

93	32	34	40	15	0	0	15	0	0	0
94	34	GH53A	25	7	7	0	0	0	0	0
95	34	GH54	25	15	15	0	0	0	0	0
96	33	35	40	24	0	0	24	0	0	0
97	35	36	25	13	13	0	0	0	0	0
98	GH55	GH56	25	19	19	0	0	0	0	0
99	35	GH57	25	40	40	0	0	0	0	0
100	GH57	GH58	25	21	21	0	0	0	0	0
101	37	GH59	50	4	0	0	0	4	0	0
102	GH59	GH60	40	22	0	0	22	0	0	0
103	GH60	GH61	40	25	0	0	20	0	0	0
104	GH61	GH62	32	25	0	25	0	0	0	0
105	GH62	GH63	25	24	24	0	0	0	0	0
106	GH63	GH64	25	24	24	0	0	0	0	0
107	37	GH65	05	20	0	0	0	0	20	0
108	GH65	38	05	20	0	0	0	0	20	0
109	38	GH66	25	10	10	0	0	0	0	0
110	38	GH67	50	27	0	0	0	27	0	0
111	GH67	GH68	50	25	0	0	0	25	0	0
112	GH68	39	40	24	0	0	24	0	0	0
113	39	GH69	25	5	5	0	0	0	0	0
114	GH69	GH70	25	23	23	0	0	0	0	0
115	39	GH71	25	29	29	0	0	0	0	0
116	GH71	GH72	25	2	2	0	0	0	0	0
117	18	GH73	65	24	0	0	0	0	24	0
118	GH73	GH74	65	31	0	0	0	0	31	0
119	GH74	GH75	65	29	0	0	0	0	29	0
120	GH75	GH76	65	26	0	0	0	0	26	0
121	GH76	40	65	17	0	0	0	0	17	0
122	40	41	32	15	0	15	0	0	0	0
123	41	GH77	25	22	22	0	0	0	0	0
124	41	GH78	25	15	15	0	0	0	0	0
125	41	GH79	25	35	35	0	0	0	0	0
126	40	GH80	65	9	0	0	0	0	9	0
127	GH80	GH81	65	17	0	0	0	0	17	0
128	GH81	42	65	16	0	0	0	0	16	0
129	42	GH82	25	20	20	0	0	0	0	0
130	42	GH83	65	9	0	0	0	0	9	0
131	GH83	43	65	11	0	0	0	0	11	0
132	43	GH84	25	16	16	0	0	0	0	0
133	43	GH85	65	15	0	0	0	0	15	0
134	GH85	GH86	65	28	0	0	0	0	28	0
135	GH86	44	65	21	0	0	0	0	21	0
136	44	GH87	25	17	17	0	0	0	0	0
137	44	GH88	65	5	0	0	0	0	5	0
138	GH88	GH89	65	30	0	0	0	0	30	0
139	GH89	GH90	65	25	0	0	0	0	25	0
140	GH90	45	65	18	0	0	0	0	18	0
141	45	GH91	25	18	18	0	0	0	0	0
142	45	GH92	65	31	0	0	0	0	31	0
143	GH92	46	65	80	0	0	0	0	80	0
144	46	GH93	25	15	15	0	0	0	0	0
145	46	GH94	65	13	0	0	0	0	13	0
146	GH94	GH95	65	25	0	0	0	0	25	0
147	GH95	GH96	65	20	0	0	0	0	20	0
148	GH96	GH97	65	18	0	0	0	0	18	0
149	GH97	47	65	27	0	0	0	0	27	0
150	47	GH98	25	19	19	0	0	0	0	0
151	GH98	GH99	25	17	17	0	0	0	0	0
152	47	GH100	65	1	0	0	0	0	1	0
153	GH100	GH101	65	25	0	0	0	0	25	0
154	GH101	48	65	17	0	0	0	0	17	0
155	48	49	40	18	0	0	18	0	0	0
156	49	102	28	3	3	0	0	0	0	0
157	49	50	28	31	31	0	0	0	0	0
158	50	103	25	1	1	0	0	0	0	0
159	50	104	25	18	18	0	0	0	0	0
160	48	105	65	9	0	0	0	0	9	0
161	105	106	65	25	0	0	0	0	25	0
162	106	51	65	6	0	0	0	0	6	0
163	51	GH107	25	20	20	0	0	0	0	0
164	51	52	65	19	0	0	0	0	19	0
165	52	108	25	21	21	0	0	0	0	0
166	52	GH109	65	2	0	0	0	0	2	0
167	GH109	53	65	24	0	0	0	0	24	0
168	53	GH110	25	21	21	0	0	0	0	0
169	53	GH111	65	2	0	0	0	0	2	0
170	GH111	54	65	19	0	0	0	0	19	0
171	54	GH112	25	23	23	0	0	0	0	0
172	54	GH113	65	6	0	0	0	0	6	0
173	GH113	55	65	7	0	0	0	0	7	0
174	55	GH114	25	17	17	0	0	0	0	0
175	55	GH115	65	18	0	0	0	0	18	0
176	GH115	GH116	65	25	0	0	0	0	25	0
177	GH116	GH117	65	25	0	0	0	0	25	0
178	GH117	GH118	65	25	0	0	0	0	25	0
179	GH118	GH119	65	31	0	0	0	0	31	0
180	GH119	GH120	65	25	0	0	0	0	25	0
181	GH120	GH121	65	25	0	0	0	0	25	0
182	GH121	GH122	65	25	0	0	0	0	25	0
183	GH122	GH123	65	25	0	0	0	0	25	0
184	GH123	GH124	65	25	0	0	0	0	25	0
185	GH124	GH125	65	25	0	0	0	0	25	0
186	GH125	31	65	5	0	0	0	0	5	0
TOTAL				1210	127	219	195	2407	63	



9.	PUMPS FOR DOMESTIC WATER SUPPLY For (Tower A, B & Community-2) Located in underground tank-2 <i>C, S, G, Z, Shopping 1</i>		
i	Potable Water Requirement Per Day	<i>N. School</i> 155	KL 320
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	<i>(2 Pump W. + 1 S. 54)</i> 95	Mtr
v	Residual Head	5	Mtr
vi	Friction Head Loss	10	Mtr
vii	Total head required	<i>320 40</i> 110	Mtr
viii	Discharge of Pump = $155/8 = 19.38$ cu.m /hr = 323 lpm Say 350 lpm	<i>14.25</i>	
ix	Power Required (Lpm*head (m)/4500*.65(effi)	<i>12.16</i>	HP
	Say	15.60	HP

10.	PUMPS FOR DOMESTIC WATER SUPPLY For (Tower C, 5N, 6N, 7N), Shopping-1 & Nursery school, Located in underground tank-2		
i	Potable Water Requirement Per Day	150	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	80	Mtr
v	Residual Head	5	Mtr
vi	Friction Head Loss	10	Mtr
vii	Total head required	95	Mtr
viii	Discharge of Pump = $150/8 = 18.75$ cu.m /hr = 312.5 lpm Say 325 lpm		
ix	Power Required (Lpm*head (m)/4500*.65(effi)	10.55	HP
	Say	11	HP

11.	PUMPS FOR DOMESTIC WATER SUPPLY For EWS-2, Shopping-2 & Primary school, Located in underground tank-2		
i	Potable Water Requirement Per Day	<i>SS</i> 45	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	30	Mtr
v	Residual Head	5	Mtr
vi	Friction Head Loss	5	Mtr
vii	Total head required	<i>SS 6.87 114.6 120</i> 40	Mtr
viii	Discharge of Pump = $45/8 = 5.62$ cu.m /hr = 93.6 lpm Say 100 lpm		
ix	Power Required (Lpm*head (m)/4500*.65(effi)	1.37	HP
	Say	2	HP

12.	PUMPS FOR Flushing WATER SUPPLY For tower(1,2,3,4,5N,6N,7N), Community building-1, Shopping-1, Located in STP-1		
i	Potable Water Requirement Per Day	<i>250</i> 245	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	<i>(2 W. + 1 S. 54)</i> 80	Mtr
v	Residual Head	5	Mtr
vi	Friction Head Loss	10	Mtr





DESIGN CHART FOR WATER SUPPLY SYSTEM (FLUSHING)

LINE NO	LINE NO		NO OF MAIN UNITS	NO OF EWS UNITS	TOTAL POPULATION	TOTAL WATER REQ@37 2.5 LPD	DOMESTIC IC@ 35% OF TOTAL WATER	Area in sqm	TYPE OF BUILDING	Basis of Water Requirement LPD	Total water required for other buildings (LPD)	Flushing @ 65 % OF TOTAL WATER	TOTAL FLUSHING WATER REQ. PER DAY(SELF)	PROGRESSIVE WATER REQ. IN LPD	TOTAL DOMESTIC WATER REQ. PER DAY	PUMP WORKING 8 HOURS	SELF WATER REQ IN LPM	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	SELF HEAD LOSS IN MTRS	VELOCITY IN M/SEC	SIZE OF RISER PIPE IN MM Dia
	From	To																				
1	STP	1	0	0	0	0	0					0	0	19320	19320	2415	40	72	0.005	0.358	0.305	50
2	Tower-C	2	64	0	320	52000	19320					0	19320	0	19320	2415	40	204	0.005	1.015	0.305	50
3	STP	3	0	0	0	0	0					0	0	6211	6211	775	13	7	0.005	0.037	0.243	32
4	Tower-B	4	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.004	0.153	0.185	40
5	Tower-A	5	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.004	0.153	0.287	50
6	Tower-A	6	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.006	0.012	0.391	65
7	Tower-A	7	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.006	0.114	0.330	50
8	Tower-A	8	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.006	0.538	0.330	50
9	Tower-A	9	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.021	0.148	0.659	50
10	Tower-A	10	60	0	300	51750	18113					0	18113	0	18113	2254	38	38	0.004	0.168	0.287	50
11	Tower-A	11	60	0	300	51750	18113					0	18113	0	18113	2254	38	184	0.007	1.376	0.382	50
12	Tower-A	12	60	0	300	51750	18113					0	18113	0	18113	2254	38	20	0.006	0.117	0.335	50
13	Tower-A	13	60	0	300	51750	18113					0	18113	0	18113	2254	38	44	0.001	0.060	0.115	32
14	Tower-A	14	60	0	300	51750	18113					0	18113	0	18113	2254	38	23	0.001	0.020	0.095	25
15	Tower-A	15	60	0	300	51750	18113					0	18113	0	18113	2254	38	46	0.001	0.967	0.094	25
16	Tower-A	16	60	0	300	51750	18113					0	18113	0	18113	2254	38	77	0.016	1.205	0.881	109
17	Tower-A	17	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.013	0.105	0.807	100
18	Tower-A	18	60	0	300	51750	18113					0	18113	0	18113	2254	38	23	0.021	0.480	0.901	80
19	Tower-A	19	60	0	300	51750	18113					0	18113	0	18113	2254	38	36	0.015	0.525	0.646	65
20	Tower-A	20	60	0	300	51750	18113					0	18113	0	18113	2254	38	64	0.018	1.139	0.715	65
21	Tower-A	21	60	0	300	51750	18113					0	18113	0	18113	2254	38	121	0.011	0.212	0.544	65
22	Tower-A	22	60	0	300	51750	18113					0	18113	0	18113	2254	38	58	0.002	0.144	0.211	50
23	Tower-A	23	60	0	300	51750	18113					0	18113	0	18113	2254	38	82	0.007	0.537	0.419	65
24	Tower-A	24	60	0	300	51750	18113					0	18113	0	18113	2254	38	8	0.018	0.147	0.538	40
25	Tower-A	25	60	0	300	51750	18113					0	18113	0	18113	2254	38	52	0.020	1.257	0.588	40
26	Tower-A	26	60	0	300	51750	18113					0	18113	0	18113	2254	38	122	0.006	0.745	0.460	80
27	Tower-A	27	60	0	300	51750	18113					0	18113	0	18113	2254	38	155	0.006	0.635	0.450	80
28	Tower-A	28	60	0	300	51750	18113					0	18113	0	18113	2254	38	70	0.013	0.688	0.411	40
29	Tower-A	29	60	0	300	51750	18113					0	18113	0	18113	2254	38	118	0.004	0.463	0.390	80
30	Tower-A	30	60	0	300	51750	18113					0	18113	0	18113	2254	38	4	0.013	0.951	0.441	40
31	Tower-A	31	60	0	300	51750	18113					0	18113	0	18113	2254	38	57	0.018	1.203	0.613	50

5.	TOTAL U.G. TANK-1 For (Tower 1,2,3,4 ,EWS-1 ,community building-1.) @ 65%.	430	
i	TOTAL U.G. STORAGE (for domestic demand)	~~600~~	KL
ii	FIRE WATER TANK	400	KL
	Therefore it is proposed to construct (under ground tank -1)		
	FIRE TANK - 400 KL = 200KL X 2 Nos		
	RAW WATER TANK - ~~400~~ KL = ~~200~~ KL X 2 Nos		
	DOMESTIC WATER TANK - ~~300~~ KL = ~~90~~ KL X 2 Nos		

430 215

6.	TOTAL U.G. TANK-2 For (Tower A,B,C,5N,6N ,7N ,EWS-2,Conveninet shopping-1&2 ,community building-2, primary school & nursery school)	380	
i	TOTAL U.G. STORAGE (for domestic demand)	~~360~~	KL
ii	FIRE WATER TANK	400	KL
	Therefore it is proposed to construct (under ground tank -2)		
	FIRE TANK - 400 KL = 200KL X 2 Nos		
	RAW WATER TANK - ~~180~~ KL = ~~90~~ KL X 2 Nos		
	DOMESTIC WATER TANK - ~~180~~ KL = ~~90~~ KL X 2 Nos		

7.	PUMPS FOR DOMESTIC WATER SUPPLY For (Tower 1,2,3,4 & community building-1) Located in underground tank-1		
i	Potable Water Requirement Per Day	355	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	80	Mtr
v	Residual Head (2 W. + one S. by)	5	Mtr
vi	Friction Head Loss	10	Mtr
vii	Total head required	95	Mtr
viii	Discharge of Pump = $355/8 = 44.88$ cu.m /hr = 698 lpm Say 700 lpm	13.62	
ix	Power Required (Lpm*head (m)/4500*.65(effi)	22.73	HP
	Say	25	HP

15.0

8.	PUMPS FOR DOMESTIC WATER SUPPLY For (EWS-1) Located in underground tank-1		
i	Potable Water Requirement Per Day	75	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	40	Mtr
v	Residual Head (1 W. + 1 S. by)	5	Mtr
vi	Friction Head Loss	5	Mtr
vii	Total head required	50	Mtr
viii	Discharge of Pump = $75/8 = 9.37$ cu.m /hr = 155 lpm Say 160 lpm	2.96	
ix	Power Required (Lpm*head (m)/4500*.65(effi)	2.7	HP
	Say	3.0	HP



vi	Friction Head Loss		5	Mtr
vii	Total head required	4.37 72.92	40	Mtr
viii	Discharge of Pump = $36/8 = 4.5$ cu.m /hr = 62.5 lpm Say 100 lpm		1.48	
ix	Power Required (Lpm*head (m)/4500*.65(effi)	(1W + 1 S.M)	1.36	HP
	Say		2	HP

17.	PUMPS FOR HORTICULTURE PURPOSE FOR TOTAL GREEN AREA ,Located in STP-2			
i	horticulture Water Requirement Per Day	60	KL	
ii	Pumping duration per day	4	Hrs	
iii	Suction lift	0	Mtr	
iv	Clear Head Required	10	Mtr	
v	Residual Head	15	Mtr	
vi	Friction Head Loss	10	Mtr	
vii	Total head required	35	Mtr	
viii	Discharge of Pump = $60/4 = 15$ cu.m /hr = 250 lpm say 300Lpm			
ix	Power Required (Lpm*head (m)/4500*.65(efli)	3.58	HP	
	Say	5	HP	

18.	PUMPS FOR HORTICULTURE PURPOSE FOR TOTAL GREEN AREA ,Located in STP-1			
i	horticulture Water Requirement Per Day	100	KL	
ii	Pumping duration per day	5	Hrs	
iii	Suction lift	0	Mtr	
iv	Clear Head Required	10	Mtr	
v	Residual Head	15	Mtr	
vi	Friction Head Loss	10	Mtr	
vii	Total head required	35	Mtr	
viii	Discharge of Pump = $100/5 = 20$ cu.m /hr = 333.33 lpm say 400 Lpm			
ix	Power Required (Lpm*head (m)/4500*.65(efli)	4.78	HP	
	Say	5	HP	

19	PUMPS FOR FIRE PROCTION For(Tower 1,2,3,4 ,EWS-1,community building-1) Located in underground tank-2					
i.	PUMPS DESCRIPTION	LOCATION	NOS.	DISCHARGE(LPM)	HEAD IN Mtr	HP
ii.	DIESEL PUMP	PUMP ROOM	1	2850	120	
iii.	FIRE PUMP	PUMP ROOM	1	2850	120	120 (Dead Load)
iv.	SPRINKLER.PUMP	PUMP ROOM	1	2850	120	120 (Dead Load)
v.	JOCKY .PUMP	PUMP ROOM	1	180	120	12

20	PUMPS FOR FIRE PROCTION For (Tower A,B,C,5N,6N ,7N , shopping-1 ,community building-2) Located in underground tank-1					
i.	PUMPS DESCRIPTION	LOCATION	NOS.	DISCHARGE(LPM)	HEAD IN Mtr	HP
ii.	DIESEL PUMP	PUMP ROOM	1	2850	140	



23.	Equipment Description	No's	Each power cons (HP)	Total Power (HP)	
i.)	Domestic Water Transfer pumps For (Tower 1,2,3,4 & community building-1) Located in underground tank-1	(9W+1S)	~~25~~ 15	~~25~~ 30	
ii.)	Domestic Water Transfer pumps For EWS-1) Located in underground tank-1	(1W+1S)	3	3	
iii.)	Domestic Water Transfer Pumps for (Tower A, B, C, 5, 6, 7 & Community-2) Located in underground tank-2	(9W+1S)	15	~~15~~ 30	
iv.)	Domestic Water Transfer Pumps for (Tower C, 5N, 6N, 7N), Shopping-1 & Nursery school, Located in underground tank-2	~~(1W+1S)~~	~~11~~	~~11~~	
v.)	Domestic Water Transfer Pumps for EWS-2, Shopping-2 & Primary school, Located in underground tank-2	(1W+1S)	2	2	
vi.)	Flushing Water Trans Pumps For tower(1,2,3,4,5N,6N,7N), Community building-1, Shopping-1, Located in STP-1	(1W+1S)	~~10~~	~~17~~ 20	
vii.)	FLUSHING Water Transfer Pumps for EWS-1, Located in STP-1	(1W+1S)	2	2	
viii.)	FLUSHING Water Transfer Pumps for tower(A, B, C, Community building-2, Located in STP-2	(1W+1S)	~~8~~ 7.5	~~8~~ 15	
ix.)	FLUSHING Water Transfer Pumps for tower-C, Located in STP-2	~~(1W+1S)~~	~~4~~	~~4~~	
x.)	FLUSHING Water Transfer Pumps for EWS-2, Primary school & Shopping-2, Located in STP-2	(1W+1S)	2	2	
xi.)	horticulture purpose Located in STP-2	(1W+1S)	5	5	
	horticulture purpose Located in STP-1	(1W+1S)	5	5	
xii.)	Jockey pumps For (Tower 1,2,3,4, EWS-1, community building-1) Located in underground tank-2	1Nos	12.5	12.5	
xiii.)	Jockey pumps For (Tower A, B, C, 5N, 6N, 7N, shopping-1, community building-2) Located in underground tank-1	1Nos	12.5	12.5	
xiv.)	Tube well pumps For (Tower 1,2,3,4, EWS-1, community building-1,)	2 Nos	~~13~~ 10	~~26~~ 20	
xv.)	Tube well pumps For (Tower A, B, C, 5N, 6N, 7N, EWS-2, Convenient shopping-1 & 2, community building-2, primary school & nursery school)	2Nos	~~10~~	~~20~~ 20	
			Total	179	HP
			133.53	130.55	KW
			200.30	163.18	KVA
			SAY	170.20	KVA

Requirement of 170 KVA capacity will be added in to the main D.G. set to provide stand by supply for total development. (in two location)



2

**SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF GROUP HOUSING
COLONY MEASURING 21.1804 ACRE, SECTOR-37 GURGAON**

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, it has been decided by the Haryana Government to establish various residential sectors in Gurgaon. Jubilant limited is developing group housing colony measuring 21.1804 acres, Sector-37 Gurgaon Manesar Urban Complex.

WATER SUPPLY

At Present the source of water supply in this area is proposed for tube well, hence provision of 4 nos tube well has been proposed till the regular supply of canal water from HUDA. The tube well will be abundant as & when sufficient canal based water supply is provided by HUDA. It has been proposed to construct underground tanks of capacity as per attached details for domestic and other purpose. The underground tank will be filled from the HUDA riser and then pumped to the overhead water tanks of each tower & other amenity. We are purposing two water treatment plants for whole development.

DESIGN

The scheme has been designed for the population as given in attached sheets.

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.

SEWERAGE SCHEME

This scheme is designed for sewer connecting the centralized sewage treatment plant to treat the sewage and to use for horticulture and flushing purpose and excess sewage line will be connected to the proposed HUDA sewer, passing along the sector road. The sewerage system has been marked on the respective plans.

The 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 self cleaning velocity. Necessary provision for laying S.W/RCC pipe sewer line, construction of required number of manholes etc., have been made in the estimate. Necessary design statement for entire sewerage system has been prepared and attached with estimate. We are purposing two STP plants for whole development.


Authorised Signatory

4

I DETAILS FOR DAILY WATER CONSUMPTION :				Main DU = 1114 Nos S. Personnel = 114 Nos GND = 198 Nos	
I. Total Water Demand :					
S. No.	FLATS	Population			
		<u>Service Personnel</u> 5 person / unit		172.5 LPCD	
a.	Tower -1 = 216 unit	8x2	1080 + 16	186300.00	+ 2760 = 189060
b.	Tower -2 = 254 unit	72x2	1270 + 144	219075.00	+ 24840 = 243915
c.	Tower -3 = 59 unit		295	50887.50	
d.	Tower -4 = 59 unit		295	50887.50	
e.	Tower -5N = 44 unit		220	37950.00	
f.	Tower -6N = 72 unit		360	62100.00	
g.	Tower -7N = 76 unit		380	65550.00	
h.	EWS-1 = 128 unit	~~250 @ 640~~ 2 person / unit		110400	
i.	Community building -1 (L.S)	-		10000.00	
j.	Shopping -1 (L.S)	-		5000.00	
k.	Nursery school (L.S)	-		10000.00	
l.	Tower- A= 144 unit	15x2	720 + 30	124200.00	+ 5175 = 129375
m.	Tower- B = 126 unit	13x2	630 + 26	108675.00	+ 4485 = 113160
n.	Tower- C = 64 unit	6x2	320 + 12	55200.00	+ 2070 = 57270
o.	EWS-2 = 70 unit	~~100 @ 350~~ 3 person / unit		60375	
p.	Community building -2 (L.S)	-		10000.00	
q.	Convenient shopping -2 (L.S)	-		5000.00	
r.	Primary school (L.S)	-		10000.00	2500
			1171599	1062114.00 Liter	1235930
			117159	106211 KL	1235.93 KLD
		Say		1400 KL	Say = 1236 KLD
	Domestic Consumption @ (65% of total demand for Tower ,EWS + 35% of total demand for Community building , primary school & convenient shopping + 100 % of total demand for nursery school)			803	Say = 805 KL
	Flushing Consumption @ (35% of total demand for Tower ,EWS + 65% of total demand for Community building , primary school & convenient shopping)			433	Say 435 KL
	Horticultural water requirement (Organized Green)				
	(6.21 acre) @ 25 kl /acre/Per Day			155.25 KL	
				Say 160 KL	
	Total Flushing Water demand per day including horticulture			560 KL	588.25 Say = 590 KL
	Sewage generated to STP @ (90% Of Total Water Demand)			490 KLD	1112
	Increase by 10%			1089 KLD	1223.64

DESIGN CHART FOR WATER SUPPLY SYSTEM DOMESTIC

SL NO	LINE NO	MD OF MAIN LINES	MD OF EWS LIMITS	TOTAL POPULATION	TOTAL WATER REQ @ 172.5 L/PD	DOMESTIC @ 65% OF TOTAL WATER	Area in sqm	Type of Building	Basis of Water Requirement L/PD	Total water requirement for other buildings (L/PD)	DOMESTIC @ 35% OF TOTAL WATER	TOTAL DOMESTIC WATER REQ PER DAY (SELF)	PROGRESSIVE WATER REQ IN L/PD	TOTAL DOMESTIC WATER REQ PER DAY	PUMP WORKING HOURS	SELF WATER REQ IN L/PD	LENGTH OF PIPE MTR	HEAD LOSS (MTR)	SELF HEAD LOSS IN MTR	VELOCITY IN MSEC	SIZE OF RISER PIPE IN MM DIA
		From	To																		
1	PUMP ROOM 1	1	0	0	0	0					0	0	143520	143520	17143	299	115	0.007	0.002	0.569	100
2	1	Tower C	64	0	56200	36880					0	35080	0	35080	4455	75	256	0.016	3.225	0.569	50
3	1	2	0	0	0	0					0	0	107640	107640	13455	224	39	0.013	0.473	0.567	80
4	2	Tower 5	44	0	37960	24668					0	24668	0	24668	3003	51	16	0.013	0.613	0.553	80
5	2	3	0	0	0	0					0	0	82973	82973	13172	173	48	0.007	0.360	0.524	80
6	3	Tower 7	76	0	65560	42608					0	42608	0	42608	5320	89	8	0.006	0.648	0.400	65
7	3	Tower 6	72	0	62100	40365					0	40365	0	40365	5046	84	63	0.019	1.227	0.640	50
8	PUMP ROOM 1	4	0	0	0	0					0	0	186962	186962	23379	300	21	0.011	0.239	0.741	100
9	4	5	0	0	0	0					0	0	144641	144641	18009	301	52	0.007	0.368	0.573	100
10	5	Tower 6	120	0	103500	67275					0	67275	0	67275	8459	143	3	0.014	0.642	0.631	65
11	5	Tower A	138	0	118025	77366					0	77366	0	77366	9021	161	53	0.018	0.959	0.726	65
12	4	6	0	0	0	0					0	0	42321	42321	5250	88	33	0.021	0.761	0.871	50
13	6	7	0	0	0	0					0	0	42321	42321	5250	88	191	0.021	4.659	0.871	50
14	7	Com'm	0	0	0	0	354731	Community building	15L/Person	2306	807	807	0	807	101	2	19	0.009	0.009	0.961	25
15	7	8	0	0	0	0					0	0	41514	41514	5159	85	44	0.021	0.902	0.658	50
16	8	EWS	0	70	60375	39244					0	39244	0	39244	4905	82	23	0.018	0.425	0.822	50
17	8	Primary School	0	0	0	0	192050	Nursery school	10L/Child	2270	2270	2270	0	2270	284	5	45	0.001	0.037	0.808	32
18	PUMP ROOM 2	9	0	0	0	0					0	0	40835	40835	51017	850	73	0.048	3.526	1.418	100
19	9	Tower 1	114	0	98325	63911					0	63911	0	63911	7089	133	37	0.013	0.470	0.600	65
20	9	10	0	0	0	0					0	0	344224	344224	43520	717	22	0.035	0.775	1.365	100
21	10	Tower 1	114	0	98325	63911					0	63911	0	63911	7459	133	35	0.013	0.467	0.600	65
22	10	11	0	0	0	0					0	0	280313	280313	35039	584	151	0.024	3.638	1.111	100
23	11	Tower 2	254	0	219075	142099					0	142099	0	142099	17600	297	19	0.020	0.307	0.802	80
24	11	12	0	0	0	0					0	0	137914	137914	17359	251	122	0.019	2.343	0.854	80
25	12	Tower 4	59	0	50888	33077					0	33077	0	33077	4135	69	41	0.013	0.562	0.925	50
26	12	13	0	0	0	0					0	0	134937	134937	13105	218	72	0.032	2.288	0.894	65
27	13	Tower 3	59	0	50588	33077					0	33077	0	33077	4135	69	41	0.013	0.562	0.925	50
28	13	EWS	0	120	110400	71760					0	71760	0	71760	8970	150	10	0.067	0.565	1.135	50



C.E. No. 216

Dated 7/1/16

Annexure-A

SUB:- Approval of Service Plan /estimate for Group Housing Colony on the land measuring 21.1804 acres (License No. 13 of 2008 dated 31.1.2008) in Sec-37/C Gurgaon Manesar Urban Complex being developed by M/S. Jubliant Malls 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.

5/1/16

 E.E. (w)
 5/1/16

7.5	Flushing Water Trans Pumps For tower(A,B),Community building-2, Located in STP-2, 8 HP	Each	(2+1) 3	200000.00	300,000.00
	Flushing Water Trans Pumps For tower C, Located in STP-2, 3.5 HP	Each	2	125000.00	250,000.00
	Flushing Water Trans Pumps For EWS-2, Primary school & Shopping-2, Located in STP-2, 2 HP.	Each	(1+1) 2	50000.00	100,000.00
	Horticulture pump Located in STP-2, 5HP	Each	2	150000.00	300,000.00
	Horticulture pump Located in STP-1, 5HP	Each	2	150000.00	300,000.00
2	Providing and installing pumping set of following capacities for Fire protection. in two location				
	180 lpm at 120M head (12 HP)	Each	1 + 1	200,000.00	200,000.00
	2850 lpm at 120 M head (120 HP)	Each	2 + 2	750000.00	1,400,000.00
	2850 lpm at 120 M head DG pump (120 HP)	Each	1 + 1	1000000.00	1,000,000.00
2 (a)	Providing and installing pumping set of following				
	180 lpm at 140M head (14 HP)	Each	1	150,000.00	150,000.00
	2850 lpm at 140 M head (140 HP)	Each	2	800000.00	1,600,000.00
	2850 lpm at 140 M head DG pump (140 HP)	Each	1	1100000.00	1,100,000.00
3	Provision for chlorination plant complete	Each	2 (1+1)	50000.00	400,000.00
4	Provision for making foundations and erection of Pumping Machinery.	LS		300000.00	300,000.00
5	Provision for carriage of material and other unforeseen items etc.	LS		200000.00	200,000.00
6	Provision for pipes, valves and specially inside the pump chamber and boosting chamber	LS		200000.00	200,000.00
7	Provision for electric service connection including electrical fitting for bore well and boosting chamber including cost of transfer	LS	(2 Nos)	100000.00	100,000.00
8	Provision for Gen. set of 170 KVA capacity (in two location)	LS	(2)	1200000.00	1,200,000.00
	TOTAL				21,000,000.00
	SAY				210.00 Lakhs

For JUBILANT MALLS PVT. LTD.

Authorized Signatory

MATERIAL STATEMENT FOR WATER SUPPLY SYSTEM (FLUSHING)

SL NO	LINE NO		LENGTH OF PIPE	SIZE OF RISER PIPE IN MM Dia	SIZE OF RISER PIPE IN 25 MM Dia	SIZE OF RISER PIPE IN 32 MM Dia	SIZE OF RISER PIPE IN 40 MM Dia	SIZE OF RISER PIPE IN 50 MM Dia	SIZE OF RISER PIPE IN 65 MM Dia	SIZE OF RISER PIPE IN 80 MM Dia	SIZE OF RISER PIPE IN 100 MM Dia
	From	To									
1	STP A	1	72	~~150~~	0	0	0	72	0	0	0
2	1	Tower-C	204	~~150~~	0	0	0	204	0	0	0
3	STP	2	7	~~150~~	0	7	0	0	0	0	0
4	2	3	64	~~150~~	0	0	64	0	0	0	0
5	3	Tower-B	8	~~150~~	0	0	0	8	0	0	0
6	3	4	2	~~150~~	0	0	0	0	2	0	0
7	4	Tower-A	20	~~150~~	0	0	0	20	0	0	0
8	4	Tower-A	94	~~150~~	0	0	0	94	0	0	0
9	2	5	7	~~150~~	0	0	0	7	0	0	0
10	5	Tower-B	38	~~150~~	0	0	0	38	0	0	0
11	5	6	184	~~150~~	0	0	0	184	0	0	0
12	6	EWS	20	~~150~~	0	0	0	20	0	0	0
13	6	7	44	~~150~~	0	44	0	0	0	0	0
14	7	Community	23	~~150~~	23	0	0	0	0	0	0
15	7	Primary	46	~~150~~	46	0	0	0	0	0	0
16	STP B	8	77	100	0	0	0	0	0	0	77
17	8	9	8	100	0	0	0	0	0	0	8
18	9	10	23	~~150~~	0	0	0	0	0	23	0
19	10	Tower-1	36	~~150~~	0	0	0	0	36	0	0
20	~~10-B~~	Tower-2	~~64~~ 122	~~150~~	0	0	0	0	64	0	0
21	9	11	~~20~~ 110	~~150~~	0	0	0	0	20	0	0
22	11	Tower-5	~~58~~ 37	~~150~~	0	0	0	58	0	0	0
23	11	12	82	~~150~~	0	0	0	0	82	0	0
24	12	Tower-6	8	~~150~~	0	0	8	0	0	0	0
25	12	Tower-7	62	~~150~~	0	0	62	0	0	0	0
26	8	13	122	~~150~~	0	0	0	0	0	122	0
27	13	14	104	~~150~~	0	0	0	0	0	104	0
28	14	Tower-3	~~70~~ 41	~~150~~	0	0	70	0	0	0	0
29	14	15	126	~~150~~	0	0	0	0	0	126	0
30	15	Tower-4	4	~~150~~	0	0	4	0	0	0	0
	~~15~~	~~EWS~~	~~67~~	~~150~~	0	0	0	67	0	0	0
					~~69~~	~~51~~	~~208~~	~~772~~	~~204~~	~~375~~	~~85~~

STP - GWS
B.

30mm 1000

2095 mtr

MATERIAL STATEMENT				
Sl. No.	RCC Line Marked As		Dia of Pipe In MM	Length Of Line
	From	To		
1	1	4	400	112
2	2	3	400	45
3	3	4	400	75
4	4	outfall1	400	22
5	5	6	400	55
6	6	10	400	60
7	7	9	400	72
8	8	9	400	64
9	9	10	400	14
10	10	13	400	22
11	11	12	400	115
12	12	13	400	46
13	13	outfall2	400	6
14	14	16	400	116
15	15	16	400	32
16	16	outfall3	400	6
17	17	19	400	40
18	18	19	400	26
19	19	20	400	80
20	20	22	400	45
21	21	22	400	27
22	22	23	400	82
23	23	30	400	75
24	24	26	400	38
25	25	26	400	25
26	26	28	400	108
27	27	28	400	35
28	28	30	400	46
29	29	30	400	42
30	30	outfall4	400	6
31	31	33	400	28
32	32	33	400	60
33	33	37	400	125
34	34	36	400	148
35	35	36	400	18
36	36	37	400	14
37	37	39	400	19
38	38	39	400	31
39	39	41	400	18
40	40	41	400	32
41	41	42	400	78
42	42	44	400	146
43	43	44	400	285
44	44	outfall5	400	11
45	45	Outfall near plot no 37	Plot No 424	36
TOTAL				2600

m/s

For JUBILANT MALLS PVT. LTD.

[Signature]
Authorised Signatory

MATERIAL STATEMENT FOR WATER SUPPLY SYSTEM (Domestic)

SL NO	LINE NO		LENGTH OF PIPE	SIZE OF RISER PIPE IN MM Dia	SIZE OF RISER PIPE IN 25 MM Dia	SIZE OF RISER PIPE IN 32 MM Dia	SIZE OF RISER PIPE IN 50 MM Dia	SIZE OF RISER PIPE IN 65 MM Dia	SIZE OF RISER PIPE IN 80 MM Dia	SIZE OF RISER PIPE IN 100 MM Dia
	From	To								
1	PUMP ROOM I	1	115	100	0	0	0	0	0	115
2	1	Tower C	206	50	0	0	206	0	0	0
3	1	2	39	80	0	0	0	0	39	0
4	2	Tower 5	16	80	0	0	0	0	16	0
5	2	3	48	80	0	0	0	0	48	0
6	3	Tower 7	8	55	0	0	0	8	0	0
7	3	Tower 6	63	50	0	0	63	0	0	0
8	PUMP ROOM II	4	21	100	0	0	0	0	0	21
9	4	5	52	100	0	0	0	0	0	52
10	5	Tower B	3	65	0	0	0	3	0	0
11	5	Tower A	53	65	0	0	0	53	0	0
12	4	6	33	50	0	0	33	0	0	0
13	6	7	191	80	0	0	191	0	0	0
14	7	Comm.	19	25	19	0	0	0	0	0
15	7	8	44	50	0	0	44	0	0	0
	8	EWS	23	60	0	0	23	0	0	0
17	8	Primary School	45	80	0	45	0	0	0	0
18	PUMP ROOM 2	9	73	100	0	0	0	0	0	73
19	9	Tower 1	37	65	0	0	0	37	0	0
20	9	10	22	100	0	0	0	0	0	22
21	10	Tower 1	36	80	0	0	0	36	0	0
22	10	11	151	100	0	0	0	0	0	151
23	11	Tower 2	19	80	0	0	0	0	19	0
24	11	12	122	80	0	0	0	0	122	0
25	12	Tower 4	41	50	0	0	41	0	0	0
26	12	13	72	65	0	0	0	72	0	0
27	13	Tower 3	41	50	0	0	41	0	0	0
28	13	EWS	10	50	0	0	10	0	0	0
Total					19	45	652	209	244	434

28. P. Room to EWS. 350m length

1943 mtr

Grand Total : Dom + Plumbing

100 mm d = 1943m + 2095m = 4038m



DESIGN CHART FOR EXTERNAL FIRE HYDRANT

21

S/N	Line From	Line To	Pipe Dia	Length (Mtr.)	80 mm Dia	100 mm Dia	150 mm Dia
1	Pumproom1	1	150	5	0	0	5
2	1	EPH1	150	27	0	0	27
3	EPH1	EPH2	100	29	0	29	0
4	EPH2	EPH3	80	25	25	0	0
5	1	2	150	73	0	0	73
6	2	EPH4	150	242	0	0	242
7	EPH4	EPH5	150	39	0	0	39
8	EPH5	EPH6	150	40	0	0	40
9	EPH6	EPH7	150	43	0	0	43
10	EPH7	EPH8	100	41	0	41	0
11	EPH8	EPH9	80	39	39	0	0
12	2	3	150	52	0	0	52
13	3	EPH10	150	108	0	0	108
14	EPH10	EPH11	100	42	0	42	0
15	EPH11	EPH12	80	44	44	0	0
16	3	4	150	37	0	0	37
17	4	5	150	17	0	0	17
18	5	6	150	12	0	0	12
19	6	EPH13	80	42	42	0	0
20	6	EPH14	150	3	0	0	3
21	EPH14	EPH15	100	16	0	16	0
22	EPH15	EPH16	80	29	29	0	0
23	5	EPH17	80	89	89	0	0
24	4	7	150	11	0	0	11
25	7	EPH18	80	32	32	0	0
26	7	EPH19	150	22	0	0	22
27	EPH19	EPH20	150	28	0	0	28
28	EPH20	8	150	19	0	0	19
29	8	EPH21	80	39	39	0	0
30	8	9	150	100	0	0	100
31	9	EPH22	80	20	20	0	0
32	9	EPH23	100	25	0	25	0
33	EPH23	EPH24	80	58	58	0	0
34	Pumproom2	10	150	50	0	0	50
35	10	EPH25	150	44	0	0	44
36	EPH25	EPH26	150	45	0	0	45
37	EPH26	11	150	6	0	0	6
38	11	EPH27	80	22	22	0	0
39	11	12	150	43	0	0	43
40	12	EPH28	80	14	14	0	0
41	12	EPH29	150	26	0	0	26
42	EPH29	EPH30	100	45	0	45	0
43	EPH30	EPH31	80	47	47	0	0
44	10	EPH32	150	4	0	0	4
45	EPH32	EPH33	150	56	0	0	56
46	EPH33	13	150	64	0	0	64
47	13	14	150	25	0	0	25
48	14	EPH34	80	34	34	0	0
49	14	EPH35	80	39	39	0	0
50	13	15	150	67	0	0	67
51	15	EPH36	80	11	11	0	0
52	15	EPH37	150	18	0	0	18
53	EPH37	16	150	22	0	0	22
54	16	17	150	30	0	0	30
55	17	EPH38	80	44	44	0	0
56	17	EPH39	100	5	0	5	0
57	EPH39	EPH40	80	50	50	0	0
58	16	EPH41	150	8	0	0	8
59	EPH41	18	150	102	0	0	102
60	18	19	150	12	0	0	12
61	19	EPH42	100	18	0	18	0
62	EPH42	EPH43	80	41	41	0	0
63	19	EPH44	80	35	35	0	0
64	18	20	150	67	0	0	67
65	20	21	150	14	0	0	14
66	21	EPH45	80	31	31	0	0
67	21	EPH46	100	15	0	15	0
68	EPH46	EPH47	80	40	40	0	0
69	20	22	150	85	0	0	85
70	22	EPH48	80	29	29	0	0
71	22	EPH49	80	17	17	0	0
TOTAL					891	246	1281



MATERIAL STATEMENT

27

S. NO.	Line		Length of line	Dia of Pipe	DIA IN mm				
	From	To			Sump Riser	Sump Riser	200	250	300
			Mtr	MM	~~150 MS~~ ~~100 MS~~ CF/DP	150 MS	MM	MM	MM
1	1	2	188	250	0	0	0	188	0
2	Sump-C	2	189	~~100 150~~	189	0	0	0	0
3	2	STP-1	9	300	0	0	0	0	9
4	3	5	98	200	0	0	98	0	0
5	4	5	56	200	0	0	56	0	0
6	5	7	21	200	0	0	21	0	0
7	6	7	22	250	0	0	0	22	0
8	7	9	20	250	0	0	0	20	0
9	8	9	58	250	0	0	0	58	0
10	9	Sump-1	5	250	0	0	0	5	0
11	Sump-1	STP	126	150	~~126~~	~~126~~	0	0	0
12	10	12	58	200	0	0	58	0	0
13	11	12	58	200	0	0	58	0	0
14	12	14	50	200	0	0	50	0	0
15	13	14	58	200	0	0	58	0	0
16	14	16	25	200	0	0	25	0	0
17	15	16	58	200	0	0	58	0	0
18	16	18	96	200	0	0	96	0	0
19	17	18	58	200	0	0	58	0	0
20	18	20	16	200	0	0	16	0	0
21	19	20	58	200	0	0	58	0	0
22	20	Sump-2	13	200	0	0	13	0	0
23	Sump-2	STP	~~220~~	150	~~220~~	20	0	0	0
24	21	27	~~58-120~~	250	0	0	0	58	0
25	22	26	~~58-120~~	250	0	0	0	58	0
26	23	25	58 ✓	250	0	0	0	58	0
27	24	25	~~58-25~~	250	0	0	0	58	0
28	25	26	32	250	0	0	0	32	0
29	26	27	15	250	0	0	0	15	0
30	27	Sump-3	5	250	0	0	0	5	0
31	Sump-3	STP	~~230 200~~	150	~~0 200~~	~~230~~	0	0	0
			Total		~~189~~	~~376~~	723	577	9

735

say 725m 580m 10m

150 mm d CF/DP = 735 mtr

200 mm d S.W. = 725m

250 mm d S.W. = 580m

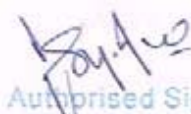
300 mm d S.W. = 10 mtr



Sub-Work No.IV			Roads and Footpaths		
SL.NO	Description	Unit	Qty	Rate	Amount
1	Provision for leveling and earth filling as per site condition 4 acres		21.18 acx	1.50 Lac	31.77 Lac
		sqm	36000	125	4,500,000.00
2 (i)	~~Soling Coat 100mm thick (88-45mm) gauge compacted to 75mm thick WMM conforming to MOT specification (Table 400-6 Grading No.2)~~				
		sqm	36000	250	9,000,000.00
(ii)	~~Wearing coat (Top Coat) 100mm thick (55 to 22.4mm) gauge compacted to 75mm thick conforming to MOT specification (Table 400-6 Grading No.2)~~ GSB 25.0mm, WMM 25.0mm, DBM 75mm & Acmm PC				
		sqm	36000	250	9,000,000.00
(iii)	~~25mm thick pre-mix carpet with seal coat~~		28250	100/L	282.50 Lac
		sqmt	31320	225.00	7,047,000.00
3	Provision for kerb and channels of CC (1:1.5:3) (3400x2)		6800	600/L	40.80 Lac
		M	10400	400.00	4,160,000.00
4	Provision for making approach to each block and Pavement LS				
		sqm	12500	850.00	10,625,000.00
5	Provision for guide map and other unforeseen items and Indicating board etc. LS				
		Acre	21.95	25000.00	548,750.00
6	Provision for cartage of material an other unforeseen items. ~~4 Traffic light control etc~~				
		LS		750000.00	750,000.00
		TOTAL			46,630,750.00
	Add 3% contingencies & PH Charges				1,366,922.50
		TOTAL			46,999,672.50
	Add 49% Departmental charges, price escalation, unforeseen, Admin.				23,029,839.53
		TOTAL			70,029,512.03
		SAY			700.30 Lakhs
Material statement of Fire fighting Rising Main (See Enclosed Sheet Annexure-VI)					

384.57 Lac
11.54 Lac
396.11 Lac
194.09 Lac
590.20 Lac

For JUBILANT MALLS PVT. LTD.


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5

	Say	1225 1200 KLD
	STP-1 capacity provided for tower(1,2,3,4,5N,6N,7N), EWS-1, Community building-1, Shopping-1 & nursery school	250 KLD 836
	STP-2 capacity provided for tower(A,B,C), EWS-2, Community building-2, Shopping-2 & Primary school	400 250 KLD
	Total Flushing Water demand per day including horticulture	590 260 KLD
2.	Type of water & Type of Source	
I.	Domestic water demand/ day (From HUDA)	805 700 KL
II.	Flushing water demand /day (From STP)	400 KL 435
III.	Horticulture/day (From STP)	160 KL
IV.	Fire capacity for whole developement	800 KL

3.	HUDA Main water Supply Calculation For underground tank-2 (Tower A,B,C,5N,6N,7N, EWS-2, Conveninet shopping-1&2, community building-2, primary school & nursery school)		
a.	Required Fresh Water per Day	420	KL
b.	Supply Duration	8	Hrs
c.	Line Flow Rate	0.9	(Cum/ Min)
d.	Proposed line dia.	100	mm
e.	Flow Velocity.	1.9	(m/sec)
f.	Friction Head Loss /1000m	46	Mtr
g.	Length of line	83	Mtr
h.	Total Head Loss	3.8	Mtr

4.	HUDA Main water Supply Calculation For underground tank-1 (Tower 1,2,3,4, EWS-1, community building-1.)		
a.	Required Fresh Water per Day	380	KL
b.	Supply Duration	8	Hrs
c.	Line Flow Rate	0.79	(Cum/ Min)
d.	Proposed line dia.	100	mm
e.	Flow Velocity.	1.7	(m/sec)
f.	Friction Head Loss /1000m	36	Mtr
g.	Length of line	83	Mtr
h.	Total Head Loss	3	Mtr

Sub-Work No. 1		Water Supply & Fire Fighting Head Work			
Sub-Head No. 01					
SL.NO	Description	Unit	Qty	Rate	Amount
1	Cost of borewell with pipe and strainer to a depth of about 80 metre in all respect.				
	120	Each	4	10- ~~10~~ 200000.00	40- ~~40~~ 2,800,000.00
2	Provision for rising mains, connection borewells with water main and Bye-pass arrangements.				
	100 mm dia	M	570 200 200	1250/- 1400.00 1575/-	7.13 Lacs 220,000.00 288,000.00
	150 mm dia	M	240	1200.00	288,000.00
	200 mm dia	M	240	2150/-	516,000.00
3	Providing Tubewell submersible Pumps, Capacity 18000 lph at 120 M head				
	all perfect	Each	4	150000.00	600,000.00
4	Provision for carriage for materials and other foreseen items.				
	boosing chamber as per P.H. Standard design	LS	161	2 Nos (1.3)	10- ~~10~~ 50,000.00
5	Construction of U.G Tanks				
	incl. 800 KL for Fire Fighting in				
	two location	KL	1760	3500.00	6,160,000.00
6	Provision for construction of Tubewell chambers of Size 1.5x1.5x1.5 m for Housing tubewell				
		Each	4	1.00 50000.00	4- ~~4~~ 200,000.00
7	Provision for carriage for materials and other unforeseen items.				
		LS		50000.00	2.00 Lacs 50,000.00
TOTAL					10,368,000.00
(C/O To Abstract of cost for subwork No.1)					129.52 Lacs
SAY					103.68 Lakhs

For JUBILANT MALLS PVT. LTD.


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	100 mm	150 mm	200 mm
T.W. No. 4 to UGT. II	50 m	-	-
T.W. No. 3 to T.W. No. 3	370 m	-	-
T.W. No. 3 to A	-	75	-
T.W. No. 1 to A	150 m	-	-
A to UGT - I	-	-	40 m
	570 m	75 m	40 m

Sub -Work No. II		Sewerages Scheme			
SL. NO	Description	Unit	Qty	Rate	Amount
1	Providing, jointing, cutting & testing S.W. ~~150 mm~~ pipe Class 'A' and lowering into trenches including cost of excavation, bed concrete cost of manholes etc. complete in all respects				
	~~150 mm dia~~ 3108	M	~~100~~ 735	~~1750.00~~ 1575/-	~~330750~~ 11.58 Lacs
	300 mm dia i/d S.W. ~~150 mm~~ pipes	M	~~10~~ 10	~~1700.00~~ 2150/-	~~17000~~ 0.22 Lacs
	250 mm dia i/d S.W. ~~150 mm~~ pipes	M	~~580~~ 580	~~1800/-~~ 1800/-	~~1044000~~ 10.44 Lacs
	200 mm dia i/d S.W. ~~150 mm~~ pipes	M	~~725~~ 725	~~1250~~ 1250	~~906250~~ 9.06 Lacs
2	Provision for cartage of material and other unforeseen items.				
2(a)	Pro for Sump Well along with machines	LS		~~100000.00~~ 100000.00	~~100000.00~~ 20
	Complete in all respect				20
3	Provision for making HUDA connection.	LS		~~100000.00~~ 100000.00	~~100000.00~~ 20
4	Provision for temporary disposal arrangement.	LS		~~100000.00~~ 100000.00	~~100000.00~~ 200,000.00
5	STP capacity 1100 KLPD including 150 mm ID pipe for disposal of excess sewage into External Sewer by pumping	KLPD	1100	15000.00	~~16,500,000.00~~ 165.00 Lacs
	(in two location) Treatment up to tertiary level				
	TOTAL				18,857,600.00
	Add 3% contingencies & PH charges				565,728.00
	TOTAL				19,423,328.00
	Add 49% Departmental charges, price escalation Unforeseen, Admin.				9,617,430.72
	TOTAL				28,940,758.72
	SAY				289.41 Lakhs
	Material statement of Sewrage (See Enclosed Sheet Annexure-IV)				336.55 Lacs

For JUBILANT MALLS PVT. LTD.


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FINAL ABSTRACT OF COST		
		Amount in Rs. Lacs
SUB WORK NO. I	WATER SUPPLY SCHEME	~~611.01~~ 571.90
SUB WORK NO. II	SEWERAGE SCHEME	~~289.41~~ 336.55
SUB WORK NO. III	STORM WATER DRAINAGE	~~151.94~~ 241.05
SUB WORK NO. IV	ROADS & FOOT PATHS	~~700.30~~ 590.20
SUB WORK NO. V	STREET LIGHTING	~~69.06~~ 81.26
SUB WORK NO. VI	PLANTATION & ROAD SIDE TREES	~~41.78~~ 21.20
SUB WORK NO. VII	MAINTENANCE CHARGES & SURFACING OF ROAD	~~666.26~~ 747.83
	TOTAL	~~2529.75~~ 2549.99

FOR JUBILANT MALL

For JUBILANT MALLS PVT. LTD.

Sgt = 2550.00 Lacs

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AUTHORISED SIGNATORY

Rate Per acre = $\frac{2550.00}{21.1804} = 120.40$

Superintending Engineer
HUDA Circle-II, Gurgaon

Executive Engineer
HUDA, Division No. IV
Gurgaon

Director General
Town and Country Planning,
Haryana, Chandigarh

Checked subject to comments
In forwarding letter No. 316.
Dt. 7/11/16 and notes
attached with the estimate

Executive Engineer (W)
for Chief Engineer
HUDA Panchkula

Sub-Work No.VI		Plantation and road side trees			
SL.NO	Description	Unit	Qty	Rate	Amount
1	Development of lawn area (organised green Acres)	2.16 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 turfed area				
c	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 2.16 Acres @ 100000 per acre				
		25147.883 Sqm or	1.56	1.56	9.32
		acre	6.21	200000	1,200,000.00
2	2. Providing tress, guards and planting trees along road at 12 m interval				
	Total road length = 3400/12 = 283 No				
	No of Tress = 867				
	say = 870				
	Cost Analysis of Planting Trees				
	Excavation = 400 each				
	Manure = 150 each				
	Tree plants = 500 each				
	Tree guards = 1000 each				
		Rs. 1750 per tree			
		Each	870	1750	1,522,500.00
		TOTAL			2,722,500.00
	Add 3% contingencies & PH Charges				81,675.00
		TOTAL			2,804,175.00
	Add 48% Departmental charges, price escalation, unforeseen, Admin.				1,374,045.75
		TOTAL			4,178,220.75
		SAY			41.78 Lakhs

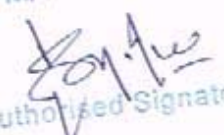
C.O.T final abstract of cost

For JUBILANT MALLS PVT. LTD.

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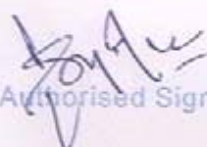
SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF GROUP HOUSING COLONY MEASURING 21.1804 ACRE, SECTOR-37 GURGAON			
SUB WORK No. 1		Water Supply & Fire Fighting	
1	Sub Head No. 01	Head Work	40,368,000.00
			₹ 129.52 Lacs
2	Sub Head No. 02	Pumping Machinery	21,000,000.00
			₹ 124.50 Lacs
3	Sub Head No. 03	Rising Main	892,900.00
			₹ 10.38 Lacs
4	Sub Head No. 04	Distribution System (Dom. + Flushing)	940,300.00
			₹ 55.88 Lacs
5	Sub Head No. 05	Fire ~~using~~ ^{Ring} Main	4,071,100.00
			₹ 47.62 Lacs
6	Sub Head No. 06	Irrigation	2,570,940.00
			₹ 4.75 Lacs
		TOTAL	39,813,240.00
		Add 3% contingencies & PH Charges	1,104,397.20
		TOTAL	₹ 11.18 41,007,637.20
		Add 49% Departmental charges, price escalation, unforeseen, Admin.	20,093,742.23
			₹ 383.83
			₹ 188.07 Lacs
		TOTAL	₹ 571.90 Lacs 61,101,379.43
		SAY IN LAKHS	611.01

For JUBILANT MALLS PVT. LTD.


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Sub -Work No. 1		Water Supply & Fire Fighting			
Sub -Head No. 02		Pumping Machinery			
SL. NO	Description	Unit	Qty	Rate	Amount
1	Providing and installing electricity driven pumping set for domestic and flushing supply complete with motor and other accessories				<i>Rs in Lacs</i>
	Domestic Water Transfer pumps For (Tower 1,2,3,4 & community building-1) Located in underground tank-1, 25 HP.	Each	<i>(2+1)</i> 3	~~5000000.00~~	<i>6.00 Lacs</i> ~~10,000,000.00~~
	Domestic Water Transfer pumps For (EWS-1) Located in underground tank-1, 3HP.	Each	<i>(1+1)</i> 2	~~400000.00~~	<i>1.00</i> ~~200,000.00~~
	Domestic Water Transfer Pumps for(Tower A, B &Community-2) Located in underground tank-2, 15HP.	Each	<i>(2+1)</i> 3	~~200000.00~~	600,000.00
	Domestic Water Transfer Pumps for(Tower C,5N,6N,7N), Shopping-1 &Nursery school, Located in underground tank-2 11HP.	Each	~~2~~	~~250000.00~~	~~500,000.00~~
	Domestic Water Transfer Pumps forEWS-2, Shopping-2 &Primary school, Located in underground tank-2, 2 HP.	Each	<i>1+1</i> 2	50000.00	100,000.00
	Flushing Water Trans Pumps For tower(1,2,3,4,5N,6N,7N),Community building1, Shopping-1, Located in STP-1, 17 HP	Each	<i>(2+1)</i> 3	~~350000.00~~	<i>4.50 Lacs</i> ~~700,000.00~~
	Flushing Water Trans Pumps For EWS-1, Located in STP-1, 2 HP	Each	2	50000.00	100,000.00

For JUBILANT MALLS PVT. LTD.


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Sub-Work No. III			Storm Water Scheme		
SL. NO	Description	Unit	Qty	Rate	Amount
1	Providing, Laying R.C.C. pipes drain class NP-3 with cement joint manholes excavation, etc. complete in all respects.				
	400 mm dia.	M	2600	2500 ~~2000.00~~	65.0 ~~5,200,000.00~~
2	Provision for roof top rain harvesting arrangement - Recharge pit with twin bore				
		Each	22	2.50 ~~200000.00~~	55.0 4,400,000.00
3	Provision for carriage of material and unforeseen items				
		LS		100000.00	100,000.00
4	Provision for making connection to main line				
	road	Each	4	50000.00	200,000.00
5	Pro for cutting of roads and making good to its original				1.00 Lac
	TOTAL				9,900,000.00
6	Pro for Road Gullies with 300 mm dia pipe connection				5.00 Lac
7	Add 3% for contingencies and PH charges.				297,000.00
	TOTAL				10,197,000.00
	Add 49% Departmental charges, price escalation, unforseen				4,996,530.00
					131.00 Lac
	TOTAL				15,193,530.00
	SAY				151.94 Lakhs
	Material statement of Fire fighting Rising Main (See Enclosed Sheet Annexure-V)				66.12 Lac

201.05 Lac

For JUBILANT MALLS PVT. LTD.


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7) Pro for Timbering of shoring etc. and other unforseen items (L.I.)

Is 2.00 Lac

Sub-Work No. 1		Water Supply Rising Main from HUDA			
Sub-Head No. 03					
SL. NO	Description	Unit	Qty	Rate	Amount
1	Providing, laying, jointing and testing pipe lines including Cost of excavation etc. complete in all respects.				
	~~80 mm dia. pipe~~		0		
	150	M		1575	6.36 Lacs
	100 mm dia. ~~ASBEST~~ pipe	M	404	1500.00	606,000.00
2	Providing and fixing sluice valve including cost of surface box and masonry chamber etc. completed in all respects.				
	~~80 mm i/d~~	~~Each~~	~~0~~	~~15000.00~~	~~0.30 Lacs~~
	100 mm i/d	Each	2	10000.00	20,000.00
3	Providing and fixing indicating plates for sluice valve and air Valves.				
		Each	2	1500.00	0.02 Lacs
4	Providing and fixing air release valve and scour valve.				
		Each	2	7500.00	15,000.00
5	Provision for carriage for materials and other unforeseen items.				
		LS		50000.00	50,000.00
6	Making water supply connection, with HUDA main on master Road	Each	2	100000.00	200,000.00
TOTAL					892,000.00
SAY					8.93 Lakhs
Pm for cutting of roads and making good to its in original condition (L1)					1.00 Lacs
					Rs. 16.38 Lacs

For JUBILANT MALLS PVT. LTD.


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- 36
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.

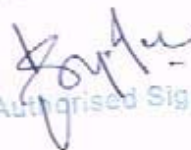
For


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

6/1/16

Sub-Work No. 1		Water supply & Fire fighting Fire			
Sub-Head No. 05		Rising-Main- <i>Ring main</i>			
SL. NO	Description	Unit	qty	Rate	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.				
	150 mm m.s. pipe line	M	1701	<i>1575</i> ~~1200.00~~	<i>26.79 Lacs</i> ~~2,041,200.00~~
	100 mm i/d	M	246	<i>1250</i> ~~1000.00~~	<i>3.08 Lacs</i> ~~246,000.00~~
	80 mm i/d	M	891	<i>1000</i> ~~900.00~~	<i>8.91 Lacs</i> ~~801,900.00~~
2	Providing and fixing fire Hydrant <i>complete in all respect</i>	Each	49	<i>15000</i> ~~9000.00~~	<i>7.35 Lacs</i> ~~441,000.00~~
3	Providing for indication plates	Each	49	<i>1000</i> ~~1000.00~~	<i>0.49 Lacs</i> ~~49,000.00~~
4	Providing for carriage of material as other unforeseen items.	LS		100000.00	100,000.00
					<i>Rs. 47.62 Lacs</i>
Total cost of Abstract of cost for Subwork No.1					4,071,100.00
SAY					40.71 Lakhs

For JUBILANT MALLS PVT. LTD.


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STORM WATER DRAINAGE

We propose to construct under ground pipe drain, which will be connecting rain water harvesting system for recharge the aquifer and surplus storm water will be allowed to flow to the HUDA drain along the sector road.

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

Cost of road has been taken in the estimate.

Street Lighting

Provision for lighting on surrounding area has been made.

Horticulture

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

Rates

The estimate has been based on the present market rates.

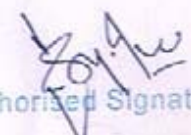
Cost:

The total cost of the scheme, including cost of all services works out to be Rs. ~~2529.75~~ ^{2550-v} ~~Lakhs (Rupees Twenty Five Crore Fifty Two Lakhs and Six Thousand only)~~ including 3% contingencies & 49% departmental charges. Price escalation, unforeseen

The firm will follow all the terms & condition as per Licence issued by the competent authority.

FOR JUBLIANT

For JUBILANT MALLS PVT. LTD.


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iii.	FIRE PUMP	PUMP ROOM	1	2850	140	140 (Dead Load)
iv.	SPRINKLER.PUMP	PUMP ROOM	1	2850	140	140 (Dead Load)
v.	JOCKY .PUMP	PUMP ROOM	1	180	140	14

21. ~~Tube well For (Tower 1,2,3,4, EWS-1, community building 1.)~~

Approx. discharge of tube well = 18 KL/hour and working for 12 hours /day

a.) Total domestic Water demand = ~~805~~ KL/day

b.) Number of tube wells ⁸⁰⁵ ~~405~~ /18x12 = ~~1.87~~ ^{3.72}

~~Add 10% as standby~~ = ~~0.18~~

Total = ~~2.05~~
SAY = ~~2~~ Nos
⁴

Entire water to the proposed development is to be supplied by HUDA from the canal filtration scheme and therefore, it is proposed to install two tube wells as standby.

Pumping machinery for tube well

Gross working head	= 100.0 m
Average fall in S.L.	= 5.0 m
Depression head	= 5.0 m
Friction loss in main	= 10.0 m

	= 120.00 m

HP = 300 (Lpm) x120(head)/(4500x0.65) = ~~13.31~~ ^{15.0} SAY = ~~13~~ H.P.



Sub-Work No. 1		Water supply Distributing System Domestic & Flushing			
Sub-Head No. 04					
Sl.No	Description	Unit	Qty	Rate	Amount
1	Providing & Fixing and installation of ~~400 R.P. 200 pipe~~ ^{400 R.P. 200 pipe} working pressure of ~~10 kg/cm²~~ ^{10 kg/cm²} conforming of IS 4984, PN-12.5 with special fitting earth work excavation in all kinds of soil, refilling, cement concrete 100 mm thick around at joint 300 mm from the centre on both sides and 150 mm sand filling around the pipe complete in all respects.				
	Pipe 100 mm	M	1943 + 2095 = 4038	1250/-	50.48 Lacs
2	Provision for carriage of materials and other unforeseen items and cutting of roads.	L.S.		200,000.00	200,000.00
3	Providing and fixing air release/scour valve	Each	10	10000/-	1.00 Lacs
				8750.00	87,500.00
(C/O TO Abstract of Cost for Subwork No.1)					910,300.00
SAY					9.10 Lakhs

4. Prov. and fixing sluice valve including cost of basic masonry chamber complete in all respect 10+10 = 20 Nos @ Rs 12000/- Φ 2.40 Lacs

For JUBILANT MALLS PVT. LTD. 55.88 Lacs

[Signature]
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22. Tube well For (Tower A,B,C,5N,6N,7N, EWS-2, Convenient shopping-1&2, community building-2, primary school & nursery school)

Approx. discharge of tube well = 18 KL/hour and working for 12 hours /day

a.) Total domestic Water demand = 350 KL/day

b.) Number of tube wells $350 / 18 \times 12$ = 1.62

Add 10% as standby = 0.16

Total = 1.78

SAY = 2 Nos

Entire water to the proposed development is to be supplied by HUDA from the canal filtration scheme and therefore, it is proposed to install two tube wells as standby.

Pumping machinery for tube well

Gross working head	= 100.0 m
Average fall in S.L.	= 5.0 m
Depression head	= 5.0 m
Friction loss in main	= 10.0 m
	= 120.00 m

HP = $300 \text{ (Lpm)} \times 120 \text{ (head)} / (4500 \times 0.65) = 12.31$ SAY = 13 H.P.



Details of Roads

6m wide Road

Pocket-	A	=	361 m
	B	=	245 m
	C	=	220 m
	D	=	511 m
	E	=	195 m
	F	=	253 m
	G	=	280 m
	H	=	170 m
	I	=	210 m
	J	=	340 m
	K	=	65 m
	L	=	189 m
	M	=	105 m
			<u>3144 m</u>
			<u>$\times 6 \text{ m}$</u>
			<u>18864 Sqm</u>

$$24 \text{ m wide roads} = 120 \text{ m}$$

$$(2 \times 7) = 14 \text{ m}$$

$$\underline{1680 \text{ Sqm}}$$

$$12 \text{ m wide Service Road} = 125 \text{ only}$$

$$\times 5.50 \text{ m}$$

$$\underline{687.50 \text{ Sqm}}$$

$$\text{Surface car parking} = 560 \text{ Nos}$$

$$\text{Area} = 2.50 \times 5.00 \times 560 = 7000 \text{ Sqm}$$

$$\text{Total area} = 18864 + 1680 + 687.50 + 7000 = 28231.50$$

$$= \text{Say } 28250 \text{ Sqm}$$

Length for K&B as channel

$$3389 \text{ Rmt}$$

$$\text{Say } 3400 \text{ Rmt}$$

Sub-Work No.V		Street Lighting			
SL.NO	Description	Unit	Qty	Rate	Amount
1	Providing Street lighting on roads as I. per standard specification of HVPN <i>with CFL.</i>	Acre	21.18	<i>2.50 lacs / Acre</i>	<i>52.95 lacs</i>
		~~pole lights.~~	~~300~~	~~15000~~	~~4,500,000.00~~
		TOTAL			~~4,500,000.00~~
	Add 3% contingencies & PH Charges				~~135,000.00~~
		TOTAL			<i>1.59 lacs</i>
	Add 49% Departmental charges, price escalation, unforeseen, Admin.				~~4,635,000.00~~
		TOTAL			<i>54.54 lacs</i>
		TOTAL			~~2,271,150.00~~
		TOTAL			<i>26.72 lacs</i>
		TOTAL			~~6,906,150.00~~
		SAY			<i>81.26 lacs</i>
					~~69.06~~ Lakhs

c.o. to final abstract of cost

For JUBILANT MALLS PVT. LTD.

[Signature]
Authorised Signatory

SERVICE ESTIMATE, DESIGN REPORT AND
CALCULATIONS OF
INTERNAL DEVELOPMENT WORKS

FOR

GROUP HOUSING COLONY MEASURING 21.1804 ACRE, SECTOR
37, GURGAON MANESAR URBAN COMPLEX.

OWNER

M/S JUBILANT MALLS
PVT. LTD.



Sub Work No. IIrrigationSub Head No. 6

- (i) For. for irrigation line/garden hydrant
- line complete in all respect
25/20 mm (L.S.) Rs 2.50 lacs
- (ii) For & fixing 25 mm id irrigation hydrant
valve complete in all respect
50 mm @ 8 350/- each Rs 1.75 lacs
- (iii) For for carriage of material (L.S.) Rs 0.50 lacs
Rs 4.75 lacs



Project :- I.I.D Spire & I.I.D Grand

Drainage Design Sheet

Sl.	RCC Line		Area Served		Run off Assuming (If @ 15.25mm) In Ltrs	Dia of Pipe In MM	Gradient %	Velocity m/sec	Discharge In Ltrs	Check for Carrying Capacity	Length Of Line	Fall In Meter	Starting (OL) Meter	Ending (LL) Meter	Starting depth Meter	End depth Meter
	From	To	Self (sqm)	Branch (sqm)												
16	1	4	4576	0	6	400	370	0.75	84.48	OK	112	0.30	-1.85	-2.15	1.85	2.15
17	2	3	1831	0	2	400	370	0.75	84.48	OK	45	0.12	-1.85	-1.97	1.85	1.97
18	3	4	3514	1831	6	400	370	0.75	84.48	OK	76	0.21	-1.97	-2.15	1.97	2.15
19	4	outfall	0	9921	12	400	370	0.75	84.48	OK	22	0.00	-2.15	-2.24	2.15	2.24
20	5	6	2790	0	3	400	370	0.75	84.48	OK	65	0.18	-1.20	-1.35	1.20	1.35
21	6	10	1064	2790	6	400	370	0.75	84.48	OK	60	0.16	-1.35	-1.64	1.35	1.64
22	7	8	1905	0	2	400	370	0.75	84.48	OK	72	0.19	-1.20	-1.39	1.20	1.39
23	8	9	2254	0	3	400	370	0.75	84.48	OK	64	0.17	-1.20	-1.37	1.20	1.37
24	9	10	200	4239	6	400	370	0.75	84.48	OK	14	0.04	-1.39	-1.43	1.39	1.43
25	10	13	345	9303	12	400	370	0.75	84.48	OK	22	0.08	-1.54	-1.60	1.54	1.60
26	11	12	5425	0	7	400	370	0.75	84.48	OK	116	0.31	-1.20	-1.51	1.20	1.51
27	12	13	990	5425	8	400	370	0.75	84.48	OK	40	0.12	-1.51	-1.64	1.51	1.64
28	13	outfall	0	16663	20	400	370	0.75	84.48	OK	6	0.02	-1.64	-1.65	1.64	1.65
29	14	15	2569	0	3	400	370	0.75	84.48	OK	116	0.31	-2.02	-2.33	2.02	2.33
30	15	16	1087	2569	6	400	370	0.75	84.48	OK	32	0.08	-2.02	-2.11	2.02	2.11
31	16	outfall	0	4256	8	400	370	0.75	84.48	OK	6	0.02	-2.33	-2.35	2.33	2.35
32	17	19	935	0	1	400	370	0.75	84.48	OK	40	0.11	-1.20	-1.31	1.20	1.31
33	18	19	472	0	1	400	370	0.75	84.48	OK	26	0.07	-1.20	-1.27	1.20	1.27
34	19	20	5501	1407	9	400	370	0.75	84.48	OK	80	0.22	-1.31	-1.52	1.31	1.52
35	20	22	1232	2708	10	400	370	0.75	84.48	OK	45	0.12	-1.52	-1.65	1.52	1.65
36	21	22	6454	0	8	400	370	0.75	84.48	OK	27	0.07	-1.20	-1.27	1.20	1.27
37	22	23	1508	14854	20	400	370	0.75	84.48	OK	82	0.22	-1.65	-1.67	1.65	1.67
38	23	25	1450	10552	22	400	370	0.75	84.48	OK	76	0.21	-1.87	-2.07	1.87	2.07
39	24	26	809	0	1	400	370	0.75	84.48	OK	38	0.10	-1.20	-1.30	1.20	1.30
40	25	26	1050	0	1	400	370	0.75	84.48	OK	26	0.07	-1.20	-1.27	1.20	1.27
41	26	28	1610	1919	4	400	370	0.75	84.48	OK	108	0.29	-1.30	-1.56	1.30	1.56
42	27	28	934	0	1	400	370	0.75	84.48	OK	35	0.09	-1.20	-1.29	1.20	1.29
43	28	30	4913	4463	6	400	370	0.75	84.48	OK	46	0.12	-1.56	-1.72	1.56	1.72
44	29	30	7750	0	9	400	370	0.75	84.48	OK	42	0.11	-1.20	-1.31	1.20	1.31
45	30	outfall	0	30701	37	400	370	0.75	84.48	OK	6	0.02	-2.37	-2.09	2.07	2.09
46	31	33	1450	0	2	400	370	0.75	84.48	OK	28	0.08	-1.29	-1.28	1.29	1.28
47	32	33	928	0	1	400	370	0.75	84.48	OK	60	0.16	-1.29	-1.35	1.29	1.35
48	33	37	4459	2376	8	400	370	0.75	84.48	OK	125	0.34	-1.35	-1.70	1.35	1.70
49	34	35	3364	0	4	400	370	0.75	84.48	OK	143	0.40	-1.20	-1.60	1.20	1.60
50	35	36	730	0	1	400	370	0.75	84.48	OK	13	0.05	-1.20	-1.25	1.20	1.25
51	36	37	180	4102	5	400	370	0.75	84.48	OK	14	0.04	-1.60	-1.64	1.60	1.64
52	37	39	525	11120	14	400	370	0.75	84.48	OK	19	0.08	-1.20	-1.29	1.20	1.29
53	38	39	559	0	1	400	370	0.75	84.48	OK	31	0.08	-1.20	-1.29	1.20	1.29
54	39	41	1845	12203	17	400	370	0.75	84.48	OK	15	0.05	-1.75	-1.80	1.75	1.80
55	40	41	678	0	1	400	370	0.75	84.48	OK	32	0.08	-1.20	-1.29	1.20	1.29
56	41	42	1345	14726	20	400	370	0.75	84.48	OK	78	0.21	-1.60	-2.01	1.60	2.01
57	42	44	5455	16271	27	400	370	0.75	84.48	OK	146	0.39	-2.01	-2.41	2.01	2.41
58	43	44	5374	0	12	400	370	0.75	84.48	OK	285	0.77	-1.20	-1.97	1.20	1.97
59	44	outfall	0	31900	36	400	370	0.75	84.48	OK	11	0.03	-2.41	-2.44	2.41	2.44

MATERIAL STATEMENT FOR GARDEN HYDRANT WORKS

S. No.	Line No.		Pipe Dia mm	Length In Meter	25 mm	32 mm	40 mm	50 mm	63 mm	80 mm
	From	To								
1	STP	1	80	8	0	0	0	0	0	0
2	1	2	65	8	0	0	0	0	0	0
3	2	3	32	19	0	19	0	0	0	0
4	3	GH1	25	17	17	0	0	0	0	0
5	3	GH2	25	4	4	0	0	0	0	0
6	2	GH3	65	10	0	0	0	0	10	0
7	GH3	GH4	65	21	0	0	0	0	21	0
8	GH4	GH5	65	37	0	0	0	0	37	0
9	GH5	GH6	50	25	0	0	0	25	0	0
10	GH6	4	40	24	0	0	24	0	0	0
11	4	GH7	25	19	19	0	0	0	0	0
12	4	GH8	32	26	0	26	0	0	0	0
13	GH8	GH9	25	34	0	0	0	0	0	0
14	GH9	GH10	25	24	24	0	0	0	0	0
15	1	GH11	65	7	0	0	0	0	7	0
16	GH11	5	65	5	0	0	0	0	5	0
17	5	GH12	25	19	19	0	0	0	0	0
18	5	6	65	19	0	0	0	0	19	0
19	6	GH13	25	15	15	0	0	0	0	0
20	6	GH14	65	2	0	0	0	0	2	0
21	GH14	7	65	79	0	0	0	0	79	0
22	7	8	65	215	0	0	0	0	215	0
23	8	9	25	9	9	0	0	0	0	0
24	9	GH15	25	30	30	0	0	0	0	0
25	9	GH16	25	2	2	0	0	0	0	0
26	8	10	65	18	0	0	0	0	18	0
27	10	GH17	25	11	11	0	0	0	0	0
28	10	GH18	65	28	0	0	0	0	28	0
29	GH18	GH19	65	29	0	0	0	0	29	0
30	GH19	GH20	50	28	0	0	0	28	0	0
31	GH20	GH21	50	28	0	0	0	28	0	0
32	GH21	GH22	40	25	0	0	25	0	0	0
33	GH22	11	25	11	11	0	0	0	0	0
34	11	GH23	25	2	2	0	0	0	0	0
35	11	GH24	25	25	25	0	0	0	0	0
36	7	12	65	42	0	0	0	0	42	0
37	12	13	50	16	0	0	0	16	0	0
38	13	14	50	10	0	0	0	10	0	0
39	13	GH25	25	7	7	0	0	0	0	0
40	14	GH26	25	10	10	0	0	0	0	0
41	14	15	40	15	0	0	15	0	0	0
42	15	GH27	25	11	11	0	0	0	0	0
43	15	GH28	32	15	0	15	0	0	0	0
44	GH28	16	25	6	6	0	0	0	0	0
45	16	GH29	25	22	22	0	0	0	0	0
46	16	GH30	25	6	6	0	0	0	0	0
47	12	37	65	165	0	0	0	0	165	0
48	37	GH31	50	4	0	0	0	4	0	0
49	GH31	GH32	50	22	0	0	0	22	0	0
50	GH32	GH33	40	26	0	0	26	0	0	0
51	GH33	GH34	32	20	0	20	0	0	0	0
52	GH34	GH35	25	23	23	0	0	0	0	0
53	GH35	GH36	25	24	24	0	0	0	0	0
54	STP2	18	80	55	0	0	0	0	0	55
55	18	GH37	65	2	0	0	0	0	2	0
56	GH37	GH38	65	25	0	0	0	0	25	0
57	GH38	19	65	12	0	0	0	0	12	0
58	19	20	25	20	20	0	0	0	0	0
59	20	GH39	25	23	23	0	0	0	0	0
60	20	GH34	25	20	20	0	0	0	0	0
61	19	GH35	65	20	0	0	0	0	20	0
62	GH35	GH36	65	23	0	0	0	0	23	0
63	GH36	21	65	9	0	0	0	0	9	0
64	21	GH37	25	21	21	0	0	0	0	0
65	21	GH38	65	16	0	0	0	0	16	0
66	GH38	GH39	65	25	0	0	0	0	25	0
67	GH39	GH40	65	47	0	0	0	0	47	0
68	GH40	GH41	65	25	0	0	0	0	25	0
69	GH41	22	65	6	0	0	0	0	0	0
70	22	GH42	25	8	8	0	0	0	0	0
71	22	GH43	65	20	0	0	0	0	20	0
72	GH43	23	65	3	0	0	0	0	3	0
73	23	GH44	25	9	9	0	0	0	0	0
74	23	24	65	19	0	0	0	0	19	0
75	24	GH45	25	9	9	0	0	0	0	0
76	24	GH46	65	3	0	0	0	0	3	0
77	GH46	25	65	20	0	0	0	0	20	0
78	25	GH47	25	9	9	0	0	0	0	0
79	25	26	65	2	0	0	0	0	2	0
80	26	27	65	23	0	0	0	0	23	0
81	27	28	65	308	0	0	0	0	308	0
82	28	29	65	15	0	0	0	0	15	0
83	29	30	28	53	53	0	0	0	0	0
84	30	GH48	25	2	2	0	0	0	0	0
85	30	GH49	25	33	33	0	0	0	0	0
86	29	GH50	25	80	80	0	0	0	0	0
87	26	GH51	65	25	0	0	0	0	25	0
88	GH51	31	65	20	0	0	0	0	20	0
89	31	32	65	24	0	0	0	0	24	0
90	32	GH52	25	2	2	0	0	0	0	0
91	32	GH53	65	19	0	0	0	0	19	0
92	GH53	33	50	8	0	0	0	0	0	0



vii	Total head required	250 31.25 520.83 260.42	95	Mtr
viii	Discharge of Pump = $245/8 = 30.63$ cu.m /hr = 510.5 lpm Say 525 lpm		18.45/2	9.15 HP
ix	Power Required (Lpm*head (m)/4500*.65(effi)	Say = 260.42m	16.15	HP
	Say		17	HP

10.5

13.	PUMPS FOR Flushing WATER SUPPLY For EWS-1, Located in STP-1		
i	Potable Water Requirement Per Day	40	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	40	Mtr
v	Residual Head	5	Mtr
vi	Friction Head Loss	5	Mtr
vii	Total head required	50	Mtr
viii	Discharge of Pump = $40/8 = 5$ cu.m /hr = 83.33 lpm Say 100 lpm	1.85	
ix	Power Required (Lpm*head (m)/4500*.65(effi)	1.7	HP
	Say	2.0	HP

(one w. + 1 s. 54)

14.	PUMPS FOR Flushing WATER SUPPLY For tower(A,B),Community building-2, Located in STP-2			
i	Potable Water Requirement Per Day	110	85	KL
ii	Pumping duration per day		8	Hrs
iii	Suction lift		0	Mtr
iv	Clear Head Required		95	Mtr
v	Residual Head		5	Mtr
vi	Friction Head Loss	(2 W. + 1. S. by)	10	Mtr
vii	Total head required	110 13.75 114.58 150	110	Mtr
viii	Discharge of Pump = 85/8 = 10.63 cu.m /hr = 177.16 lpm Say 200 lpm		5.23	
ix	Power Required (Lpm*head (m)/4500*.65(effi)		7.5	HP
	Say		8	HP

(2 w. + 1 s. 54)

15.	PUMPS FOR Flushing WATER SUPPLY For tower C, Located in STP-2		
i	Potable Water Requirement Per Day	20	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	80	Mtr
v	Residual Head	5	Mtr
vi	Friction Head Loss	10	Mtr
vii	Total head required	95	Mtr
viii	Discharge of Pump = $20/8 = 2.5$ cu.m /hr = 41.66 lpm Say 100 lpm		
ix	Power Required (Lpm*head (m)/4500*.65(effi)	3.24	HP
	Say	4	HP

16.	PUMPS FOR Flushing WATER SUPPLY For EWS-2,Primary school & Shopping-2, Located in STP-2		
i	Potable Water Requirement Per Day	30	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	30	Mtr
v	Residual Head	5	Mtr

