PROPOSED GROUP HOUSING

"THE HERITAGE MAX"

AT
SECTOR-102, GURGAON, HARYANA

SERVICE PLAN ESTIMATE
ON
PUBLIC HEALTH ENGINEERING SERVICES

Client

M/S MAHAGORI ESTATES PVT. LTD.
101, Tower-D, Global Business Park,
Mehrauli-Gurgaon Road, Gurgaon-122002

Architect

ARCOP ASSOCIATES (P.) LTD
Plot No. - 36, Sector - 32, Gurgaon

Plumbing & Fire Suppression Consultant

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

PROJECT REPORT / ESTIMATES FOR PROVIDING INTERNAL SERVICES e.g. WATER SUPPLY, FIRE, SEWERAGE & STORM WATER DRAINAGE ETC. IN RESPECT OF RESIDENTIAL PROJECT THE HERITAGE MAX GROUP HOUSING, SECTOR-102, 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.

THE HERITAGE MAX GROUP HOUSING is a residential proposed between sector - 102, at Gurgaon for development by **M/s MAHAGORI ESTATES PVT. 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 3 Nos and the tubewells will be bored in tune with growth of demand to avoid absolence of the tubewells. The ultimate requirement of tubewells includes provision of 10% standby.

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. 1082 ~~44739~~ Lacs which includes 3% contingency and PE charges and ~~14~~ 49% departmental charges ~~also~~., price, escalation, interest, Admn.
	The cost per gross acre for this phase works out to Rs. ~~84.21~~ 96.18 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.

M/s MAHAGORI ESTATES PVT. LTD.

Authorised Signatory

Paradise Consultants * New Delhi *

BALJEET KUMAR, Architect
Council of Architecture
Registration No. CA/2008/42228

THE HERITAGE MAX GROUP HOUSING, SECTOR-102, GURGAON (HARYANA)

DESIGN CALCULATION

1	**Daily Domestic Water Requirement**				
	Nos. of Blocks				
	Apartment			493	
	EWS			88	
	Service Personnel			51	
	Population @ 5 person per unit - Apartment			5	
	Population @ ~~3~~ 5 person per unit - EWS			~~2~~ 5	
	Population @ 2 person per unit - Service Personnel			2	
	Therefore population (Apartment)			2465	persons
	Therefore population (EWS)			440 ~~176~~	persons
	Therefore population (Maintenance Personnel)			102	persons
	Total Population			3007 ~~2743~~	**persons**
			SAY	3007 ~~2743~~	**persons**
	Water requirement for apartmant		@	172.5	liter / head / day
				~~473167.50~~	lpd 518707.50
			or	~~473.17~~	**KLD (1)**
				518.71 say 520 KLD	
2	**Other Requirement**				
a.)	Primary/Nursery School	1	@	10000	lit/day
	Therefore daily water requirement			10000	lit/day
				10	KLD
b.)	No. of ~~Club~~ Community building	1			
	Daily water requirement lumpsum		@	25000	lit/day
	Therefore daily water requirement			25000	lit/day
				25	KLD
c.)	No. of Convenient Shopping	1			
	Daily water requirement lumpsum		Lumpsum	5000	lit/day
	Therefore daily water requirement			5000	lit/day
				5.00	KLD
			Total	**40.00**	**KLD (3)**
3	Total Daily Water Requirement (1+2)			~~513.17~~	**KLD** 560 KLD
i)	Domestic Water Requirement @	65%		~~333.56~~	KLD 364
			Say	~~350.00~~	**KLD** 365
ii)	Flushing Water Requirement @	35%		~~179.61~~	KLD 196
			Say	~~180.00~~	**KLD** 200
4	**Water usage from STP**				
a)	Area under Parks	5.03	acre		
	Daily water requirement		@	25000	lit/acre/day
				125750.00	lit/day
				125.75	KLD
b)	Area under Roads				
	Daily water requirement		Lumpsum	25000	lit/acre/day
				25000	lit/day
				25	KLD
c)	Under Road+ Parks (a+b)		**Total**	150.75	KLD
			Say	**151.00**	**KLD**

				351		
d)	**Total treated water requirement [3 (ii) + c]**			~~331.00~~	KLD	
				716		
	Total Daily Requirement [3 (i) + d]			~~681.00~~	**KLD**	
				716		
			SAY	~~681.00~~	**KLD**	
I	**Tubewell**					
	Assuming working hours of tubewells			12 ~~10~~	hours	
	Assuming discharge/hour of each tubewell			15	KL/hours	
	Total fresh water demand			~~350.00~~	**KLD** 365	
	No. of tubewells required	365 ~~350.00~~	/10/15	2.02	~~2.33~~	~~1.95~~
	Add 10% standby			0.20	0.23	~~0.20~~
			Total	2.42	~~2.57~~	~~2.15~~
			Say		3.00	
	It is proposed to provide (i.e. 3 No.) to cater the present requirement					
II	**Pumping machinery for tubewell**					
	Gross working load		=	65.00	m	
	Average fall in SL		=	3.05	m	
	Depression head		=	6.10	m	
	Friction loss in main		=	2.50	m	
			=	76.65	m	
		Say	=	**77.00**	m	
	BHP = 18000x77x1/60x60x75x0.6		=	8.56	BHP	
	With 60% efficiency	Say		10.0	BHP	
III	**Underground Tank**					365
	Daily fresh water requirement for domestic use			=		~~350.00~~ KL
	Capacity of under ground tank	365	12			182.50
	24 hours storage	~~350.00~~	x ~~24~~ / 24	=		~~350.00~~ KL
	Fire Tank Capacity Proposed As / IS Code 15105			=	200	~~100.00~~ KL
	Flushing 351/2 = 175 KL near STP		Proposed	=	Raw	~~350.00~~ KL 182.50 200 KL
		960	**Total**	200	960	~~700~~ **KL**
	It is proposed to provide under ground tank of capacity ~~700~~ **KL** which also includes **350 KL** capacity for fire fighting.					
	This tank 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					350.00 KL
	TOTAL UG STORAGE (DOMESTIC + FLUSHING + HORTICULTURE)				716	~~681.00~~ KL
	RAW WATER TANK				200	~~150.00~~ KL
	DOMESTIC WATER TANK					200.00 KL
	FLUSHING, HORTICULTURE & ROAD WASHING (PART OF STP)				200	~~331.00~~ KL

IV	**DOMESTIC WATER PUMPS - LOCATED IN PUMP ROOM**				
a.)	**Domestic Water Transfer** Pumps				
i)	**For Towers & EWS**				290
	Daily requirement for domestic use			=	~~287.83~~ KL
	Assuming 6 hours running 3 pumps (with one standby)	290			16.11
	Discharge/hour	~~287.83~~ / 6 / 3		=	~~15.99~~ KL/HR
	Head of pump				
	i) Suction lifts		270 LPM	=	0.0 m
	ii) Friction loss in M<main & specials			=	7.0 m
	iii) Residual head			=	5.0 m
	iv) Clear head		270x101 / 60x75x0.60	=	89.0 m
				=	101.0 m
	BHP of motor	15.99x1000x101/4500x60x0.60			10.10 ~~10.0~~ HP
			SAY	=	**12.5 HP**
ii)	**For Club, Shopping & Schools**				
	Daily requirement for domestic use			=	26.00 KL
	Assuming 6 hours running 1 pumps (with one standby)				
	Discharge/hour	26.00 / 6 / 1		=	4.33 KL/HR
	Head of pump				
	i) Suction lifts		75x19 / 6x75x10.60	=	0.0 m
	ii) Friction loss in M<main & specials			=	4.0 m
	iii) Residual head			=	5.0 m
	iv) Clear head			=	10.0 m
				=	19.0 m
	BHP of motor	4.33x1000x19/4500x60x0.60			0.5 HP
			SAY	=	**1.0 HP**
iii)	**For EWS**				49.33
	Daily requirement for domestic use			=	~~19.73~~ KL Say 50 KL
	Assuming 6 hours running 1 pumps (with one standby)	50			8.33
	Discharge/hour	~~19.73~~ / 6 / 1		=	~~3.29~~ KL/HR
	Head of pump				
	i) Suction lifts		150 LPM	=	0.0 m
	ii) Friction loss in M<main & specials			=	1.0 m
	iii) Residual head			=	5.0 m
	iv) Clear head			=	33.0 m
				=	39.0 m
					2.17 LPM
	BHP of motor	3.29x1000x39/4500x60x0.60			~~0.8~~ HP
			SAY	=	~~1.0~~ **HP**
					3

5	**PUMPS FOR FIRE PROECTION**					
	Pump Description	**Location**	**Nos.**	**Discharge**	**Head**	**HP**
i)	**Diesel Driven Pump**	Pump Room	1	2280	135.00	
ii)	**Hydrant Pump**	Pump Room	1	2280	135.00	120
iii)	**Sprinkler Pump**	Pump Room	1	2280	135.00	120
iv)	**Jockey Pump**	Pump Room	1	180	135.00	25
	Capacity of Gen Set	Nos.	HP			
	Domestic Water Transfer Pumps for Towers & EWS	~~2~~ 3	12.5	=	25 ~~37.5~~	HP
	Domestic Water Transfer Pumps for Club, Shopping & Schools	1	1.0	=	1	HP
	Domestic Water Transfer Pumps for EWS	1	~~1.0~~ 3	=	~~3~~	HP
	Fire Pump (Jockey)	1	25.0	=	25	HP
	Tubewell	3	10.0	=	30	HP
	Lighting			=	25	HP
	Flushing Pump 2x20+2 =				151 ~~119.5~~	HP 42
		or 151 ~~119.5~~	x0.746x1.50		168.97 ~~133.72~~	KVA
		175	Say		~~140.00~~	KVA
	Requirement of 140 KVA capacity will be added in to the main D.G. set to provide standby supply.				175	

Estimate for Providing in internal Development works for Housing for

M/s MAHAGORI ESTATES PVT. LTD.

		Amount (Lacs.)	
Sub Work - I Water Supply	309.32	~~153.39~~	~~257.97~~
Sub Work - II Sewerage	121.10	~~77.56~~	~~128.95~~
Sub Work - III Storm Water Drainage	74.42	~~65.94~~	~~86.19~~
Sub Work - IV Roads & Footpath	239.46	~~148.35~~	~~200.38~~
Sub Work - V Street Lighting	17.27	~~13.21~~	~~17.27~~
Sub Work - VI - Horticulture	11.13	~~10.33~~	~~11.13~~
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)	309.18	~~245.50~~ ~~145.31~~	
	Total	~~922.54~~ 947.39	

~~(RUPEES SIX CRORE SIXTY NINE LACS TWENTY THREE THOUSAND ONLY)~~

M/s MAHAGORI ESTATES PVT. LTD.

Say Rs. Per Lacs/Acre = 947.39 / 11.25 = 84.21 Lacs

lot 2 — 96.18

Authorized Signatory

Sub Divisional Engineer
HUDA Sub Divn. No 6
GURGAON

Paradise Consultants * New Delhi *

BALJEET KUMAR, Architect
Council of Architecture
Registration No. CA/2008/42228

Executive Engineer
HUDA Division No. V
Gurgaon

Superintending Engineer
HUDA Circle No. 1,
Gurgaon

Checked subject to comments in forwarding letter No. 12460 Dt. 18/9/12 and notes attached with the estimate

Executive Engineer (W)
for Chief Engineer
HUDA Panchkula

Director General
Town and Country Planning,
Haryana, Chandigarh

FINAL ABSTRACT OF REVISED COST

				Amount (Lacs.)	
Sub Head -'(I) Head Works			61.75	~~34.30~~	~~59.50~~
Sub Head - (II) Pumping Machinery			71.65	~~42.35~~	~~47.10~~
Sub Head - (III) Distribution System (Dom + Flushing)			35.12	~~24.45~~	~~27.66~~
Sub Head - (IV) Irrigation Scheme			10.56	~~7.24~~	~~10.93~~
Sub Head - (V) Fire Scheme			22.47	~~22.30~~	~~22.90~~
			201.55		
Total			6.05	~~130.63~~	~~168.09~~
Add 3% Contingencies @ pf. charges			207.60	~~3.92~~	~~5.04~~
			101.72	~~134.55~~	~~173.13~~
Add ~~14%~~ 49% Departmental Charges, price escalation unforseen, Admn. charges.			309.32 lacs	~~18.84~~	~~84.83~~
		Total		~~153.39~~	~~257.96~~
(CO to final abstract of cost)			Say	~~153.39~~	
				257.97	

	Sub Work I				**Water Supply**
	Sub Head No. I				**Head Works**
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.	9	~~500000.00~~ 7.00 Lacs.	~~15.00~~ ~~2.00~~ 14.00
2	Constructing pump chambers as per standard design of PWD PH/HUDA of size 1.50x1.50 m	Nos.	2	~~90000.00~~ 1.00 Lacs.	~~2.70~~ ~~3.00~~ 2.00
	Housing for T.W.				
3	Construction of boosting chambers of suitable size along with under ground tank of capacity 700 KL pumping machinery and generating set etc. complete in all respects.				
	Details of boosting station				
i)	construction of boosting chamber				7.50
ii)	UG tank ~~700~~ 350 KL capacity incl. 350 KL for fire fighting in two compartments @ 3000 / KL. and				~~2.10~~ ~~2.00~~ 28.50
	2 no be for Flushing near STP)				
4	Provision for carriage of material and other unforeseen items.				2.00
5	~~Provision for facilites staff for Maintenance~~				~~5.00~~
	~~(C.O. to abstract of cost of Sub-work No.I)~~				~~59.50~~ ~~34.30 Lacs~~
				~~Say~~	~~34.30 Lacs~~ ~~59.50~~

Provision for Pump Chamber of Standard size 4.90 x 4.25 m as per P.H. required 2 nos @ Rs. 2.25 lacs each — Rs. 4.50 lacs

Provision for rising main from T.W to U.G Tank

150mm ϕ = 125 m @ Rs. 120/- mtr. — Rs. 1.50 lacs

150 mm ϕ 50 m @ Rs 150/- mtr. — Rs. 0.75 lacs

Provision for boundary wall around T.W. site etc. (L.S) — Rs. 1.00 lacs

Rs. 61.75 lacs

	Sub Work I			**Water Supply**	
	Sub Head No. II			**Pumping Machinery**	
No.	**Description**	**Unit**	**Qty**	**Rate**	**Amount (in Lakhs)**
(i)	Providing and installing electricity driven electro or submersible pumping set capable of delivering about 15.0 KL water per hour against a total head of 77.0 M complete with motor and other accessories. (For Tubewell -10.0 HP)	Nos.	2	100000.00	2.00
(ii)	Providing & installing electricity driven pumping set capable of delivering 270 LPM of water against a total head of 101 m complete with motor and other accessories (For Domestic - 12.5 HP)	Nos.	~~4~~ 3	~~120000.00~~ 1.25 Lac	~~4.80~~ 3.75
(iii)	Providing & installing electricity driven pumping set capable of delivering ~~80~~ 270 LPM of water against a total head of 19 m complete with motor and other accessories (For Domestic - 1.0 HP)	Nos.	2	~~20000.00~~ 0.30	~~0.40~~ 0.60 0.40
(iv)	Providing & installing electricity driven pumping set capable of delivering 60 LPM of water against a total head of 43 m complete with motor and other accessories (For Domestic - 3.0 HP)	Nos.	2	20000 0.25 ~~25000.00~~	0.50 ~~0.50~~
	(X) Pl. see Appx.				6.50
2	Provision for diesel engine generator set each for standby Arrangements for booster pump complete with gear haed arrangements of following capacities.				17.50 Lac
	1 No. - ~~140~~ 125 KVA	Nos.	~~1~~	~~1300000.00~~	~~13.00~~
3	Providing & installing pumping set of following capacities for fire protection:			1.50	
i)	180 LPM @ 135 M Head (25 HP)	Nos.	1	~~100000.00~~	~~1.00~~ 1.50
ii)	2280 LPM @ 135 M Head (120 HP) Hydrant	Nos.	1	350000.00	3.50 9.00
iii)	2280 LPM @ 135M Head (120 HP) Sprinkler	Nos.	1	~~350000.00~~	~~3.50~~ 9.00
iv)	2280 LPM @ 135 M Head (DG Pump)	Nos.	1	~~500000.00~~ 10.00	~~5.00~~ 10.00
4	Provision for diesel engine genset stand bye arrangements for Tubewells.	Nos.	2	150000.00	~~4.50~~ 3.00
5	Provision for cheap pressure type chlorination plant complete	Nos.	2	1.00 ~~15000.00~~	~~3.00~~ 2.00 ~~0.45~~
6	Provision for making foundations & erection of pumping machinery	LS	-	-	1.00 ~~0.70~~
7	Provision for pipes, valves & specials inside the pump chamber	LS	-	-	1.50 ~~1.25~~
8	Provision for electric services connection including electric fittings for tubewells chambers complete including cost of Transformers.	LS	-	-	3.00
9	Provision for carriage for materials and other unforeseen items	LS	-	-	1.00 ~~0.75~~
	(C.O. to abstract of cost of Sub-work No.I)				71.65 Lac ~~42.35~~ 47.10
				Say	~~42.35~~ ~~47.10~~

	Sub Work I				Water Supply
	Sub Head No. III				Distribution System/Rising Main
					(Dont Following)
No.	Description	Unit	Qty	Rate	Amount (Rs.)
1	Providing, laying, jointing & testing G.I. pipes including cost of excavation complete as per ISI marked.				
i)	~~25 mm dia~~	M	~~147~~	~~350~~ 300.00	~~44100.00~~
ii)	~~32 mm dia~~	M	~~371~~	~~450~~ 400.00	148400.00
iii)	~~40 mm dia~~	M	~~127~~	~~550~~ ~~600~~ 550.00	69850.00
iv)	~~50 mm dia~~	M	~~342~~	~~750~~ ~~700~~ 650.00	222300.00
v)	~~65 mm dia~~	M	~~60~~	~~950~~ ~~900~~ 850.00	51000.00
vi)	~~80 mm dia~~ 150 mm Q	M	~~796~~	~~1050~~ ~~1000~~ 950.00	756200.00
vii)	100 mm dia	M	~~315~~	~~1250~~ 1200.00	378000.00
2	Providing, fixing & Testing Ball valves including cost of complete in all respects.				
i)	25 mm dia	Nos.	1	1250.00	1250.00
ii)	32 mm dia	Nos.	4	1500.00	6000.00
iii)	40 mm dia	Nos.	1	1700.00	1700.00
iv)	50 mm dia	Nos.	2	2000.00	4000.00
3	Providing, fixing & Testing Sluice valves including cost of complete in all respects.				
i)	~~65 mm i/d~~	Nos.	~~1~~	~~3500.00~~	~~3500.00~~
ii)	~~80 mm i/d~~	Nos.	~~2~~	~~10000.00~~	~~20000.00~~
iii)	100 mm i/d	Nos.	~~4~~ 4+4	12000.00	~~48000.00~~ 96000/-
iv)	150 mm i/d	Nos.	~~2~~ 2+2	~~15~~000.00	~~30000.00~~ 56000/-
v)	~~200 mm i/d~~	Nos.	~~1~~	~~18000.00~~	~~18000.00~~
4	Providing, fixing & Testing Non Return valves (NRV) including cost of complete in all respects.				
i)	100 mm i/d	Nos.	3	12000.00	36000.00
5	Providing and fixing air valves and scour valves including cost of complete in all respects.	Nos.	~~4~~ 4+4	10000.00	80000/- ~~40000.00~~
6	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	~~17~~ 23	1000.00	23000/- ~~17000.00~~
7	Provision for carriage of material	LS	-	-	150000.00
8	Provision for cutting the roads and making to its original conditions.	LS	-	-	150000.00
9	Making water supply connection. on master road	LS	-	-	50000/- ~~250000.00~~
10	Provision for rising main from ~~tubewells~~ to UG Tank municipal		250	1200	3.00
i)	100 mm i/d	M	~~117~~	~~950.00~~	~~111150.00~~
ii)	~~150 mm i/d~~	M	~~51~~	~~1350.00~~	~~68850.00~~
iii)	~~200 mm i/d~~	M	~~43~~	~~1900.00~~	~~81700.00~~
	(C.O. to abstract of cost of Sub-work No.I)				~~2766300/-~~ ~~2444650.00~~
				Say	~~24.45 Lacs~~ ~~27.66~~ 35.12 Lacs

	Sub Work I				**Water Supply**	
	Sub Head No. IV				**Irrigation**	
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.			675/-	84650	
i)	65 mm dia	M	1254	~~500.00~~	~~627000.00~~	~~877800~~
ii)	80 mm dia	M	5	~~600.00~~ 750/-	~~3000.00~~ 3750/-	~~4000~~
2	Providing and fixing 20mm dia Irrigation hydrant valve complete in all respect.	Nos.	26	~~800.00~~ 3500/-	~~20800.00~~ 91000/-	~~26000~~
3	~~Providing & fixing~~ valve ~~25mm dia~~	~~Nos.~~	~~26~~	~~400.00~~	~~10400.00~~	~~15600~~
4	Providing, fixing & Testing Sluice valves including cost of complete in all respects.			8000/-		16000/-
i)	65 mm i/d	Nos.	2	~~2700.00~~	~~5400.00~~	~~6000~~
ii)	80 mm i/d	Nos.	1	~~4750.00~~ 10000/- ~~5000.00~~	~~4750.00~~	~~5000~~ 10000/-
5	Providing and fixing air valves and scour valves including cost of complete in all respects.	Nos.	1	~~4500.00~~ 10000/-	~~4500.00~~	
6	Providing and fixing indicating plates for sluice valve, air valve etc.	Nos.	4	~~800.00~~ 1000/-	~~3200.00~~	
7	Provision for carriage of materials etc. and other unforsean charges	LS	-	-	~~15000.00~~	25000/-
8	Provision for cutting of roads & making good to its in original condition	LS	-	-	~~30000.00~~	50000/-
					1036200/- 1093400	
			Total		~~724050.00~~	
			Say		~~7.24 Lacs~~ ~~10.93~~ 10.58 Lacs	

Sub Work I

Sub Head No. V — **Fire Scheme**

No.	Description	Unit	Qty	Rate	Amount (Rs.)
1	Providing, laying, jointing & testing M.S. pipes for fire ring main including cost of Fittings, Valves & excavation complete (as per ISI marked) in all respect.				
a)	150 mm dia	M	1014	1500.00	1521000.00
b)	100 mm dia	M	0	1200.00	0.00
c)	80 mm dia	M	170	~~950.00~~ 1000/-	~~161500.00~~ 170000/-
2	Providing and fixing External Fire Hydrants complete with masonary chambers.	Nos.	17	10000.00	170000.00
3	Providing & fixing valve 150mm dia			14000/-	14000/-
a)	150 mm dia	Nos.	1	~~15000.00~~	~~15000.00~~
b)	100 mm dia	Nos.	0	12000.00	0.00
c)	80 mm dia	Nos.	17	10000.00	170000.00
4	Providing, fixing & Testing Non Return valves (NRV) including cost of complete in all respects.				
i)	80 mm i/d	Nos.	17	5000.00	85000.00
5	Provision for cutting of roads and carriage of materials etc. and other unforsean charges	LS	-	-	~~50000~~ ~~40000.00~~
6	Provision for indication plates	Nos.	17	1000.00	17000.00
7	Provision for carriage of material	LS	-	-	1.00 0.50 ~~50000.00~~
			Total		~~22.89500/-~~ ~~2229500.00~~ 22.47 lay
			Say		~~22.30~~ Lacs ~~22.90~~

	Sub Work II			Sewerage Scheme	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)
1	Providing, lowering, jointing, cutting salt glazed stone ware pipes and specials into trenches including cost of excavation, bed concrete lot of manholes complete.				
i)	**200 mm i/d**			1250/-	75000/-
a)	Average depth 1.5 m to 4.5 m	M	60	~~1200.00~~	~~72000.00~~
b)	Average depth 4.5 m to 6.0 m	M	0	~~1300.00~~ 1500/-	0.00
ii)	**250 mm i/d**			1800	1348200
a)	Average depth 1.5 m to 4.5 m	M	749	~~1500.00~~	~~1123500.00~~
b)	Average depth 4.5 m to 6.0 m	M	47	~~4600.00~~	~~75200.00~~ 91650/-
iii)	**400 mm dia i/d**			2500/- 1950	
a)	Average depth 1.5 m to 4.5 m	M	0	~~2000.00~~	0.00
b)	Average depth 4.5 m to 6.0 m	M	10	~~2150.00~~ 2400.00	~~6450.00~~ ~~7200~~ 26000/-
2	Provision for lighting, watching and temporary diversion ~~of traffic~~	LS	-	- 2600	2100000.00
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	-	-	50000/- ~~200000.00~~
5	Cost of ~~415~~ 450 Kld Sewerage Treatment Plant. or 0.45 MLD	LS	-	-	~~4500000.00~~ ~~6000000/-~~ 50.00
6	Provision for CI / DI pipe 150 mm dia pipe from STP. To Huda Main Line.	LS	-	-	500000.00
	Prov. for vent pipe as per P.H requirement at suitable places (L.S)			5.00	8402600/-
				~~78.91~~	~~6605150.00~~
	Add 3% contingencies ~~&~~ PE Charges			~~2520~~ 78. 2.36	~~198154.5~~
					~~6803304.50~~
				81.27	8654678/-
	Add 14% Deptt. Charges, price, escalation, unforseen, 49/. Admn. charges.			39.82	~~952462.63~~ 4940922.22
				Total ~~7755767.13~~	
				121.10	~~12895470.22~~
	(C.O. to abstract of cost of Sub-work No. 1)			Say	~~77.56~~ Lacs
					~~128.95~~

	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**			1400/-	4.70 Lacs	
a)	Average depth upto 1.5 m	M	336	~~1300.00~~	~~436800.00~~	
ii)	**400 mm i/d**			1750/-		
a)	Average depth upto 1.5 m	M	0	~~1700.00~~	0.00	
b)	Average depth 1.5 m to 4.5 m	M	1155	1800.00	2079000.00	
2	Provision for Road Gully & ~~Drain~~ - 300mm ϕ pipe Connection	LS	-	-	3.00 Lacs ~~500000.00~~	
3	Provision for cutting of roads and carriage of materials etc. and other unforseen items	LS	-	-	150000.00	
4	Provision for disposal arrangements Recharge Pit .	Nos	12	150000.00	12.00 Lacs ~~1800000.00~~	
5	Provision for lighting, watching and temporary diversion of traffic	LS	-	-	500000.00	
6	Provision for connection with HUDA on master road	LS	-	-	5000/- ~~150000.00~~	
	Pro for ~~Cutting~~ timbering and shoring (L.S.)				1.00 ~~5615800.00~~	48.19
	Add 3% contingencies and P.E. Charges				~~168474.00~~	1.46
					~~5784274.00~~	49.95
	Add ~~14%~~ 4% Deptt. Charges, Price escalation 4% unforseen, Admn charges				~~809798.36~~ 2834294.26	24.47
			Total	8618568.26	~~6594072.36~~	74.42
		SAY			65.94 Lacs	
	(C.O. to abstract of cost of Sub-work No. 1				8618	

	Sub Work IV				Road Work	
	Description	**Unit**	**Qty**	**Rate**	**Amount (Rs.)**	
No.	Provision for leveling & earth filling : including providing good earth transportation from source to site, laying in layer, rolling & watering & compaction to the desired specification for road & bridge works Clause-305 for all leads and lift as per site conditions.	Acres	11.25	100000	1125000.00	
1	Construction of road by:- (Road on Ground.) I) Providing GSB 300 thick as per MORT & H specifications conforming to Clause 401 grading -11	Sq. mtr.	~~10372.16~~ 7385	~~800~~ 850	~~8297728.00~~ ~~8816336.00~~	62.77 lay
2	ii) Providing Laying, spreading and compacting graded stone aggregates as per Table 400-11 to **Wet Mix Macadam** specification -406 MORT & H, IV, Revision. Including premixing the mixed materials with water to OMC in Mechanical mixer (Plug Mill) carriage of mixed material by tipper to site, laying in uniform layers using paver in sub base/ base course, on a well prepared sub base and compacting with power and vibratory roller to achieve & desired density, including cost of material complete.					
	Providing laying & compaction of **B.M. (Bituminous** Macadam) 50 mm thick with grading 2 as per table No. 500.10 and minimum 4.55 bitumen of 60/70 grade as per MORT & H secification for road & bridge works 2001 (Revision IV) clause. 507.8 for all leads & lifts etc. complete in all respects to the satisfaction of the Engineer-in-charge.					
	(X) Pl. see Appo.				Rs. 39.27 lay	
	Providing & Fixing kerbs & channels of C.C. M-20 grade as per standard size including back filling etc. complete in all respect. ~~10536/6~~ 1561 X2 = 3123 mtr.	mtr.	~~2025.3~~ 3123	~~400.00~~ 600	~~810120.00~~ ~~1215180.00~~	18.74 lay 18.47
3	Provision for Guide Maps & Road Marking Strips 7 Post Delinators. & Blat Indicator	LS.		~~200000.00~~	200000.00	
4	Provision for Carriage of material	LS.		~~200000.00~~	200000.00	
5	Provision for 80 mm thick pavement	Sq. mtr.	2500	~~800.00~~ 600	~~2000000.00~~ 1500000.00	
6	Prov. for Traffic light Control (T.S.)					5.00
			Total		~~12632848.00~~ ~~13056516.00~~	156.03
	Add 3% contingencies & P.E. charges			391695 + 48	~~378985.44~~	4.68
					~~15444211.48~~	160.71
					~~13011833.44~~	78.75
			Total	134.48	~~130.12~~ Lacs	239.46
	Add ~~14~~ 19 % department charges, Unforseen, Admn.			65.90	~~18.22~~ Lacs	
	Price escalation.	**SAY**			~~448.33~~ Lacs	
					200.38	

	Sub Work V				Street Lighting	
S. No.	Description	Unit	Qty	Rate	Amount (Rs.)	
1	Supply, installation, testing and commissioning of Street Lighting GI Poles, Light Fixtures, Feeder Pillars, Cables & Wires including cable end terminations and Earthing Station etc. for Street Lighting	per acre	11.25	100000.00	1125000.00	
	Add 3% contingencies El P.E. charges				33750.00	
	Total				1158750.00	
	Add ~~14%~~ Deptt. Charges, Price, escalation, Interest 49% Admn. charges				~~162225~~ 677787.50	
			Total		~~1320975.00~~ 1726537.50	
		SAY			~~13.21~~ Lacs 17.27	

	Sub Work VI				Horticulture	
	Description	Unit	Qty	Rate	Amount (Rs.)	
No.	Development of lawn area					
1	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)					
	5.00 1.00				5.00	
	~~11.25~~ acres @ Rs. ~~0.90~~ lacs. 3123 / 12				~~1,012,500~~	
	~~400~~ trees @ Rs. ~~1500~~/- each 260 Nos say 300 Nos				~~600,000~~	2.25
	300 750 and P.E.				~~1612500.00~~	7.25
	Add 3% contingency charges				~~48375.00~~	0.22
				Total	~~1660875.00~~	7.47
	Add ~~14%~~ Deptt. Charges, Price, escalation 49%, unforeseen, Admin charges.				~~232522.50~~	3.66
				Total	~~1893397.50~~	11.13
			say		~~18.93~~ Lacs	
					11.13	

	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.					
	11.25 acres @ 5 lacs per acre				5625000	
2	Provision for resurfacing & strengthening of road 10372.16 sqm @ Rs. 350/- per sqm				6223296.00 3630256	
3	Provision for resurfacing of road after 5 year 10372.16 sqm @ Rs. 300/- per sqm				4448864.00 3111648	
				91.71 lac	15997160.00	
				201.46	12366904	
				6.04	479915.00	
	Add 3% contingency & PE charges				371007.12	
				207.50	16477075.00	
				Total	12737911.12	
	Add 14% Departmetal charges			101.68	1783307.5568	807376.65
				Total	14521218.6768	2455084.00
			say	309.18 lac	145.21 Lacs	245.50

PROJECT :- THE HERITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

DOMESTIC WATER SUPPLY QUANTITY SHEET

S.No.	Line No	Length of Pipe	Dia of Pipe
		mtr.	mtr.
1	*Pump Room - DA1*	22.0	150
2.	DA1 - DA2	22.0	100
3.	DA2 - DA3	91.0	100
4.	DA3 - DA4	49.0	~~80~~ 100
5.	DA4 - DA5	32.0	~~80~~ 100
6.	DA1 - DA5	87.0	100
7.	DA5 - DA6	42.0	~~80~~ 100
8.	DA6 - DA7	73.0	~~80~~ 100
9.	DA7 - DA8	15.0	80 100
10.	DA6 - DA8	88.0	80 100
11.	*Pump Room - DB1*	20.0	50 100
12.	DB1 - DB1a	53.0	32 100
13.	DB1 - DBb	128.0	32 100
14.	DB1 - DB2	152.0	50 100
15.	*Pump Room - DC1*	170.0	50 100
		1022	

FLUSHING WATER SUPPLY QUANTITY SHEET

1	*S.T.P. - FA1*	19.0	~~100~~ 150
2.	FA1 - FA2	96.0	100
3.	FA2 - FA3	42.0	~~80~~ 100
4.	FA3 - FA4	54.0	~~80~~ 100
5.	FA4 - FA5	88.0	~~80~~ 100
6.	FA2 - FA5	95.0	~~80~~ 100
7.	FA5 - FA6	42.0	~~80~~ 100
8.	FA6 - FA7	73.0	~~80~~ 100
9.	FA7 - FA8	15.0	~~80~~ 100
10.	FA6 - FA8	88.0	~~80~~ 100
11.	*STP. - FB1*	20.0	40 100
12.	FB1 - FB1a	178.0	32 100
13.	FB1 - FB2	107.0	40 100
14.	FB2 - FB3	147.0	25 100
15.	*S.T.P. - FC1*	12.0	32 100
		1057	

TUBE WELL WATER SUPPLY QUANTITY SHEET

1	TW 01 -T1	62.0	100
2.	TW 02 -T2	51 + 10.0 = 61	100
3.	~~TW 03 -T2~~	45.0	~~100~~
4.	~~T2 - T1~~	~~51.0~~	~~150~~
5.	T1 - *UGT.*	43 0	200 150

150 mm Ø
22 + 19 =
41 mtr
Say = 50 M
100 mm Ø
1022 + 1057
= 2079 mtr
Say 2080 m

100 mm Ø : 62 + 61 = 123 mtr Say 125 mtr
150 mm Ø 43 Page 1 Say 50 mtr.

S.No.	Line No	Length of Pipe	Dia of Pipe
		mtr.	mtr.
6.	Municipal Supply	~~60.0~~ 250 mtr.	~~65~~ 100

S.No.	Line No	Length of Pipe	Dia of Pipe
		mtr.	mtr.
		Length in (MTR)	**Pipe Dia (MM)**
Domestic & Flushing Water Supply line		147.0	25
Domestic & Flushing Water Supply line		371.0	32
Domestic & Flushing Water Supply line		127.0	40
Domestic & Flushing Water Supply line		342.0	50
Domestic & Flushing Water Supply line		0.0	65
Domestic & Flushing Water Supply line		796.0	80
Domestic & Flushing Water Supply line		315.0	100
Domestic & Flushing Water Supply line		22.0	150
		Length in (M)	Pipe Dia
Municipal Water Supply line		60.0	65
Tube Well Water Supply line		117.0	100
Tube Well Water Supply line		51.0	150
Tube Well Water Supply line		43.0	200
Tube Well Water Supply line		0.0	250
25 Dia Valve		1	Nos.
32 Dia Valve		4	Nos.
40 Dia Valve		1	Nos.
50 Dia Valve		2	Nos.
65 Dia Valve		1	Nos.
80 Dia Valve		2	Nos.
100 Dia Valve		4	Nos.
150 Dia Valve		2	Nos.
200 Dia Valve		1	Nos.
100 Dia Non Return Valve		3	Nos.
Air Valve		4	Nos.

PROJECT :- THE HARITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

IRRIGATION WATER SUPPLY QUANTITY SHEET

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mm.
1	*S.T.P*	G1	5.0	80
2.	G1	G2	53.0	65
3.	G2	G2a	31.0	65
4	G2	G3	152.0	65
5.	G3	G3a	121.0	65
6.	G3a	G3b	23.0	65
7.	G3b	G3c	40.0	65
8.	G3	G4	143.0	65
9.	G4	G5	140.0	65
10.	G5	G3b	43.0	65
11.	G5	G6	173.0	65
12.	G6	G7	117.0	65
13.	G3a	G7	124.0	65
14.	G7	G1	94.0	65

	Length in (mtr.)	Pipe Dia
Irrigation Water Supply line	1254.0	65
Irrigation Water Supply line	5.0	80

Garden Hydrant	26	Nos.
65 Dia Valve	2	Nos.
80 Dia Valve	1	Nos.
Air Valve	1	Nos.

PROJECT :- THE HARITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

FIRE QUANTITY SHEET

S.No.	Line No		Length of Pipe	Dia of Pipe
	From	To	mtr.	mtr.
1	*U.G.Tank*	F1	15.0	150
2.	F1	F2	55.0	150
3.	F2	F3	168.0	150
4.	F3	F4	158.0	150
5.	F2	F4	149.0	150
6.	F4	F5	94.0	150
7.	F5	F6	162.0	150
8.	F6	F7	117.0	150
9.	F7	F8	76.0	150
10.	F8	F1	20.0	150

	Length	
80 mm Dia Pipe	**170.0**	mtr.
100 mm Dia Pipe	**0.0**	mtr.
150 mm Dia Pipe	**1014.0**	mtr.

External Fire Hydrant =	**17**	**Nos.**
80 Dia Valve =	**17**	**Nos.**
100 Dia Valve =	**0**	**Nos.**
150 Dia Valve =	**1**	**Nos.**
80 Dia Non Return Valve =	**17**	**Nos.**

PROJECT :- THE HERITAGE MAX GROUP HOUSING, SECTOR-102, GURGAON (HARYANA)
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)	(M)	(mtr.)	(mtr.)	(mtr.)	(cum.)	(mtr.)	(mtr.)	(mtr.)	(mtr.)
1	S1	S2	87.0	250	0.250	2.55	3.01	2.78	174.11	0.0	87.0	0.0	0.0
2.	S2	S3	168.0	250	0.250	3.01	3.89	3.45	409.50	0.0	0.0	168.0	0.0
3.	S3a	S3	46.0	250	0.250	2.55	2.79	2.67	88.83	0.0	46.0	0.0	0.0
4.	S3	S4	46.0	250	0.250	3.89	4.13	4.01	128.96	0.0	0.0	46.0	0.0
5.	S4	S5	87.0	250	0.250	4.13	4.59	4.36	263.70	0.0	0 0	87 0.	0.0
6.	S5	S6	42.0	250	0.250	4.59	4.81	4.70	136.57	0.0	0.0	0.0	42.0
7.	S6a	S6	36.0	200	0.200	1.20	1.46	1.33	35.18	36.0	0.0	0.0	0.0
8.	S6	S7	5.0	250	0.250	4.81	4.84	4.83	16.66	0.0	0 0	0 0	5.0
9.	S8	S9	105.0	250	0.250	2.55	3.10	2.83	213.37	0.0	105.0	0.0	0.0
10.	S9	S10	50.0	250	0.250	3.10	3.37	3.23	114.86	0.0	0.0	50.0	0.0
11.	S10	S11	112.0	250	0.250	3.37	3.96	3.66	288.33	0.0	0.0	112.0	0.0
12.	S11	S12	32.0	250	0.250	3.96	4.12	4.04	90.26	0.0	0.0	32.0	0.0
13.	S12a	S12	24.0	200	0.200	1.20	1.37	1.29	22.83	24.0	0.0	0.0	0.0
14.	S12	S7	16.0	250	0.250	4.12	4.21	4.17	46.44	0.0	0.0	16.0	0.0
15.	S7	STP.	~~5.0~~ 1008.00	400	0.400	4.99	5.00	4.99	12.70	0.0	0.0	0.0	3.0
Total			~~859.0~~ 866						2043.0	60.0	238.0	511.0	50.0

Excavation Depth				
	(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)	(4.5 - 6.0)
200 mm Dia pipe	60.0	0.0	0.0	0.0
250 mm Dia pipe	0.0	238.0	5180	~~47.0~~ 50
300 mm Dia pipe	0.0	0.0	0.0	0.0
400 mm Dia pipe	0.0	0.0	0.0	3.0
500 mm Dia pipe	0.0	0.0	0.0	0.0

PROJECT :- THE HERITAGE MAX GROUP HOUSING, SECTOR-102, GURGAON (HARYANA)

TITLE :- STORM WATER QUANTITY SHEET

S.No.	Line No.		Length	Size of Pipe		Depth			Excavation Depth	EXCAVATION		
						Start	End	Avg.		0.0 -1.5	1.5 - 3.0	3.0 - 4.5
	From	To	(mtr.)	(mm)	(mtr.)	(mtr.)	(mtr.)	(mtr.)	(cum.)	(mtr.)	(mtr.)	(mtr.)
1	A1	A2	78.0	400	0.400	2.00	2.14	2.07	184.74	0.0	78.0	0.0
2.	A2	D.C.-01	2.0	400	0.400	2.14	2 14	2.14	4.88	0.0	2.0	0.0
3.	D.C.-01	R.P.-01	2.0	400	0.400	2.14	2.14	2.14	4.88	0.0	2.0	0.0
4.	R.P.-01	A3	5.0	400	0.400	2.00	2.01	2.00	11.52	0.0	5.0	0.0
5.	A3	A4	105.0	400	0.400	2.01	2.19	2.10	252.09	0.0	105.0	0.0
6.	A4	D.C.-02	2.0	400	0.400	2.19	2.20	2.19	4.99	0.0	2.0	0.0
7.	D.C.-02	R.P.-02	2.0	400	0.400	2.20	2.20	2.20	5.00,	0.0	2.0	0.0
8.	R.P.-02	A5	4.0	400	0.400	2.00	2.01	2.00	9.21	0.0	4.0	0.0
9.	A5	A6	84.0	400	0.400	2.01	2.15	2.08	199.98	0.0	84.0	0.0
10	A6	D.C.-03	2.0	400	0.400	2.15	2.16	2.16	4.91	0.0	2.0	0.0
11.	D.C.-03	R.P.-03	2.0	400	0.400	2.16	2.16	2.16	4.92	0.0	2.0	0.0
12.	R.P.-03	A7	8.0	400	0.400	2.00	2.01	2.01	18.46	0.0	8.0	0.0
13.	A7	A8	99.0	400	0.400	2.01	2.19	2.10	237.69	0.0	99 0	0.0
14.	A8	D.C.-04	5.0	400	0.400	2.19	2.20	2.19	12.46	0.0	5.0	0.0
15.	D.C.-04	R.P.-04	2.0	400	0.400	2.20	2.20	2.20	5.00	0.0	2.0	0.0
16.	R.P.-04	A9	8.0	400	0.400	2.00	2.01	2.01	18.46	0.0	8.0	0.0
17.	A9a	A9b	95.0	400	0.400	2.00	2.17	2.08	226.42	0.0	95.0	0.0
18.	A9c	A9b	62.0	400	0.400	2.00	2.11	2.05	145.97	0.0	62.0	0.0
19.	A9b	D.C.-05	2.0	400	0.400	2.17	2.17	2.17	4.94	0.0	2.0	0.0
20.	D.C.-05	R.P.-05	2.0	400	0.400	2.17	2.17	2.17	4.94	0.0	2.0	0.0
21.	R.P.-05	A9d	3.0	400	0.400	2.00	2.01	2.00	6.91	0.0	3.0	0.0
22.	A9d	A9e	43.0	400	0.400	2.01	2.08	2.04	100.75	0.0	43.0	0.0
23.	A9f	A9e	50.0	400	0.400	2.00	2.09	2.04	117.19	0.0	50.0	0.0
24.	A9e	D.C.-06	3.0	400	0.400	2.09	2.09	2.09	7.17	0.0	3.0	0.0
25.	D.C.-06	R.P.-06	3.0	400	0.400	2.09	2.10	2.10	7.19	0.0	3.0	0.0
26.	R.P.-06	A9	10.0	400	0.400	2.00	2.02	2.01	23.09	0.0	10.0	0.0
27	A9	A10	60.0	400	0.400	2.02	2 12	2 07	142.21	0.0	60 0	0.0
28.	A10	D.C.-07	2.0	400	0.400	2.12	2.13	2.12	4.85	0.0	2.0	0.0
29.	D.C.-07	R.P.-07	2.0	400	0.400	2.13	2.13	2.13	4.86	0.0	2.0	0.0
30.	A11	A12	69.0	400	0.400	2.00	2.12	2.06	162.88	0.0	69.0	0.0
31.	A12	D.C.-08	2.0	400	0.400	2.12	2.12	2.12	4.85	0.0	2.0	0.0
32.	D.C.-08	R.P.-08	2.0	400	0.400	2.12	2.13	2.13	4.85	0.0	2.0	0.0
33.	R.P.-08	A13	8.0	400	0.400	2.00	2.01	2.01	18.46	0.0	8.0	0.0
34.	A13	A14	62.0	400	0.400	2.01	2.12	2.07	146.84	0.0	62 0	0.0
35.	A14	D.C.-09	2.0	400	0.400	2.12	2.13	2.12	4.85	0.0	2.0	0.0
36.	D.C.-09	R.P.-09	2.0	400	0.400	2.13	2.13	2.13	4.86	0.0	2.0	0.0
37.	R.P.-09	A15	4.0	400	0.400	2.00	2.01	2.00	9.21	0.0	4.0	0.0
38	A15	A16	67.0	400	0.400	2.01	2.12	2.07	158.51	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.)
39.	A16	D.C.-10	2.0	400	0.400	2.12	2.13	2.13	4.85	0.0	2.0	0.0
40.	D.C.-10	R.P.-10	2.0	400	0.400	2.13	2.13	2.13	4.86	0.0	2.0	0.0
41.	R.P.-10	A17	4.0	400	0.400	2.00	2.01	2.00	9.21	0.0	4.0	0.0
42.	A17	A18	57.0	400	0.400	2.01	2.11	2.06	134.35	0.0	57.0	0.0
43.	A18	D.C.-11	2.0	400	0.400	2.11	2.11	2.11	4.82	0.0	2.0	0.0
44.	D.C.-11	R.P.-11	2.0	400	0.400	2.11	2.11	2.11	4.82	0.0	2.0	0.0
45.	R.P.-11	A19	4.0	400	0.400	2.00	2.01	2.00	9.21	0.0	4.0	0.0
46.	A19	A20	49.0	400	0.400	2.01	2.09	2.05	115.15	0.0	49.0	0.0
47.	A20	D.C.-12	2.0	400	0.400	2.09	2.10	2.09	4.79	0.0	2.0	0.0
48.	D.C.-12	R.P.-12	2.0	400	0.400	2.10	2.10	2.10	4.80	0.0	2.0	0.0
49.	R.P.-12	A21	3.0	400	0.400	2.00	2.01	2.00	6.91	0.0	3.0	0.0
50.	A21	A22	45.0	400	0.400	2.01	2.08	2.04	105.51	0.0	45.0	0.0
51.	A22	D.C.-13	4.0	400	0.400	2.08	2.09	2.09	9.55	0.0	4.0	0.0
52.	D.C.-13	R.P.-07	2.0	400	0.400	2.09	2.09	2.09	4.79	0.0	2.0	0.0
53.	R.P.-07	Over Flow to HUDA	10.0	400	0.400	2.00	2.02	2.01	23.09	0.0	10.0	0.0
54	Catch Basin Line		336.0	250	0.250	0.60	0.70	0.65	271.32	336.0	0.0	0.0
Total			1491.0						3009.0	336.0	1155.0	0.0

Excavation Depth			
	(0.0 - 1.5)	(1.5 - 3.0)	(3.0 - 4.5)
250 mm Dia pipe	336.0	-	-
400 mm Dia pipe	0.0	1155.0	0.0
500 mm Dia pipe	0.0	0.0	0.0
600 mm Dia pipe	0.0	0.0	0.0

PROJECT :- THE HERITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

TITLE :- TUBE WELL WATER DESIGN CHART

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	TW 01	T1	15.00	22.50	375.00	62.0	0.013	0.80	0.795	100
2.	TW 02	T2	15.00	22.50	375.00	10.0	0.013	0.13	0.795	100
3.	TW 03	T2	15.00	22.50	375.00	45.0	0.013	0.58	0.795	100
4	T2	T1	30.00	45.00	750.00	51.0	0.006	0.33	0.707	150
5.	T1	UGT.	45.00	67.50	1125.00	43.0	0.003	0.15	0.597	200
Total Length of branch lines						211.0	mtr.			

PROJECT :- THE HERITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

(Pump Riser Calculation Sheet)

Domestic Water Supply Design Calculation For Towers

Line No.	Pipe No.	Load on pipe (fix units)	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
1	2	3	4	5	6	7	8	9	10	11	12	13	15	14	
Pump Room - DA1			13.325	150	0.007	22.0	5	1.10	23.10	0.169	0.169	0.754	101.00	100.83	11.83
DA1 - DA2			7.631	100	0.019	22.0	5	1.10	23.10	0.433	0.602	0.971	100.83	100.23	11.23
DA2 - DA3			5.087	100	0.009	91.0	5	4.55	95.55	0.846	1.449	0.647	100.23	98.78	9.78
DA3 - DA4			2.544	80	0.007	49.0	5	2.45	51.45	0.374	1.823	0.506	98.78	96.96	7.96
DA4 - DA5			2.544	80	0.007	32.0	5	1.60	33.60	0.244	2.067	0.506	96.96	94.89	5.89
DA1 - DA5			5.695	100	0.011	87.0	5	4.35	91.35	0.997	1.166	0.725	100.83	99.67	10.67
DA5 - DA6			3.151	80	0.011	42.0	5	2.10	44.10	0.477	1.643	0.627	99.67	98.02	9.02
DA6 - DA7			3.151	80	0.011	73.0	5	3.65	76.65	0.829	2.472	0.627	98.02	95.55	6.55
DA7 - DA8			3.151	80	0.011	15.0	5	0.75	15.75	0.170	2.642	0.627	95.55	92.91	3.91
DA6 - DA8			3.151	80	0.011	88.0	5	4.40	92.40	0.999	2.642	0.627	98.02	95.38	6.38
			Flow Rate	13.325 lps											
						799.5 LPM									
			(3 W + 1 S)			266.5 LPM									
			Height Building			89 m									
			Pump Head			101.00 m									
			Pump HP			10.0 HP									
			Say			12.5 HP									

Flushing Water Supply Design Calculation For Towers

Line No.	Pipe No.	Load on pipe (fix units)	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
1	2	3	4	5	6	7	8	9	10	11	12	13	15	14	
S.T.P. - FA1			7.175	100	0.017	19.0	5	0.95	19.95	0.334	0.334	0.913	101.00	100.67	11.67
FA1 - FA2			7.175	100	0.017	96.0	5	4.80	100.80	1.688	2.022	0.913	100.67	98.64	9.64
FA2 - FA3			2.739	80	0.008	42.0	5	2.10	44.10	0.368	2.390	0.545	98.64	96.25	7.25
FA3 - FA4			2.739	80	0.008	54.0	5	2.70	56.70	0.473	2.863	0.545	96.25	93.39	4.39
FA4 - FA5			1.370	80	0.002	88.0	5	4.40	92.40	0.214	3.076	0.272	93.39	90.32	1.32
FA2 - FA5			3.066	80	0.010	95.0	5	4.75	99.75	1.026	1.360	0.610	98.64	97.28	8.28
FA5 - FA6			1.697	80	0.003	42.0	5	2.10	44.10	0.152	1.511	0.337	97.28	95.77	6.77
FA6 - FA7			1.697	80	0.003	73.0	5	3.65	76.65	0.263	1.775	0.337	95.77	94.00	5.00
FA7 - FA8			1.697	80	0.003	15.0	5	0.75	15.75	0.054	1.829	0.337	94.00	92.17	3.17
FA6 - FA8			1.697	80	0.003	88.0	5	4.40	92.40	0.318	1.829	0.337	95.77	93.94	4.94

Flow Rate	7.175 lps	
	430.5 LPM	
(2 W + 1 S)	215.3 LPM	
Height Building	89 m	
Pump Head	101.00 m	
Pump HP	8.1 HP	
Say	10.0 HP	

Domestic Water Supply Design Calculation For Club, Shops & Schools

Line No.	Pipe No.	Load on pipe (fix units)	Probable demand (lps)	Assumed pipe dia. (mm)	Head loss (m/m)	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
1	2	3	4	5	6	7	8	9	10	11	12	13	15	14	
Pump Room - DB1			1.204	50	0.018	20.0	5	1.00	21.00	0.377	0.377	0.613	19.00	18.62	8.62
DB1 - DB1a			0.301	32	0.037	53.0	5	2.65	55.65	2.039	2.416	0.680	18.62	16.21	6.21
DB1 - DB1b			0.151	32	0.010	128.0	5	6.40	134.40	1.365	1.742	0.340	18.62	16.88	6.88
DB1 - DB2			0.752	50	0.023	152.0	5	7.60	159.60	3.631	4.008	0.696	18.62	14.61	4.61

Flow Rate	1.204 lps
(1 W + 1 S)	72.2 LPM
Height Building	10 m
Pump Head	19.00 m
Pump HP	0.5 HP
SAY	1.00 HP

Flushing Water Supply Design Calculation For Club, Shops & Schools

Line No.	Pipe No.	Load on pipe (fix units)	Probable demand (lps)	Assumed pipe dia. (mm)	Head loss (m/m)	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
1	2	3	4	5	6	7	8	9	10	11	12	13	15	14	
STP. - FB1			0.648	40	0.017	20.0	5	1.00	21.00	0.355	0.355	0.515	19.00	18.64	8.64
FB1 - DB1a			0.162	32	0.012	178.0	5	8.90	186.90	2.176	2.531	0.366	18.64	16.11	6.11
FB1 - DB2			0.486	40	0.030	107.0	5	5.35	112.35	3.375	3.731	0.703	18.64	14.91	4.91
FB2 - FB3			0.081	25	0.011	147.0	5	7.35	154.35	1.657	2.012	0.300	18.64	16.63	6.63

Flow Rate	0.648 lps
(1 W + 1 S)	38.9 LPM
Height Building	10 m
Pump Head	19.00 m
Pump HP	0.3 HP
SAY	1.00 HP

Domestic Water Supply Design Calculation For EWS

Line No.	Pipe No.	Load on pipe (fix units)	Probable demand (lps)	Assumed pipe dia. (mm)	Head loss (m/m)	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
1	2	3	4	5	6	7	8	9	10	11	12	13	15	14	
Pump Room - DC1			0.914	50	0.011	170.0	5	8.50	178.50	1.923	1.923	0.465	40.00	38.08	5.08
				Flow Rate		0.914 lps									
				(1 W + 1 S)		54.8 LPM									
				Height Building		33 m									
				Pump Head		40.00 m									
				Pump HP		0.8 HP									
				SAY		1.00 HP									

Flushing Water Supply Design Calculation For EWS

Line No.	Pipe No.	Load on pipe (fix units)	Probable demand (lps)	Assumed pipe dia. (mm)	Head loss (m/m)	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
1	2	3	4	5	6	7	8	9	10	11	12	13	15	14	
STP. - FC1			0.492	32	0.030	12.0	5	0.60	12.60	0.379	0.379	0.611	39.00	38.62	5.62
				Flow Rate		0.492 lps									
				(1 W + 1 S)		29.5 LPM									
				Height Building		33 m									
				Pump Head		39.00 m									
				Pump HP		0.4 HP									
				SAY		1.00 HP									

PROJECT :- THE HERITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

TITLE :- HYDRAULIC SEWAGE DESIGN CHART

S No	Line No		Gross Water Requirement (Load on Line)	Sewage Flow (Self Load on Line) LPD	Sewage Flow (Self Load on Line) KLD	Previous Load	Progressive Discharge	Progressive Discharge (Average)	Progressive Discharge (Peak)	Infiltration @ 25% Av Discharge	Total Discharge	Length	Pipe Dia	Slope (1 in)	Fall	Velocity	Capacity of Pipe	Ground Levels at Start	H F L at Start	Invert Levels at Start	Ground Levels at End	H F L at End	Invert Levels at End	Manhole Start Depth	Manhole Start End	Average Depth	Number of Manhole	Type of Manhole		
	From	To	lpd	80%	1000	kld	kld	lps	lps	lps	lps	(mtr)	(mm)	(mm)	(mtr)	(mtr) (s)	lps	(mtr)	(mtr)	(mtr)	(mtr)	(mtr)	(mtr)	(mtr)	(mtr)	(mtr)	(mtr)	(nos)	A	B	C
																													910 Dia Upto 1670 mm	1220 Dia From 1670 to 2290 mm	1525 Dia From 2290 to 3000 mm
1	S1	S2	48125	38500	38 50	0 00	38 50	0 45	1 34	0 11	1 45	87 0	250	190	0 46	0 76	18 703	213 60	211 30	211 05	213 60	210 84	210 59	2 55	3 01	2 78	4	0	0	4
2	S2	S3	81583	49266	49 27	38 50	87 77	1 02	3 05	0 25	3 30	168 0	250	190	0 88	0 76	18 703	213 60	210 84	210 59	213 60	209 96	209 71	3 01	3 89	3 45	8	0	0	8
3	S3a	S3	42263	33810	33 81	0 00	33 81	0 39	1 17	0 10	1 27	46 0	250	190	0 24	0 76	18 703	213 60	211 30	211 05	213 60	211 08	210 81	2 55	2 79	2 67	2	0	0	2
4	S3	S4	0	0	0 00	121 58	121 58	1 41	4 22	0 35	4 57	46 0	250	190	0 24	0 76	18 703	213 60	209 96	209 71	213 60	209 72	209 47	3 89	4 13	4 01	2	0	0	2
5	S4	S5	151788	121430	121 43	121 58	243 01	2 81	8 44	0 70	9 14	87 0	250	190	0 46	0 76	18 703	213 60	209 72	209 47	213 60	209 26	209 01	4 13	4 59	4 36	3	0	0	3
6	S5	S6	0	0	0 00	243 01	243 01	2 81	8 44	0 70	9 14	42 0	250	190	0 22	0 76	18 703	213 60	209 26	209 01	213 60	209 04	208 79	4 59	4 81	4 70	2	0	0	2
7	S6a	S6	15180	12144	12 14	0 00	12 14	0 14	0 42	0 04	0 46	36 0	200	140	0 26	0 76	12 017	213 60	212 60	212 40	213 60	212 34	212 14	1 20	1 46	1 33	5	5	0	0
8	S6	S7	0	0	0 00	255 15	255 15	2 95	8 86	0 74	9 60	5 0	250	190	0 03	0 76	18 703	213 60	209 04	208 79	213 60	209 01	208 75	4 81	4 84	4 83	1	0	0	1
9	S8	S9	94525	75620	75 62	0 00	75 62	0 88	2 63	0 22	2 84	105 0	250	190	0 55	0 76	18 703	213 60	211 30	211 05	213 60	210 75	210 50	2 55	3 10	2 83	4	0	0	4
10	S9	S10	0	0	0 00	75 62	75 62	0 88	2 63	0 22	2 84	50 0	250	190	0 26	0 76	18 703	213 60	210 75	210 50	213 60	210 48	210 23	3 10	3 37	3 23	2	0	0	2
11	S10	S11	84525	67620	67 62	75 62	143 24	1 66	4 97	0 41	5 39	112 0	250	190	0 59	0 76	18 703	213 60	210 48	210 23	213 60	209 89	209 64	3 37	3 96	3 66	4	0	0	4
12	S11	S12	0	0	0 00	143 24	143 24	1 66	4 97	0 41	5 39	32 0	250	190	0 17	0 76	18 703	213 60	209 89	209 64	213 60	209 73	209 45	3 96	4 12	4 04	1	0	0	1
13	S12a	S12	15180	12144	12 14	0 00	12 14	0 14	0 42	0 04	0 45	24 0	200	140	0 17	0 76	12 017	213 60	212 60	212 40	213 60	212 43	212 23	1 20	1 37	1 29	4	4	0	0
14	S12	S7	0	0	0 00	155 38	155 38	1 80	5 40	0 45	5 84	16 0	250	190	0 08	0 76	18 703	213 60	209 73	209 48	213 60	209 64	209 39	4 12	4 21	4 17	1	0	0	1
15	S7	STP	0	0	0 00	410 53	410 53	4 75	14 25	1 19	15 44	3 0	400	370	0 01	0 75	46 935	213 60	209 01	208 61	213 60	209 00	208 60	4 99	5 00	4 99	1	0	0	1
																								Max.	5 00		44	9	0	35

PROJECT :- THE HERITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

LOAD ON SEWAGE LINES

S.No.	Name of Sewer Line		Residential Water Demand						Non Residential Water Demand		Residential + Non Residential Load		
			Main Apartment	Population @ 5 persons / Unit	Water Reuirement @ 172.5 Ltr/ day /Person	EWS + Service Apartment	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) in lpd.	Sewage Flow (Self Load on Line) in KLD.
	From	To	Nos.	5	172.5	Nos.	2	172.5			lpd.	80%	1000
1.	S1	S2	50	250	43125	0	0	0	Communtly Shopping	5000.00	48125	38500	38.50
2	S2	S3	51	255	43987.5	51	102	17595	0	0.00	61583	49266	49.27
3.	S3a	S3	49	245	42262.5	0	0	0	0	0.00	42263	33810	33.81
4.	S3	S4	0	0	0	0	0	0	0	0.00	0	0	0.00
5.	S4	S5	147	735	126787.5	0	0	0	Club	25000.00	151788	121430	121.43
6.	S5	S6	0	0	0	0	0	0	0	0.00	0	0	0.00
7.	S6a	S6	0	0	0	44	88	15180	0	0.00	15180	12144	12.14
8.	S6	S7	0	0	0	0	0	0	0	0.00	0	0	0.00
9	S8	S9	98	490	84525	0	0	0	Nursery School	10000.00	94525	75620	75.62
10.	S9	S10	0	0	0	0	0	0	0	0.00	0	0	0.00
11.	S10	S11	98	490	84525	0	0	0	0	0.00	84525	67620	67.62
12.	S11	S12	0	0	0	0	0	0	0	0.00	0	0	0.00
13	S12a	S12	0	0	0	44	88	15180	0	0 00	15180	12144	12.14
14.	S12	S7	0	0	0	0	0	0	0	0.00	0	0	0.00
15.	S7	STP.	0	0	0	0	0	0	0	0.00	0	0	0.00
			493	2465	425212.5	139	278	47955		40000	513167.5	410534	411.00
												Say	415.00

PROJECT :- THE HERITAGE MAX GROUP HOUSING SECTOR-102, GURGOAN, HARYANA

TITLE :- HYDRAULIC STORM WATER DESIGN CHART

S No	Line No		Length	Catchment Area (Sqm.)			Discharge @ 6.25 mm / hr rainfall	Pipe dia	Slope 1 in	Velocity	Cap of pipe in	Fall in line	Ground level at Start	H.F.L at Start	Invert Level at Start	Ground level at End	H.F.L at End	Invert Level at End	Manhole Depth (mm)			No. of Manhole	Manhole Type		
																			Depth at Start	Depth at End	Average Depth		910 Dia upto 1670 mm	1220 Dia upto 2290 mm	1520 Dia From 2290 to 4180 mm
	From	To	(mtr.)	Self	Progg.	Total	60% run off (lps)	(mm)	(mm)	(m/sec.)	lps	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	Nos.	Type- (A)	Type- (B)	Type- (C)
1.	A1	A2	78.0	3079.0	0.0	3079.0	3.21	400	570	0.60	75.63	0.14	213.60	212.00	211.60	213.60	211.86	211.46	2.00	2.14	2.07	3	0	3	0
2.	A2	*D.C.-01*	2.0	104.0	3079.0	3183.0	3.32	400	570	0.60	75.63	0.00	213.60	211.86	211.46	213.60	211.86	211.46	2.14	2.14	2.14	1	0	1	0
3.	*D.C.-01*	*R.P.-01*	2.0	0.0	3183.0	3183.0	3.32	400	570	0.60	75.63	0.00	213.60	211.86	211.46	213.60	211.86	211.46	2.14	2.14	2.14	0	0	0	0
4.	*R.P.-01*	A3	5.0	0.0	3183.0	3183.0	3.32	400	570	0.60	75.63	0.01	213.60	212.00	211.60	213.60	211.99	211.59	2.00	2.01	2.00	0	0	0	0
5.	A3	A4	105.0	3344.0	3183.0	6527.0	6.80	400	570	0.60	75.63	0.18	213.60	211.99	211.59	213.60	211.81	211.41	2.01	2.19	2.10	4	0	4	0
6.	A4	*D.C.-02*	2.0	74.0	6527.0	6601.0	6.88	400	570	0.60	75.63	0.00	213.60	211.81	211.41	213.60	211.80	211.40	2.19	2.20	2.19	1	0	1	0
7.	*D.C.-02*	*R.P.-02*	2.0	0.0	6601.0	6601.0	6.88	400	570	0.60	75.63	0.00	213.60	211.80	211.40	213.60	211.80	211.40	2.20	2.20	2.20	0	0	0	0
8.	*R.P.-02*	A5	4.0	0.0	6601.0	6601.0	6.88	400	570	0.60	75.63	0.01	213.60	212.00	211.60	213.60	211.99	211.59	2.00	2.01	2.00	0	0	0	0
9.	A5	A6	84.0	2915.0	6601.0	9516.0	9.91	400	570	0.60	75.63	0.15	213.60	211.99	211.59	213.60	211.85	211.45	2.01	2.15	2.08	4	0	4	0
10	A6	*D.C.-03*	2.0	91.0	9516.0	9607.0	10.01	400	570	0.60	75.63	0.00	213.60	211.85	211.45	213.60	211.84	211.44	2.15	2.16	2.16	1	0	1	0
11	*D.C.-03*	*R.P.-03*	2.0	0.0	9607.0	9607.0	10.01	400	570	0.60	75.63	0.00	213.60	211.84	211.44	213.60	211.84	211.44	2.16	2.16	2.16	0	0	0	0
12	*R.P.-03*	A7	8.0	0.0	9607.0	9607.0	10.01	400	570	0.60	75.63	0.01	213.60	212.00	211.60	213.60	211.99	211.59	2.00	2.01	2.01	0	0	0	0
13	A7	A8	99.0	4307.0	9607.0	13914.0	14.49	400	570	0.60	75.63	0.17	213.60	211.99	211.59	213.60	211.81	211.41	2.01	2.19	2.10	5	0	5	0
14	A8	*D.C.-04*	5.0	198.0	13914.0	14112.0	14.70	400	570	0.60	75.63	0.01	213.60	211.81	211.41	213.60	211.80	211.40	2.19	2.20	2.19	1	0	1	0
15	*D.C.-04*	*R.P.-04*	2.0	0.0	14112.0	14112.0	14.70	400	570	0.60	75.63	0.00	213.60	211.80	211.40	213.60	211.80	211.40	2.20	2.20	2.20	0	0	0	0
16.	*R.P.-04*	A9	8.0	0.0	14112.0	14112.0	14.70	400	570	0.60	75.63	0.01	213.60	212.00	211.60	213.60	211.99	211.59	2.00	2.01	2.01	0	0	0	0
17	A9a	A9b	95.0	4549.0	0.0	4549.0	4.74	400	570	0.60	75.63	0.17	213.60	212.00	211.60	213.60	211.83	211.43	2.00	2.17	2.08	5	0	5	0
18	A9c	A9b	62.0	2447.0	0.0	2447.0	2.55	400	570	0.60	75.63	0.11	213.60	212.00	211.60	213.60	211.89	211.49	2.00	2.11	2.05	3	0	3	0
19	A9b	*D.C.-05*	2.0	84.0	5996.0	7080.0	7.38	400	570	0.60	75.63	0.00	213.60	211.83	211.43	213.60	211.83	211.43	2.17	2.17	2.17	1	0	1	0
20.	*D.C.-05*	*R.P.-05*	2.0	0.0	7080.0	7080.0	7.38	400	570	0.60	75.63	0.00	213.60	211.83	211.43	213.60	211.83	211.43	2.17	2.17	2.17	1	0	1	0
21.	*R.P.-05*	A9d	3.0	0.0	7080.0	7080.0	7.38	400	570	0.60	75.63	0.01	213.60	212.00	211.60	213.60	211.99	211.59	2.00	2.01	2.00	0	0	0	0
22	A9d	A9e	43.0	1697.0	7080.0	8777.0	9.14	400	570	0.60	75.63	0.08	213.60	211.99	211.59	213.60	211.92	211.52	2.01	2.08	2.04	0	0	0	0
23.	A9f	A9e	50.0	1974.0	0.0	1974.0	2.06	400	570	0.60	75.63	0.09	213.60	212.00	211.60	213.60	211.91	211.51	2.00	2.09	2.04	1	0	1	0
24.	A9e	*D.C.-06*	3.0	119.0	10751.0	10870.0	11.32	400	570	0.60	75.63	0.01	213.60	211.91	211.51	213.60	211.91	211.51	2.09	2.09	2.09	1	0	1	0
25	*D.C.-06*	*R.P.-06*	3.0	0.0	10870.0	10870.0	11.32	400	570	0.60	75.63	0.01	213.60	211.91	211.51	213.60	211.90	211.50	2.09	2.10	2.10	1	0	1	0
26.	*R.P.-06*	A9	10.0	0.0	10870.0	10870.0	11.32	400	570	0.60	75.63	0.02	213.60	212.00	211.60	213.60	211.98	211.58	2.00	2.02	2.01	1	0	1	0
27	A9	A10	60.0	2368.0	24982.0	27350.0	28.49	400	570	0.60	75.63	0.11	213.60	211.98	211.58	213.60	211.88	211.48	2.02	2.12	2.07	1	0	1	0
28	A10	*D.C.-07*	2.0	79.0	27350.0	27429.0	28.57	400	570	0.60	75.63	0.00	213.60	211.88	211.48	213.60	211.87	211.47	2.12	2.13	2.12	1	0	1	0
29	*D.C.-07*	*R.P.-07*	2.0	0.0	27429.0	27429.0	28.57	400	570	0.60	75.63	0.00	213.60	211.87	211.47	213.60	211.87	211.47	2.13	2.13	2.13	0	0	0	0
30	A11	A12	69.0	1723.0	0.0	1723.0	1.79	400	570	0.60	75.63	0.12	213.60	212.00	211.60	213.60	211.88	211.48	2.00	2.12	2.06	0	0	0	0

S No	Line No		Length	Catchment Area (Sqm)			Discharge @ 6.25 mm / hr rainfall	Pipe dia	Slope 1 in	Velocity	Cap of pipe m	Fall in line	Ground level at Start	H.F.L at Start	Invert Level at Start	Ground level at End	H.F.L at End	Invert Level at End	Depth at Start	Depth at End	Average Depth	No. of Manhole	910 Dia upto 1670 mm	1220 Dia upto 2290 mm	1520 Dia From 2290 to 4180 mm
31.	A12	*D.C.-08*	2 0	87.0	1723 0	1810 0	1 89	400	570	0.60	75 63	0 00	213 60	211 88	211.48	213.60	211 88	211.48	2 12	2 12	2 12	0	0	0	0
32	*D.C.-08*	*R.P.-08*	2 0	0 0	1810.0	1810 0	1 89	400	570	0.60	75.63	0.00	213 60	211.88	211.48	213.60	211 87	211.47	2 12	2 13	2 13	1	0	1	0
33	*R.P.-08*	A13	8 0	0 0	1810.0	1810 0	1 89	400	570	0.60	75.63	0 01	213.60	212 00	211.60	213.60	211 99	211.59	2 00	2 01	2 01	1	0	1	0
34	A13	A14	62 0	3947 0	1810 0	5757.0	6 00	400	570	0 60	75 63	0 11	213.60	211.99	211.59	213.60	211 88	211.48	2 01	2 12	2 07	1	0	1	0
35.	A14	*D.C.-09*	2 0	79 0	5757 0	5836.0	6 08	400	570	0 60	75.63	0 00	213.60	211 88	211.48	213 60	211 87	211 47	2 12	2 13	2 12	1	0	1	0
36	*D.C.-09*	*R.P.-09*	2 0	0 0	5836 0	5836 0	6 08	400	570	0.60	75 63	0 00	213 60	211.87	211.47	213.60	211 87	211 47	2 13	2 13	2 13	1	0	1	0
37	*R.P.-09*	A15	4.0	0 0	5836 0	5836 0	6 08	400	570	0 60	75 63	0 01	213.60	212.00	211.60	213 60	211.99	211 59	2 00	2 01	2 00	1	0	1	0
38	A15	A16	67 0	3094 0	5836.0	8930 0	9 30	400	570	0 60	75.63	0 12	213.60	211 99	211.59	213 60	211 88	211 48	2 01	2 12	2 07	1	0	1	0
39	A16	*D.C.-10*	2 0	99 0	8930 0	9029 0	9 41	400	570	0 60	75.63	0 00	213 60	211.88	211.48	213 60	211 87	211.47	2 12	2 13	2 13	1	0	1	0
40	*D.C.-10*	*R.P.-10*	2 0	0 0	9029 0	9029 0	9 41	400	570	0.60	75.63	0 00	213.60	211.87	211.47	213.60	211 87	211 47	2 13	2 13	2 13	1	0	1	0
41.	*R.P.-10*	A17	4 0	0 0	9029 0	9029.0	9 41	400	570	0 60	75.63	0 01	213 60	212 00	211 60	213 60	211 99	211 59	2 00	2 01	2 00	1	0	1	0
42.	A17	A18	57 0	1663 0	9029 0	10692 0	11 14	400	570	0 60	75 63	0 10	213.60	211 99	211.59	213 60	211 89	211 49	2 01	2 11	2 06	1	0	1	0
43	A18	*D.C.-11*	2 0	97 0	10692.0	10789.0	11 24	400	570	0.60	75 63	0 00	213 60	211 89	211 49	213 60	211 89	211.49	2 11	2 11	2 11	0	0	0	0
44	*D.C.-11*	*R.P.-11*	2 0	0 0	10789.0	10789 0	11.24	400	570	0 60	75.63	0 00	213.60	211 89	211.49	213 60	211.89	211.49	2 11	2 11	2 11	0	0	0	0
45	*R.P.-11*	A19	4.0	0 0	10789 0	10789 0	11 24	400	570	0 60	75.63	0 01	213.60	212 00	211.60	213.60	211.99	211 59	2 00	2 01	2 00	1	0	1	0
46	A19	A20	49 0	3834.0	10789.0	14623 0	15 23	400	570	0 60	75 63	0 09	213.60	211 99	211.59	213.60	211 91	211.51	2 01	2 09	2 05	1	0	1	0
47.	A20	*D.C.-12*	2 0	91.0	14623 0	14714.0	15.33	400	570	0 60	75 63	0 00	213.60	211.91	211 51	213.60	211 90	211.50	2 09	2 10	2 09	1	0	1	0
48.	*D.C.-12*	*R.P.-12*	2 0	0 0	14714 0	14714 0	15.33	400	570	0 60	75 63	0 00	213.60	211 90	211.50	213.60	211 90	211 50	2 10	2 10	2 10	1	0	1	0
49	*R.P.-12*	A21	3 0	0 0	14714 0	14714 0	15 33	400	570	0 60	75 63	0 01	213.60	212.00	211.60	213.60	211 99	211 59	2 00	2 01	2 00	1	0	1	0
50	A21	A22	45 0	3226 0	14714 0	17940 0	18 69	400	570	0 60	75.63	0 08	213.60	211.99	211 59	213 60	211 92	211 52	2 01	2 08	2 04	1	0	1	0
51	A22	*D.C.-13*	4 0	158 0	17940 0	18098.0	18.85	400	570	0 60	75.63	0 01	213.60	211 92	211 52	213 60	211 91	211.51	2 08	2 09	2 09	1	0	1	0
52	*D.C.-13*	*R.P.-07*	2 0	0 0	18098 0	18098 0	18.85	400	570	0.60	75.63	0 00	213.60	211.91	211.51	213 60	211 91	211 51	2 09	2 09	2 09	1	0	1	0
53	*R.P.-07*	*Over Flow to HUDA*	10 0	0 0	45527.0	45527 0	47 42	400	570	0 60	75.63	0.02	213.60	212.00	211.60	213 60	211 98	211.58	2 00	2 02	2 01	1	0	1	0

C.E. No. 12460
Dated 18/9/12
Annexure-A

SUB: Approval of service plan /estimate of Group Housing Colony area measuring 11.25 (License No. 104 of 2011 dated 11.12.2011) in Sec-102, Gurgaon Manesar Urban Complex being developed by M/S. Mahagori Estates Pvt.Ltd. (Now transferred in the name of M/S. Dreamhome Infrastructure Pvt.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.
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.

C.E. No. ~~2141~~ 12460
Dated:- 18/9/12

8. Only C.I/D.I pipes will be used in water supply and flushing system, UPVC/HDPE pipe for irrigation purposes.
9. A minimum 100 i/d C.I/D.I, 200mm i/d SW and 400mm id RCC NP-3 pipes will be used for water supply, sewerage and storm water drainage respectively.
10. Standard X-section for S.W. pipes sewer, RCC pipes sewer etc. will be followed as are being adopted in Haryana Public Health Engineering Deptt.or HUDA.
11. The X-section, width of roads, will be followed as approved by the Chief Town Planner, Haryana, Chandigarh. The kerbs and channels will also be provided as per approved X-section and specifications.
12. The specifications for various roads will be followed as per IRC/MORTH specifications.
13. The wiring system of street lighting and specifications of street lighting fixture will be as per relevant standards.
14. This shall confirm to such other conditions as are incorporated in the approved estimate and the letter of approval.

Executive Engineer (W),
For Chief Administrator, HUDA,
Panchkula