SERVICE ESTIMATE, DESIGN REPORT AND CALCULATION OF
INTERNAL DEVELOPMENT WORKS
FOR RESIDENTIAL COLONY MEASURING 10.525 Acres AT SECTOR 63A, GURGAON.

DEVELOPED BY **SMT. SANGEETA BHATIA & SH. LAKSH BHATIA IN COLLABORATION WITH ELEVATE EDITION REALTECH PVT. LTD.**

Report

Gurgaon town of Haryana State is situated on Delhi - Jaipur National Highway No.8 at a distance of 30 kms from Delhi. Being in the national capital Region, the town has fast developing tendency and potential. Further, it has also started sharing the growing Industrial load of Delhi. In order to relieve the growing pressure of population in National Capital of Delhi, Haryana Urban Development Authority has already developed residential sector which are fully inhabited to an extent. Further to the increasing demand HUDA has planned to develop new sectors at outskirt of Gurgaon town.

10.525 acres Group Housing Scheme at Sec 63A Gurgaon.
This report and estimate is for approval of **10.525 Acres** Group Housing colony.

WATER SUPPLY

At present the source of water supply in this area is HUDA and optional bore well. As the underground water is potable, provision for one numbers of Bore wells have been made in this estimate. It has been proposed to construct underground tanks of capacity as per attached details and at location for domestic purpose and for fire protection. The underground tanks will be fed from the bore wells and HUDA supply, from there water will be supplied by set of variable frequency pump to each plot which is now a days universally adopted. The water supply system has been designed as per the Hazen William formula.

DESIGN

The scheme has been designed for population considering Population for reseidential area as per NBC 2016 also as indicated in water demand sheet. The rate of water supply per head/day has been taken as 172.5 liters per head per day for residential and for others as per NBC 2016 based on their occupancy.

PUMPING EQUIPMENTS

It has been proposed to install pumping set as described with standby of equal capacity. Standby electric power requirement is added to the main DG Sets in case of electricity failure.

SEWERAGE SCHEME

Sewer line from proposed development will be connecting to a centralized Sewage treatment plant with a bypass to HUDA sewer to dispose excess sewage. The sewerage system has been marked on the respective plans.

Sewer lines have been designed for three times average D.W.F in relation to water supply demand. It has been assumed that about 80% of the domestic water supply shall find its way into the proposed sewer. Sewer lines shall be laid to a gradient maintaining minimum 2.46 ft./sec (0.75m/sec) self-cleaning velocity. Sewer line up to 400mm dia has been designed to run half full and above 400mm dia has been designed to run three fourth full at peak flow. Necessary provision for laying S.W/RCC pipe sewer line, construction of required number of manholes etc., has been made in the estimate.

Necessary design statement for entire sewerage system has been prepared and attached with estimate. Manning's formula has been used on the design of sewerage system.

STORM WATER DRAINAGE

We proposed to lay underground R.C.C. pipe drains with required number of catch basins, manholes and rainwater recharge pits with over flow to the Proposed HUDA storm drain on sector Road. The intensity of rain fall has been taken as 1-2" per hour. R.C.C storm water line will be designed as per Manning's formula.

SPECIFICATIONS

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

ROADS

Roads have been provided to above zones and estimate is prepared as per revised specifications adopted by HUDA

STREET LIGHITING

Provision for streets has also been made

HORTICULTURE

Estimates of plantation, landscaping, signage, etc., have been included

RATES

The estimate has been prepared based on the present market rates

COST

The total cost of the scheme, including cost of all services works out to be **Rs. 923.07** Lacs
Including 3% Contigencies & PE @ 49% Departmental

Say apx. Nine Crore Twenty three lakh seven hundred rupees only

Per Acre Cost **Rs. 87,70,229.96**

For: SMT. SANGEETA BHATIA & SH. LAKSH BHATIA IN COLLABORATION WITH ELEVATE EDITION REALTECH PVT. LTD.

Authorized Signatory

		Population		
S.no	**Description**	**PPU**	**No of units/ Area**	**Total Occupancy**
1	**Residential Dwelling Units**		**540**	**3,269**
1.1	4-BHK Units	@ 7 Persons/DU	152	1,064
1.2	3 BHK Units	@ 6 Persons/DU	248	1,488
1.3	EWS Units	@ 4 Persons/DU	70	280
1.4	Services personnel Units	@ 2 Persons/DU	70	140
1.5	Visitors of Resi.	@10% of total Resi. Pop.		297
2	**Convenient Shopping**	@ 3 sqm/Person	**212.934**	**71**
2.1	Staffs (10%)			7
2.2	Visitors (90%)			64
3	**Community center**	@ 1.4 sqm/Person	**4111.356**	**2,937**
3.1	Staffs (10%)			294
3.2	Visitors (90%)			2,643
4	**Security & Maintenance Staff**	Lumsump		**100**
	Total			**6,377**

Water Calculation

S.No	Unit Type	Population/ unit	Rate of water Demand (lpcd)	Water Requirement (KLD)			
				Domestic	Flushing	Total	Total Waste water generated (KLD)
1	**Residential buildings**	**3269**					
1.1	4-BHK Units	1064	86	69.16	22.34	91.50	84.59
1.2	3- BHK Units	1488	86	96.72	31.25	127.97	118.30
1.4	EWS Units	280	86	18.20	5.88	24.08	22.26
1.5	Services personnel Units	140	86	9.10	2.94	12.04	11.13
1.6	Visitors of Resi.	297	15	1.49	2.97	4.46	4.31
2	**Convenient Shopping**						
2.1	**Staffs**	7	45	0.18	0.14	0.32	0.30
2.2	**Visitors**	64	15	0.32	0.64	0.96	0.93
3	**Community center**	2937					
3.1	**Staffs**	294	45	7.34	5.87	13.22	12.48
3.2	**Visitors**	2643	15	13.22	26.43	39.65	38.32
4	**Security & Maintenance Staff**	100	45	2.50	2.00	4.50	4.25
5	**Horticulture**	6333.32	5 L/Sq.m			31.67	
6	**Swimming Pool & Water Bodies Make up**		LS	15.00		15.00	
7	**Filter Backwash water**		LS	15.00		15.00	15.00
	Total			**248.22**	**100.47**	**380.35**	**311.87**
			Say in KLD	**248**	**100**	**380**	**312**

PROPOSED BUILDING PLAN OF

DAILY WATER DEMAND & PUMPING SYSTEM (Annexure - 1)

	Description		Total Units/Area	People per Unit/Area	Total Population	Domestic Water Cold Water (A)		Flushing Water Requirement (D)		Gross Water Req. (E)=(C+D)	%age flow to Sewer		Flow to Sewer
						LPCD	LPD	LPCD	LPD	LPD	Dom.80%	Flus.80%	LPD
Total Water Requirement (in Ltrs.)					**6377.00**		**248000.00**		**100470.00**	**380350.00**			**311870.00**
Say (in KL)							**248.00**		**100.47**	**380.35**			**311.87**

Group Housing Colony, SEC 37 D, GURUGRAM

Service Estimate for HUDA |Water Demand|

	Description		Total Units/Area	People per Unit/Area	Total Population	Domestic Water Cold Water (A)		Flushing Water Requirement (D)		Gross Water Req. (E)=(C+D)	%age flow to Sewer		Flow to Sewer
						LPCD	LPD	LPCD	LPD	LPD	Dom.80%	Flus.80%	LPD

	Req	Proposed	
Fire demand 100 * (P in thousand)^0.5 only for Undrground static Reservior)	252.53	**640 KLD**	**(As per NBC 2016)**
HortiCulture Total area of (15% of Site) @ 25000 / Acre from STP	39.47	**39 KLD**	
Green Area 1.58			
STP capacity (with 5% safety margins)	327.46	**350 KLD**	

	Capacity of Tanks:				Capacity of under ground tank is on the basis of 1 day requirement and overhead on 1/2 day requirement. UGT and Pump rooms are proposed at 3 locations						
					U.G. Tank	O.H. Tank	Location		Nos of Tank		
				Req	Proposed						
1	Fire Tank (Proposed cap.)			253 KLD	640 KLD		U.G. Plant Room				
2	Raw Water Tank (Total domestic demand/2)			124 KLD	240 KLD		U.G. Plant Room				
3	Dom Water Tank (Total domestic demand/2)			124 KLD	240 KLD		U.G. Plant Room				
				Total	**1120 KL**						

Pump Calculation

1	Domestic water transfer pump		
1.1	**Pump Capacity**	**550 LPM**	**(1w+1s)**
a)	Total Demand	248 KLD	
b)	Daily working hours	8.0 Hrs	
c)	Required pump capacity	516.7 LPM	
d)	Nos. of working pumps	1 Nos.	
1.2	**Pump Head**	**155 Mtr.**	**Say**
a)	Suction lift	0	
b)	Elevation height (UGT+Tower+OHT)	135	
c)	Residual head	10	
d)	Frictional head loss (As per design sheet)	9.02	
1.3	**Pump HP**	**35.0 HP**	**Say**
a)	(Lpm*head (m)/4500*.65(effi)	31.6	

2	Flushing water transfer pump		
1.1	**Pump Capacity**	**225 LPM**	**(1w+1s)**
a)	Total Demand	100 KLD	
b)	Daily working hours	8.0 Hrs	
c)	Required pump capacity	209.3 LPM	
d)	Nos. of working pumps	1 Nos.	
1.2	**Pump Head**	**155 Mtr.**	**Say**
a)	Suction lift	0	
b)	Elevation height (UGT+Tower+OHT)	135	
c)	Residual head	10	
d)	Frictional head loss (As per design sheet)	6.3219	
1.3	**Pump HP**	**15.0 HP**	**Say**
a)	(Lpm*head (m)/4500*.65(effi)	12.9	

3	Irrigation water transfer pump		
3.1	**Pump Capacity**	**150 LPM**	**(1w+1s)**
a)	Total Demand	32 KLD	
b)	Daily working hours	4.0 Hrs	
c)	Required pump capacity	132.0 LPM	
d)	Nos. of working pumps	1 Nos.	
3.2	**Pump Head**	**45 Mtr.**	**Say**
a)	Suction lift	0	
b)	Elevation height	15	
c)	Residual head	20	
d)	Frictional head loss	10	
3.3	**Pump HP**	**3.0 HP**	**Say**
a)	(Lpm*head (m)/4500*.65(effi)	2.5	

4	Fire pumpsets		
			Nos
a)	Wet riser pump (Electric operated)	2850 LPM	1
b)	Jockey pump (WR) (Electric operated)	180 LPM	1
c)	Sprinkler pump (Electric operated)	2850 LPM	1
d)	Jockey pump (Spr) (Electric operated)	180 LPM	1
e)	Diesel Engine driven pump (SB-1)	2850 LPM	1
f)	Curtain Nozzel pump (Electric operated)	4000 LPM	1
g)	Diesel Engine driven pump (SB-2)	2850 LPM	1
4.2	**Pump Head (For Curtain Nozzels)**	**50 Mtr.**	**Say**
a)	Suction lift	0	
b)	Elevation height (B2-B1)	5	
c)	Residual head	15	
d)	Frictional head loss	30	
4.2	**Pump Head (For Hydrant and Sprinkler)**	**175 Mtr.**	**Say**
a)	Suction lift	0	
b)	Elevation height (B3-B1) +GF to Terrace + 1M on Terrace	120	
c)	Residual head	35	
d)	Frictional head loss	20	
4.3	**Pump HP for Main Electric pumps**	**190.0 HP**	**Say**
a)	(Lpm*head (m)/4500*.65(effi)	184.7	HP
4.4	**Pump HP for Jockey pumps**	**15.0 HP**	**Say**
a)	(Lpm*head (m)/4500*.65(effi)	11.7	
4.4	**Pump HP for Curtain pumps**	**75.0 HP**	**Say**
a)	(Lpm*head (m)/4500*.65(effi)	74.1	

5	Capacity of DG Set			
				Total Power cons.
a)	Domestic water transfer pump	1 Nos.	35.0 HP	35.0 HP
b)	Flushing water transfer pump	1 Nos.	15.0 HP	15.0 HP
c)	Irrigation water transfer pump	1 Nos.	3.0 HP	3.0 HP
6.2	**Total HP required**			53.0 HP
a)	DG Capactiy 80% of total power			42.4 KVA
6.3	**DG Capacity (Total power required)**	**50 KVA**		**To be fed from Main DG Set of the building**

7	HUDA water supply line calculation	Demand	Flow	Dia	Line length	F. Loss	Velocity	Total loss
		LPD	LPM	mm	Mtr	Mtr/Mtr	M/Sec	Mtr/Mtr
7.1	From Municipal conn. To UGT	248000	344.44	80	25	0.023	1.141	0.586

FINAL ABSTRACT OF COST

Description	Total of sub work	3% Contigencies and PE charges	TOTAL	49% departmental charges price circulation & unforseen admin charges	Grand Total
Sub Work-1 **Water Supply**	2,63,94,750	7,91,843	2,71,86,593	1,33,21,430	4,05,08,023
Sub Work-2 **Sewerage**	72,53,550	2,17,607	74,71,157	36,60,867	1,11,32,023
Sub Work-3 **Drainage**	41,77,500	1,25,325	43,02,825	21,08,384	64,11,209
Sub Work-4 **Road Works**	85,66,979	2,57,009	88,23,989	43,23,755	1,31,47,743
Sub Work-5 **Street Lighiting**	21,05,000	63,150	21,68,150	10,62,394	32,30,544
Sub Work-6 **Plantation**	2,68,875	8,066	2,76,941	1,35,701	4,12,642
Sub Work-7 **Services & Resurfacing of road**	1,13,79,739	3,41,392	1,17,21,131	57,43,354	1,74,64,486
TOTALS	**Rs. 6,01,46,393.65**	**Rs. 18,04,391.81**	**Rs. 6,19,50,785.45**	**Rs. 3,03,55,884.87**	**Rs. 9,23,06,670.33**

Total Cost — **Say apx. Nine Crore Twenty three lakh seven hundred rupees only**

Amount per acre **Rs. 87,70,229.96**

For: SMT. SANGEETA BHATIA & SH. LAKSH BHATIA IN COLLABORATION WITH ELEVATE EDITION REALTECH PVT. LTD.

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SUB WORK No. 1 **WATER SUPPLY**

S No.	Heads	Description	Amount
1	Sub Head 1	HUDA Rising Mains	Rs. 84,71,250.00
2	Sub Head 2	Pumping and machinery	Rs. 1,27,25,000.00
3	Sub Head 3	Water supply and distribution	Rs. 22,46,800.00
4	Sub Head 4	Irrigation System	Rs. 10,85,700.00
5	Sub Head 5	Fire Fighting	Rs. 18,66,000.00
Total Carried over to grand summary			**Rs. 2,63,94,750.00**

SUB WORK No. 1		**WATER SUPPLY**
Sub Head 1		**HUDA Rising Mains**
S No.	**Description**	**Amount**
1	Providing, laying, jointing and testing DI pipe lines Including cost of excavation etc. complete in all respects.	
a)	100 mm dia pipe 25 Mtr. @ Rs. 1,850	Rs. 46,250.00
2	Providing and fixing sluice valve including cost of surface boxes and masonary chambers etc. complete in all respects	
a)	100 mm dia pipe 1 Nos. @ Rs. 12,500	Rs. 12,500.00
3	Construction of UG Tank (In total) 1120 KL @ Rs. 7,000 /-KL	Rs. 78,40,000.00
4	Providing and fixing indicating plates for sluice valve and air valves	
a)	1 Nos. @ Rs. 1,500 each	Rs. 1,500.00
5	Provision for carriage for materials and other unforeseen items (L/S)	Rs. 1,50,000.00
6	Provision for cutting of roads and making good to its original conditions (L/S)	Rs. 3,00,000.00
7	Provision for making connection with HUDA on Master Road (L/S)	Rs. 1,00,000.00
8	Providing and fixing of Air realese valce and scour valve	
a)	2 Nos. @ Rs. 10,500 each	Rs. 21,000.00
Total carried over to summary of Sub work - 1		**Rs. 84,71,250.00**

MATERIAL STATEMENT OF HUDA MAINS REFERS TO ANNEXURE 5 & 1

SUB WORK No. 1 — **WATER SUPPLY**
Sub Head 2 — **Pumping and machinery**

S No.	Description				Amount
1	Providing & installing pumping set of following capacity for Water supply transfer Pumps				
a)	Capacity 550 LPM @ 155 Head	2 Nos. @	Rs. 3,50,000.00	each.	Rs. 7,00,000
2	Providing & installing pumping set of following capacity for Flushing Pumps				
a)	Capacity 225 LPM @ 155 Head	2 Nos. @	Rs. 1,75,000	each.	Rs. 3,50,000
3	Providing & installing pumping set of following capacity for Fire Pumps				
a)	Capacity 2850 LPM @ 175 Head Main Pump	2 Nos. @	Rs. 5,50,000	each.	Rs. 11,00,000
b)	Capacity 2850 LPM @ 175 Head SB Diesel Pump	2 Nos. @	Rs. 6,50,000	each.	Rs. 13,00,000
c)	Capacity 180 LPM @ 175 Head WR Jockey Pump	1 Nos. @	Rs. 2,50,000	each.	Rs. 2,50,000
d)	Capacity 180 LPM @ 175 Head Spr Jockey Pump	1 Nos. @	Rs. 2,50,000	each.	Rs. 2,50,000
e)	Capacity 4000 LPM @ 50 Head Curtain Pump	1 Nos. @	Rs. 3,50,000	each.	Rs. 3,50,000
4	Providing & installing pumping set of following capacity for Irrigation Pumps				
a)	Capacity 150 LPM @ 45 Head	2 Nos. @	Rs. 1,50,000	each.	Rs. 3,00,000
5	Provisions for chlorination plant complete	2 Nos @	Rs. 15,00,000	each	Rs. 30,00,000
6	Provision for making foundations and erection of pumping machinery L.S.				Rs. 2,50,000
7	Provision for pipes, valves and specials inside the boosting chamber L.S.				Rs. 1,75,000
8	Provision for carriage of material and other unforeseen items etc. L/S				Rs. 2,50,000
9	Provision for diesel engine Gen set each for standby arrangements for T.W. & booster pump complete with gear head arrangements of 210 KVA capacities – 1 No.				Rs. 42,00,000
10	Provision for electrical service connection including electrical supply for boosting chamber including cost of transformer.				Rs. 2,50,000
	Total carried over to summary of Sub work - 1				**Rs. 1,27,25,000**

SUB WORK No. 1 — **WATER SUPPLY**
Sub Head 3 — **Water supply and distribution**

S No.	Description				Amount
1	Providing, laying, jointing and testing DI/GI pipe lines including fittings etc. complete in all respects.				
1a	**Domestic**				
a)	50 mm Pipe	343	Mtr @	Rs. 1,350	Rs. 4,63,050
a)	65 mm Pipe	0	Mtr @	Rs. 1,550	Rs. 0
b)	80 mm Pipe	57	Mtr @	Rs. 1,500	Rs. 85,500
c)	100 mm Pipe	200	Mtr @	Rs. 1,650	Rs. 3,30,000
d)	150 mm Pipe	20	Mtr @	Rs. 2,000	Rs. 40,000
1b	**Flushing**				
a)	40 mm Pipe	474	Mtr @	Rs. 950	Rs. 4,50,300
b)	50 mm Pipe	29	Mtr @	Rs. 1,350	Rs. 39,150
c)	100 mm Pipe	222	Mtr @	Rs. 1,650	Rs. 3,66,300
d)	65 mm Pipe	10	Mtr @	Rs. 1,550	Rs. 15,500
2	Providing and fixing sluice valve including cost of surface boxes and masonry chambers etc. complete in all respects.				
2a	**Domestic**				
a)	50 mm	7	Each @	Rs. 18,500	Rs. 1,29,500
2b	**Flushing**				
a)	40 mm	5	Each @	Rs. 15,500	Rs. 77,500
3	Provision for carriage of materials and other unforeseen items				Rs. 2,50,000
summary of Sub work - 1					**Rs. 22,46,800.00**

AND FWS REFERS TO ANNEXURE 3 & 4

PROPOSED BUILDING PLAN OF

Water supply hydraulic calculation

Domestic Water Supply

For Towers & EWS

S No.	Line No		Total water Dom. demand	Peak Water Demand	Length of Pipe	Effective Length (actual	Proposed line dia.	Velocity in m/sec	Frictional head losses	Ele. Height	F. Loss in Riser	Total Frictional head losses	Commulative Frictional head losses	Head at Start	Head at End	Remarks
			As/Design													
			LPD	LPM	Mtr	Mtr	MM	Mtr/sec	Mtr/Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	
1	EWS	I	18200	37.9	82.0	102.5	50	0.3860	0.0054		0.000	0.558	0.558	141.5	142.02	
2	I	H	18200	37.9	25.0	31.3	50	0.3860	0.0054		0.000	0.170	0.728	142.0	142.19	
3	H	G	18200	37.9	59.0	73.8	50	0.3860	0.0054		0.000	0.402	1.130	142.2	142.59	
4	G	F	18200	37.9	15.0	18.8	50	0.3860	0.0054		0.000	0.102	1.232	142.6	142.70	
5	F	E	18200	37.9	35.0	43.8	50	0.3860	0.0054		0.000	0.238	1.470	142.7	142.93	
6	E	D	66560	138.7	57.0	71.3	80	0.5514	0.0061		0.000	0.434	1.666	142.9	143.37	
7	D	C	114920	239.4	163.0	203.8	100	0.6093	0.0056		0.000	1.151	2.817	143.4	144.52	
8	C	A	149500	311.5	37.0	46.3	100	0.7927	0.0092		0.000	0.425	3.242	144.5	144.94	
9	B	A	34580	72.0	35.0	43.8	50	0.7334	0.0179		0.000	0.782	0.782	144.2	144.94	
10	A	Pump Room	184080	383.5	20.0	25.0	150	0.4338	0.0019	5	0.009	0.056	9.024	144.9	150.00	

For Club & Community Shopping

S No.	Line No		Total water Dom. demand	Peak Water Demand	Length of Pipe	Effective Length (actual	Proposed line dia.	Velocity in m/sec	Frictional head losses	Ele. Height	F. Loss in Riser	Total Frictional head losses	Commulative Frictional head losses	Head at Start	Head at End	Remarks
			As/Design													
			LPD	LPM	Mtr	Mtr	MM	Mtr/sec	Mtr/Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	
1	A3	A2	38060	79.3	35.0	43.8	50	0.8072	0.0213		0.000	0.934	0.934	31.3	32.20	
2	A2	A1	38560	80.3	57.0	71.3	50	0.8178	0.0219		0.000	1.558	2.492	32.2	33.76	
3	A1	Pump Room	38560	80.3	163.0	203.8	65	0.4839	0.0061		0.000	1.242	3.733	33.8	35.00	

PROPOSED BUILDING PLAN OF

Water supply hydraulic calculation

Flushing Water Supply

For Towers & EWS

S No.	Line No		Total water Dom. demand	Peak Water Demand	Length of Pipe	Effective Length (actual length+ 25%)	Proposed line dia.	Velocity in m/sec	Frictional head losses	Ele. Height	F. Loss in Riser	Total Frictional head losses	Commulative Frictional head losses	Head at Start	Head at End	Remarks
			As/Design													
			LPD	LPM	Mtr	Mtr	MM	Mtr/sec	Mtr/Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	
1	EWS	I	5880	12.3	82.0	102.5	40	0.1949	0.0020		0.000	0.204	0.204	148.4	148.64	
2	I	H	5880	12.3	25.0	31.3	40	0.1949	0.0020		0.000	0.062	0.266	148.6	148.71	
3	H	G	5880	12.3	59.0	73.8	40	0.1949	0.0020		0.000	0.147	0.413	148.7	148.85	
4	G	F	5880	12.3	15.0	18.8	40	0.1949	0.0020		0.000	0.037	0.451	148.9	148.89	
5	F	E	5880	12.3	35.0	43.8	40	0.1949	0.0020		0.000	0.087	0.538	148.9	148.98	
6	E	A	21505	44.8	31.0	38.8	40	0.7127	0.0220		0.000	0.852	1.390	149.0	149.83	
1	TOWER A	D	11170	23.3	15.0	18.8	40	0.3702	0.0065		0.000	0.123	1.512	143.8	143.96	
2	D	C	11170	23.3	54.0	67.5	40	0.3702	0.0065		0.000	0.441	0.892	144.0	144.40	
3	C	B	22340	46.5	158.0	197.5	40	0.7403	0.0236		0.000	4.660	5.552	144.4	149.06	
4	B	A	37965	79.1	29.0	36.3	50	0.8052	0.0212		0.000	0.770	6.322	149.1	149.83	
5	A	STP	59470	123.9	10.0	12.5	65	0.7463	0.0136		0.000	0.170	7.712	149.8	150.00	

For Club & Community Shopping

S No.	Line No		Total water Dom. demand	Peak Water Demand	Length of Pipe	Effective Length (actual	Proposed line dia.	Velocity in m/sec	Frictional head losses	Ele. Height	F. Loss in Riser	Total Frictional head losses	Commulative Frictional head losses	Head at Start	Head at End	Remarks
			As/Design													

, GURUGRAM

Service Estimate for HUDA |FWS Design|

			LPD	LPM	Mtr	Mtr	MM	Mtr/sec	Mtr/Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	Mtr	
1	A3	A2	5880	12.3	182.0	227.5	50	0.1247	0.0007		0.000	0.153	0.153	34.7	34.88	
2	A2	A1	5880	12.3	30.0	37.5	50	0.1247	0.0007		0.000	0.025	0.178	34.9	34.91	
3	A1	STP	21505	44.8	10.0	12.5	50	0.4561	0.0074		0.000	0.093	0.271	34.9	35.00	

SUB WORK No. 1 — **WATER SUPPLY**
Sub Head 4 — **Irrigation System**

S No.	Description				Amount
1	Providing, laying, jointing and testing uPVC Class-III pipes conforming to IS:4985 including cost of excavation etc. complete in all respects.				
a)	150 mm Pipe	0	Mtr @	Rs. 1,650	Rs. 0
b)	80 mm Pipe	300	Mtr @	Rs. 1,250	Rs. 3,75,000
c)	50 mm Pipe	0	Mtr @	Rs. 650	Rs. 0
d)	32 mm Pipe	0	Mtr @	Rs. 550	Rs. 0
e)	25 mm Pipe	43	Mtr @	Rs. 400	Rs. 17,200
2	Providing and fixing sluice valve including cost of surface boxes and masonry chambers etc. complete in all respects.				
a)	150 mm	6	Each @	Rs. 18,500	Rs. 1,11,000
b)	80 mm	4	Each @	Rs. 18,500	Rs. 74,000
c)	25 mm	43	Each @	Rs. 6,000	Rs. 2,58,000
3	Providing and fixing Garden Hydrant Chamber				
	43 Nos. @ Rs. 3,500 each				Rs. 1,50,500.00
4	Provision for carriage of materials and other unforeseen items				Rs. 1,00,000.00
	Total carried over to summary of Sub work - 1				**Rs. 10,85,700.00**

MATERIAL STATEMENT OF IRRIGATION SUPPLY REFERS TO ANNEXURE 6

SUB WORK No. 1 — **WATER SUPPLY**
Sub Head 5 — **Fire Fighting**

S No.	Description	Amount
1	Providing , Laying , jointing and testing M.S. pipes lines for fire rising main including cost of fittings, valves, connection etc. complete in all respect.	
a)	150 mm MS Pipe 580 Mtr @ Rs. 1,500	Rs. 8,70,000
b)	100 mm MS Pipe 10 Mtr @ Rs. 1,200	Rs. 12,000
c)	80 mm MS Pipe 50 Mtr @ Rs. 1,000	Rs. 50,000
2	Providing and fixing valves complete in all respects.	
a)	150 mm MS Pipe 6 Each @ Rs. 15,000	Rs. 90,000
b)	80 mm MS Pipe 19 Each @ Rs. 10,000	Rs. 1,90,000
3	Providing and fixing indicating plates for sluice valve and air Valves .	
a)	19 Nos. @ Rs. 1,000 each	Rs. 19,000.00
4	Providing and fixing Fire Hydrant.	
a)	19 Nos. @ Rs. 10,000 each	Rs. 1,90,000.00
5	Providing and fixing Fire Brigade connections, (4 way Inlet, 2 way to riser & Draw out) to UGT	
a)	6 Nos. @ Rs. 7,500 each	Rs. 45,000.00
6	Provision for cutting of roads and making good to its original condition	Rs. 1,50,000.00
7	Provision for carriage of materials and other unforeseen items	Rs. 2,50,000.00
Total carried over to summary of Sub work - 1		**Rs. 18,66,000.00**

MATERIAL STATEMENT OF FIRE HYDRANT REFERS TO ANNEXURE 7

SUB WORK No. 2 **SEWERAGE SCHEME**

S No.	Description	Amount
1	Providing , jointing , cutting and testing DWC SN4 pipe and lowering into trenches including cost excatvation, bed concrete, cost of manhole etc.	
a)	100 mm dia Mtr. @ Rs. 1,250 DI class (Bye Pass Line)	Rs. 0
b)	200 mm dia 230 Mtr. @ Rs. 1,800 DI class (Bye Pass Line)	Rs. 4,14,000
c)	200 mm dia 86 Mtr. @ Rs. 1,250	Rs. 1,07,500
d)	250 mm dia 229 Mtr. @ Rs. 1,450 RCC Pipe	Rs. 3,32,050
e)	300 mm dia Mtr. @ Rs. 1,850 RCC Pipe	Rs. 0
f)	400 mm dia Mtr. @ Rs. 2,450 RCC Pipe	Rs. 0
2	Provision for carriage of material (L.S)	Rs. 50,000
3	Provision for making connection with HUDA sewer on Master Road	Rs. 1,50,000
4	Provision for cutting of roads & making good to its original condition (L.S.)	Rs. 50,000
5	Provision for lighting and watering (L.S.)	Rs. 25,000
6	Providing STP of 350 KLD Rs. 17,500 per KLD Including machinary	Rs. 61,25,000
	Total carried over to final abstract of cost	**Rs. 72,53,550**

MATERIAL STATEMENT OF SEWERAGE SCHEME REFERS TO ANNEXURE 2

PROPOSED BUILDING PLAN OF
SUBJECT: SEWER DESIGN SHEET

S. No.	Line Reference		Tower No.	Unit / Flat			Population @ 5 Person per flat and EWS @ 2 person per unit	Water Requirement @ 172.50 LPCD for DU & 45 LPCD for Commercial	Other Requirement i.e. comm. / community building & etc.	Total water requirement LPD	Sew. Quantity after evaporation lossess @ 20% (In LPD)	Sewerage Discharge Peak Flow (m3/sec)	Size of pipe in (mm)	Gradient in (m)	Velocity (m/sec)	Carrying capacity of pipe (m/sec)	Length in Mtr	Fall + Extra Fall in line due to slope (m)	Ground Level		Invert Level		Depth	
	From	To		Self	Branch	Total			IN LPD							m3 /sec			Start	End	Start	End	Start	End
PART A																								
1	A	B	Tower A, B & Convienient Shopping (212.934 sqm @ 3sqm/pax)	152	0	152	760	131100	1275	132375	105900	0.0037	250	250	0.664	0.016	35	0.14	0.75	0.75	-1.95	-2.09	2.70	2.84
3	B	C			152	152	760	131100	1275	132375	105900	0.0037	250	250	0.664	0.016	12	0.05	0.75	0.75	-2.09	-2.14	2.84	2.89
3	C	D	Tower C & Community Centre (4111.356 sqm @ 1.4sqm/pax)	124	152	276	1380	238050	54150	292200	233760	0.0081	250	250	0.664	0.016	38	0.15	0.75	0.75	-2.14	-2.29	2.89	3.04
3	E	F	EWS	70		70	140	24150		24150	19320	0.0007	200	200	0.640	0.010	86	0.43	1.75	1.75	1.10	-1.25	0.65	3.00
3	F	G		0	70	70	140	24150		24150	19320	0.0007	250	250	0.664	0.016	20	0.08	1.75	0.75	-1.25	-1.33	3.00	2.08
3	G	D (STP)	Tower D	124	70	194	760	131100		133650	106920	0.0037	250	250	0.664	0.016	124	0.50	0.75	0.75	-1.33	-1.83	2.08	2.58
9	STP		Govt. sewer line	200mm i/d D.I. Pipe by Pumping (Recycling)													230	1.85	0.75	0.75	-1.10	-1.10	1.85	1.85

SUB WORK No. 3 **STORM WATER DRAINAGE**

S No.	Description	Amount
1	Providing, laying, DWC SN4 pipe class with manholes etc. complete in all respects	
a)	400 mm dia 902.00 Mtr. @ Rs. 1,750	Rs. 15,78,500.00
b)	500 mm dia 162.00 Mtr. @ Rs. 2,000	Rs. 3,24,000.00
c)	600 mm dia 10.00 Mtr. @ Rs. 2,500	Rs. 25,000.00
d)	700 mm dia Mtr. @ Rs. 3,000	Rs. 0.00
2	Provision for lighting and watering	Rs. 1,00,000.00
3	Provision for road gullies & connecting pipe L.S.	Rs. 15,50,000.00
4	Provision for rainwater harvesting arrangements	
	Rs. 2,50,000.00 per acre Recharge Pit 0 Nos.	Rs. 0.00
5	Provision for timbering & shoring (L.S.)	Rs. 2,00,000.00
6	Provision for watering and timbering drains & other unforeseen charges	Rs. 2,50,000.00
7	Provision for making connection with HUDA Mains. (L.S.) 1 Nos.	Rs. 1,50,000.00
	TOTAL CO to FINAL ABSTRACT OF COST	**Rs. 41,77,500.00**

MATERIAL STATEMENT OF STORM WATER DRAINAGE REFERS TO ANNEXURE 2a

PROPOSED BUILDING PLAN OF																					
Drainage calculation																					
SL NO	NAME OF LINE		LENGTH	SELF AREA TO BE DRAINED	AREA IN ACRE		DISCHARGE IN CUM/SEC RAIN INTENSITY	DISCHARGE	Pipe Dia	SLOPE	VELOCITY	DISCHARGE CAPACITY	Check	GROUND LEVEL AT START	GROUND LEVEL AT END	FALL	INVERT LEVEL AT START	INVERT LEVEL AT END	DEPTH AT START	DEPTH AT END	RCP	REMARKS
			MTR	SQM	SELF	TOTAL	30 mm/Hr.	IN LPS	mm	1 IN	(m/sec)	IN LPS		MTR	MTR	MTR	MTR.	MTR	MTR.	MTR	NOS	
1	A	B	84	3850	0.95	0.95	0.022	22.45	400	450	0.68	85.11	OK	1.75	1.75	0.187	1.150	0.963	0.600	0.787		
2	C	D	59	1175	0.29	0.29	0.007	6.85	400	450	0.68	85.11	OK	1.75	1.75	0.131	1.150	1.019	0.600	0.731		
3	D	B	55	1245	0.31	0.60	0.014	14.11	400	450	0.68	85.11	OK	1.75	1.75	0.122	1.019	0.897	0.731	0.853		
4	B	E	23	100	0.02	0.02	0.001	0.58	400	450	0.68	85.11	OK	1.75	1.75	0.051	0.963	0.912	0.787	0.838		
5	E	E1	63	100	0.02	0.05	0.001	1.17	400	450	0.68	85.11	OK	1.75	1.75	0.140	0.912	0.772	0.838	0.978		
6	E1	F	13	25	0.01	0.06	0.001	1.31	400	450	0.68	85.11	OK	1.75	0.75	0.029	0.772	-0.428	0.978	1.178		
7	F	G	55	3015	0.75	0.80	0.019	18.90	400	450	0.68	85.11	OK	0.75	0.75	0.122	-0.428	-0.550	1.178	1.300		
8	G	H	104	5750	1.42	2.22	0.052	52.43	400	450	0.68	85.11	OK	0.75	0.75	0.231	-0.550	-0.781	1.300	1.531		
9	H	I	52	1700	0.42	2.64	0.062	62.35	400	450	0.68	85.11	OK	0.75	0.75	0.116	-0.781	-0.897	1.531	1.647		
10	I	J	69	2500	0.62	3.26	0.077	76.93	400	450	0.68	85.11	OK	0.75	0.75	0.153	-0.897	-1.050	1.647	1.800		
11	J	K	38	610	0.15	3.41	0.080	80.48	400	450	0.68	85.11	OK	0.75	0.75	0.084	-1.050	-1.134	1.800	1.884		
12	K	L	77	1385	0.34	3.75	0.089	88.56	500	550	0.71	139.59	OK	0.75	0.75	0.140	-1.134	-1.274	1.884	2.024		
13	L	M	85	2845	0.70	4.46	0.105	105.15	500	550	0.71	139.59	OK	0.75	0.75	0.155	-1.274	-1.429	2.024	2.179		
14	N	O	59	1445	0.36	0.36	0.008	8.43	400	450	0.68	85.11	OK	0.75	0.75	0.131	-0.150	-0.281	0.900	1.031		
15	O	P	91	2230	0.55	0.91	0.021	21.43	400	450	0.68	85.11	OK	0.75	0.75	0.202	-0.281	-0.483	1.031	1.233		
16	P	Q	72	1035	0.26	1.16	0.027	27.47	400	450	0.68	85.11	OK	0.75	0.75	0.160	-0.483	-0.643	1.233	1.393		
17	Q	R	47	2080	0.51	1.68	0.040	39.60	400	450	0.68	85.11	OK	0.75	0.75	0.104	-0.643	-0.748	1.393	1.498		
18	R	M	18	10	0.00	1.68	0.040	39.66	400	450	0.68	85.11	OK	0.75	0.75	0.040	-0.748	-0.788	1.498	1.538		

SL NO	NAME OF LINE		LENGTH	SELF AREA TO BE DRAINED	AREA IN ACRE		DISCHARGE IN CUM/SEC RAIN INTENSITY	DISCHARGE	Pipe Dia	SLOPE	VELOCITY	DISCHARGE CAPACITY	Check	GROUND LEVEL AT START	GROUND LEVEL AT END	FALL	INVERT LEVEL AT START	INVERT LEVEL AT END	DEPTH AT START	DEPTH AT END	RCP	REMARKS
			MTR	SQM	SELF	TOTAL	30 mm/Hr.	IN LPS	mm	1 IN	(m/sec)	IN LPS		MTR	MTR	MTR	MTR.	MTR	MTR.	MTR	NOS	
19	M	Ext.	10			6.14	0.145	144.81	600	650	0.74	208.80	OK	0.75	0.75	0.015	-1.429	-1.444	2.179	2.194		

PROPOSED BUILDING PLAN OF
Material statement for Sewerage (Annexure 2)

Towers Sewerage

SL NO	NAME OF LINE		LENGTH	PIPE DIA	200	250	300	400
			MTR	MM	MTR	MTR	MTR	MTR
1	**A**	**B**	35	250		35		
2	**B**	**C**	12	250		12		
3	**C**	**D**	38	250		38		
4	**E**	**F**	86	200	86			
5	**F**	**G**	20	250		20		
6	**G**	**D (STP)**	124	250		124		
STP Bye pass TO GOVT SEWER (DI)		**200 mm**	**200 mm**	**200 mm**	**STP**	350	**KL**	
		230	230					

PROPOSED BUILDING PLAN OF

MATERIAL STATEMENT FOR STORM WATER DRAINAGE SYSTEM ANNEXURE-2a

SL NO	NAME OF LINE		LENGTH	PIPE DIA	400MM	500MM	600MM	700MM
			MTR	MM	MTR	MTR	MTR	MTR
Drainage MB for Towers								
1	A	B	84	400	84			
2	C	D	59	400	59			
3	D	B	55	400	55			
4	B	E	23	400	23			
5	E	E1	63	400	63			
6	E1	F	13	400	13			
7	F	G	55	400	55			
8	G	H	104	400	104			
9	H	I	52	400	52		ś	
10	I	J	69	400	69			
11	J	K	38	400	38			
12	K	L	77	500		77		
13	L	M	85	500		85		
1	N	O	59	400	59			
2	O	P	91	400	91			
3	P	Q	72	400	72			
4	Q	R	47	400	47			
5	R	M	18	400	18			
6	M	Ext.	10	600			10	
TOTAL			**RWH Pits**	**0 Nos.**	**902.00**	**162.00**	**10.00**	**0.00**

PROPOSED BUILDING PLAN OF

Material satement for Domestic water supply (Annexure-3)								
S No.	Line No	Length	Valves	Dia	100 MM	150 MM	65 MM	80 MM
	EWS	82	4	50				
	I	25	4	50				
	H	59	4	50				
	G	15	4	50				
	F	35	4	50				
	E	57	4	80				57
	D	163	4	100	163			
	C	37	4	100	37			
	B	35	4	50				
	A	20	4	150		20		
	TOTAL				200	20	0	0
Valves					8	4	0	4

Material statement for Flushing water supply (Annexure-4)								
PART A								
S No.	Line No	Length	Valves	Dia	150 MM	40 MM	50 MM	100 MM
	EWS	82	4	40		82		
	I	25	4	40		25		
	H	59	4	40		59		
	G	15	4	40		15		
	F	35	4	40		35		
	E	31	4	40		31		
	TOWER A	15	4	40		15		
	D	54	4	40		54		
	C	158	4	40		158		
	B	29	4	50			29	
	A	10	4	65				
	Total				**0**	**474**	**0**	**0**
	Valves				**0**	**36**	**4**	**0**

Annexure-5 Municipal suplly line							
S No	Line No	Length	Dia	40 mm	80 MM	100 MM	150 MM
1	Main-Pump	25	80		25		

Annexure-6 Garden hydrant ring									
S No.	Line No	Length	GH	Dia	80 MM	25 MM	150 MM	50 MM	32 mm
1	Main Ring	850		80	300				
2	GH	43	43	25		43			
	Total		**43**		**300**	**43**	**0**	**0**	**0**

Annexure-7 External Fire hydrant ring							
S No.	Line No	Length	EFH	Dia	80 mm	100 mm	150 mm
1	Main Ring	580		150		10	580
2	EFH	50	19	80	50		
	Total		**19**		**50**	**10**	**580**

SUB WORK No. 4 **ROAD WORK**

Width in meter	length in meter	Metalled Portion	Area in Sqm.
7.5	887.46	7.5	6655.94
Total	**887.4586**		**6655.94**
		Add 5% for curves	**332.80**
		Total Area	**6988.74**

S No.	Description	Amount
1	Provision for leveling & earth filling as per site condition	
	Approx 10.525 Acre @ Rs. 1,00,000 per acre	Rs. 10,52,500.00
2a	Construction of roads by providing granular sub base 300 mm as per MORT & H specification conforming to clause 401 grading B 400.1	
2b	Providing ,laying,spreading & compacting hand broken/ crushed stone aggregate to met mix macadam conforming to physical requirement laid in 400 of 300 mm GSB 250 mm stone aggregate MORT &H specification in two layers (compacted to 250 mm (125+125) by taking material 1.32 times of the (thickness of the layer) including per mixing of material with water in mechanical mixer .	
2c	50 mm thick BM	
2d	20 mm thick mix seal surfacing	
	6988.74 Sqm @ Rs. 600 per sqm	Rs. 41,93,241.89
3a	Providing of kerbs and channel of CC (1:2.4) on both side of road	
	887.4586 m @ Rs. 300 /M	Rs. 2,66,237.58
4	Provision for guide map and other unforeseen item L.S	
	10.525 Acre @ Rs. 1,00,000 per Acre	Rs. 10,52,500.00
5	Provision for making approch to each block and pavement L.S	
	10.525 Acre @ Rs. 1,00,000 per Acre	Rs. 10,52,500.00
6	Provision for parking arrangement L.S	Rs. 4,50,000.00
7	Provision for carriage of material & unforeseen items L.S	Rs. 5,00,000.00
	TOTAL CO to FINAL ABSTRACT OF COST	**Rs. 85,66,979.47**

MATERIAL STATEMENT OF ROAD NODS REFERS TO ANNEXURE 8

PROPOSED BUILDING PLAN OF

ANNEXURE-8

SL NO	NAME OF LINE	Width MTR	Road Length MM			7.5 Mtr. MTR
Road MB						
1	A					
2	B	7.5	887.5			887.5
3	C					
TOTAL				**0.00**	**0.00**	**887.46**

SUB WORK No. 5 — Street Lighting

S No.	Description	Amount
1	Providing street lightning on roads as per standard specifications of HVPN.	
	Approx 10.525 Acre @ Rs. 2,00,000 per acre	Rs. 21,05,000.00
	TOTAL CO to FINAL ABSTRACT OF COST	**Rs. 21,05,000.00**

SUB WORK No. 6 — Plantation & Road side Trees

S No.	Description	Amount
1	**Development of Green areas (organised green of 1.58 Acres)**	
a	Trenching the ordinary soil up to dept of 60cm including removal and stacking serviceable material and disposing of by spreading and leveling within a lead of 50m and making up the trenches area to proper leads by filling with earth mixed with manure before and after flooding trench with water including cost of imported earth and manure.	
b	Rough dressing of roof area	
	Grassing with "Doob Grass" including watering and IV. Maintenance of lawns for 30 days till the grass forms a thick lawn, free from weeds and fit for moving in rows 7.5 m Apart in either direction	
	Approx. 1.58 Acres @ Rs. 1,00,000 per Acres	Rs. 1,57,875.00
2	**Planting Tree**	
a	Providing tress, guards and planting trees along road at 12 m inteval Total road length = 1430 No of Tress = 119.2 Say = 119 Cost Analysis of Planting Trees Excavation = 150 each Manure = 175 each Tree plants = 175 each Tree guards = 1000 each = Rs.1500 per tree	
	74 Trees @ Rs. 1,500 per tree	Rs. 1,11,000.00
	TOTAL CO to FINAL ABSTRACT OF COST	**Rs. 2,68,875.00**

SUB WORK No. 7 **M/C Charges for Services & Resurfacing of road**

S No.	Description	Amount
1	Providing of M/C charges for water supply , strom water drainage, sewerage, Road, Street lighting, Horticulture etc. complete in all aspect, including Operational and establishment charges as per HUDA norms for 10 years completion	
	Approx. 10.525 Acres @ Rs. 5,50,000 per Acres	Rs. 57,88,750.00
2	Providing of resurfacing of roads after 5 years 100mm thick layer 100mm thick BUSG complete to 25mm thick premix carpet with seal cost	
	Approx. 6988.74 Sqm @ Rs. 300 per Sqm	Rs. 20,96,620.94
3	Providing of resurfacing of roads after 10 years with 25mm thick premix carpet with seal coat with mech.paver	
	Approx. 6988.74 Sqm @ Rs. 500 per Sqm	Rs. 34,94,368.24
	TOTAL CO to FINAL ABSTRACT OF COST	**Rs. 1,13,79,739.18**