22.36	0.26	0.78	0.06	0.84	115.0
10	S-10	S-11	0	0	0	PLOTS	0	0	0	0.00	94.55	94.55	1.09	3.28	0.27	3.56	42.0
11	S-11	STP	0	0	0	PLOTS	0	0	0	0.00	209.76	209.76	2.43	7.28	0.61	7.89	4.0

													Type of Manhole			
Pipe Size	Slope (1 in)	Fall	Velocity	Capacity of Pipe	Road Formation level at Start	Invert Levels at Start	Road Formation level at End	Invert Levels at End	Manhole Start Depth	Manhole Depth End	Average Depth	Number of Manhole	910 Dia Upto 1.67m	1220 Dia From 1.67 to 2.29m	1520 Dia From 2.29 to 4.18m	1820 Dia Above 4.19m
(mm)	(mm)	(mtr.)	(m/s) (v)	lps.	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(nos.)	A	B	C	D
200.00	145.00	0.27	1.13	17.70	100.00	98.80	100.00	98.53	1.20	1.47	1.33	3	3	0	0	0
200.00	145.00	0.12	1.13	17.70	100.00	98.80	100.00	98.68	1.20	1.32	1.26	2	2	0	0	0
200.00	145.00	0.85	1.13	17.70	100.00	98.53	100.00	97.68	1.47	2.32	1.89	8	0	8	0	0
200.00	145.00	0.81	1.13	17.70	100.00	98.80	100.00	97.99	1.20	2.01	1.60	9	9	0	0	0
200.00	145.00	0.04	1.13	17.70	100.00	97.68	100.00	97.64	2.32	2.36	2.34	1	0	0	1	0
200.00	145.00	0.09	1.13	17.70	100.00	98.80	100.00	98.71	1.20	1.29	1.24	2	2	0	0	0
200.00	145.00	0.14	1.13	17.70	100.00	98.80	100.00	98.66	1.20	1.34	1.27	1	1	0	0	0
200.00	145.00	0.77	1.13	17.70	100.00	98.66	100.00	97.88	1.34	2.12	1.73	8	0	8	0	0
200.00	145.00	0.79	1.13	17.70	100.00	98.80	100.00	98.01	1.20	1.99	1.60	7	7	0	0	0
200.00	145.00	0.29	1.13	17.70	100.00	97.88	100.00	97.59	2.12	2.41	2.26	2	0	2	0	0
200.00	145.00	0.03	1.13	17.70	100.00	97.59	100.00	97.57	2.41	2.43	2.42	1	0	0	1	0

PROJECT :- PROPOSED "AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES SEC-92, GURUGRAM HARYANA'

TITLE :- DOMESTIC WATER SUPPLY HYDRAULIC CHART FOR RING LINES.

S.N0	Line No		PLOTS (GENERAL)			Water Requirement for Non Residential Plots.					Gross Water Requirement (Load on Line)	Average Demand
	From	To	Nos.	Population @ 18 persons / Plot.	Water Requirement @ 172.5 Ltr/ head / day	Commercial Area in Acre	TYPE OF BUILDING	Basis of Water Requirement in commerial LPD	OCF	Total Water Requirement in LPD	LPD	KLD
				18	**112.13**							
1	UGT	D-01	79	1422	159442	0.1028	COMMERCIAL +MB	2788	8198	10986	170428	170
2	D-01	D-02	45	810	90821	0.1028	COMMERCIAL +MB	2788		2788	93609	94
3	D-02	D-03	45	810	90821	0.1028	COMMERCIAL +MB	2788		2788	93609	94
4	D-03	D-04	23	414	46420	0.1028	COMMERCIAL +MB	2788		2788	49208	49
5	D-04	D-05	5	90	10091	0.1028	COMMERCIAL +MB	2788		2788	12879	13
6	D-04	D-06	11	198	22201	0.000	PLOTS	0		0	22201	22
7	D-01	D-07	34	612	68621	0.000	PLOTS	0	8198	8198	76819	77
8	D-07	D-08	34	612	68621	0.000	PLOTS	0	8198	8198	76819	77
9	D-08	D-09	13	234	26237	0.000	PLOTS	0	8198	8198	34435	34
10	D-09	D-10	9	162	18164	0.000	PLOTS	0		0	18164	18

Peak Demand @ 2.5 Times	Flow Rate	Length of Pipe	Head Loss Mtr/ Mtr	Total Head Loss	Velocity	Dia of Pipe	Road LVL at start	Hydraulic LVL at start	Head at start	Road LVL at End	Hydraulic LVL at End	Head at End
KLD	LPM	MTR.	MTR.	MTR.	M/SEC	MM	MTR.	MTR.	MTR.	MTR.	MTR.	MTR.
426	296	5	0.0045	0.02	0.628	100	95.00	140.00	45.00	100.00	139.98	39.98
234	163	14	0.0015	0.02	0.345	100	100.00	139.98	39.98	100.00	139.96	39.96
234	163	98	0.0015	0.14	0.345	100	100.00	139.96	39.96	100.00	139.81	39.81
123	85	46	0.0004	0.02	0.181	100	100.00	139.81	39.81	100.00	139.79	39.79
32	22	27	0.0000	0.00	0.047	100	100.00	139.79	39.79	100.00	139.79	39.79
56	39	92	0.0001	0.01	0.082	100	100.00	139.79	39.79	100.00	139.78	39.78
192	133	52	0.0010	0.05	0.283	100	100.00	139.98	39.98	100.00	139.92	39.92
192	133	106	0.0010	0.11	0.283	100	100.00	139.92	39.92	100.00	139.82	39.82
86	60	46	0.0002	0.01	0.127	100	100.00	139.82	39.82	100.00	139.80	39.80
45	32	84	0.0001	0.01	0.067	100	100.00	139.80	39.80	100.00	139.80	39.80

PROJECT :-PROPOSED "AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES SEC-92, GURUGRAM HARYANA"

TITLE :- FLUSHING WATER SUPPLY HYDRAULIC CHART FOR RING LINES.

S.N0	Line No		PLOTS (GENERAL)			Water Requirement for Non Residential Plots.					Green Area Water Requirement	Gross Water Requirement (Load on Line)	Average Demand	Peak Demand @ 2.5 Times	Flow Rate	Length of Pipe	Head Loss Mtr/ Mtr	Total Head Loss
	From	To	Nos.	Population @ 18 persons / Plot.	Water Requirement @ 172.5 Ltr/ head / day	Commercial Area in Acre	TYPE OF BUILDING	Basis of Water Requirement in LPD	OCF	Total Water Requirement in LPD	LPD	LPD	KLD	KLD	LPM	MTR.	MTR.	MTR.
				18	**60.38**													
1	STP	F-01	79	1422	85853	0.1028	COMMERCIAL +MB	1501	4414	5916	9460	101229	101	253	176	7	0.0045	0.03
2	F-01	F-02	45	810	48904	0.1028	COMMERCIAL +MB	1501	0	1501		50405	50	126	88	13	0.0012	0.02
3	F-02	F-03	45	810	48904	0.1028	COMMERCIAL +MB	1501	0	1501		50405	50	126	88	98	0.0012	0.12
4	F-03	F-04	23	414	24995	0.1028	COMMERCIAL +MB	1501	0	1501		26497	26	66	46	46	0.0004	0.02
5	F-04	F-05	5	90	5434	0.1028	COMMERCIAL +MB	1501	0	1501		6935	7	17	12	27	0.0000	0.00
6	F-04	F-06	11	198	11954	0.000	PLOTS	0	0	0		11954	12	30	21	92	0.0001	0.01
7	F-01	F-07	34	612	36950	0.000	PLOTS	0	4414	4414	9460	50824	51	127	88	52	0.0012	0.06
8	F-07	F-08	34	612	36950	0.000	PLOTS	0	4414	4414	1730	43094	43	108	75	106	0.0009	0.10
9	F-08	F-09	13	234	14128	0.000	PLOTS	0	4414	4414	1730	20273	20	51	35	46	0.0002	0.01
10	F-09	F-10	9	162	9781	0.000	PLOTS	0	0	0	1730	11511	12	29	20	91	0.0001	0.01

Velocity	Dia of Pipe	Road LVL at start	Hydraulic LVL at start	Head at start	Road LVL at End	Hydraulic LVL at End	Head at End
M/SEC	MM	MTR.	MTR.	MTR.	MTR.	MTR.	MTR.
0.582	80	95.00	140.00	45.00	100.00	139.97	39.97
0.290	80	100.00	139.97	39.97	100.00	139.95	39.95
0.290	80	100.00	139.95	39.95	100.00	139.83	39.83
0.152	80	100.00	139.83	39.83	100.00	139.82	39.82
0.040	80	100.00	139.82	39.82	100.00	139.81	39.81
0.069	80	100.00	139.82	39.82	100.00	139.81	39.81
0.292	80	100.00	139.97	39.97	100.00	139.90	39.90
0.248	80	100.00	139.90	39.90	100.00	139.81	39.81
0.117	80	100.00	139.81	39.81	100.00	139.80	39.80
0.066	80	100.00	139.80	39.80	100.00	139.79	39.79

PROJECT :- PROPOSED "AFFORDABLE RESIDENTIAL PLOTTED COLONY UNDER DDJAY OVER AN AREA MEASURING 5.04514 ACRES SEC-92, GURUGRAM HARYANA"								
Discription	Type	Number	Dimension			Calculation	Result	UNIT
			Length	Height	Breadth			
R1	Rectangle	1	6.202	X	5.50	Length X breadth	34.111	SQ.MT
R2	Rectangle	1	102.649	X	5.50	Length X breadth	564.570	SQ.MT
R3	Rectangle	1	85.084	X	3.97	Length X breadth	337.869	SQ.MT
R4	Rectangle	1	147.483	X	3.97	Length X breadth	585.655	SQ.MT
R5	Rectangle	1	90.055	X	5.50	Length X breadth	495.303	SQ.MT
R6	Rectangle	1	58.050	X	5.50	Length X breadth	319.275	SQ.MT
R7	Rectangle	1	36.867	X	5.50	Length X breadth	202.769	SQ.MT
Total Addition =			**526**				**2540**	SQ.MT
ADD 5 % FOR CURVED ROAD			**26**				**127**	SQ.MT
Total Mettalic Road Area =			**553**				**2667**	SQ.MT