

REPORT

The proposed development is Affordable Plotted Colony on an Area Measuring 33.75 Acres (270 KANAL & 0 MARLA) Falling in Revenue Estate of Village Murthal District Sonipat, Haryana. This report and cost estimate is proposed to develop. Adequate service provisions like sewage treatment plant and treated effluent storage are made in the already approved part of the development considering the requirement of the proposed development. Therefore, Sewer line from the proposed development Building will be connected to Sewerage System of proposed development disposing to the proposed Sewage Treatment Plant (STP).

WATER SUPPLY

At present the source of water supply in this area is HSVP/Municipal supply. As the underground water is potable, provision. 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 HSVP/Municipal supply mains passing along sector dividing master road, from there water will be pumped to Overhead water storage tank (OHT) on the roof of the buildings. Calculated water demand are 304 KLD for Domestic and 218 KLD for Flushing.

DESIGN

The scheme has been designed for population as given in attached sheets. The rate of water supply per head/day has been taken for Commercial as 45 liters per head per day & Residential as 172.5 liters per head per day as per HUDA Norms.

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. Power Backup will be provided separately or added to the capacity of main generator.

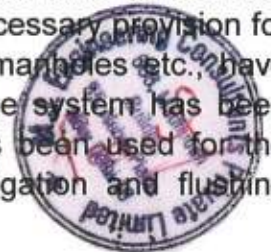
SEWERAGE SCHEME

Sewerage scheme of Building is designed for Sewer connecting to the Sewage Treatment Plant (STP) of 550 KLD capacity which cater the requirement of Buildings.

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 & 100% flushing 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 pipe sewer line, construction of required number of manholes etc., have been made in the estimate. Design statement for entire sewerage system has been prepared and attached with the estimate. Manning's formula has been used for the design of sewerage system. Treated water will be used for irrigation and flushing purpose (Through recycling) under the pipe line system.

For ROF Housing and Infrastructure Pvt. Ltd.


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STORM WATER DRAINAGE

Rainwater precipitation of the proposed development will be collected through a series of catch basin /channels and piping and will be connected to the proposed Rainwater Harvesting System. Surplus water will be disposed off to the proposed Haryana GOVT./HSVP Storm Drain. Intensity of rainfall has been taken as 1/4" per hour.

SPECIFICATIONS

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

Roads:

Cost of road has been taken in the estimate.

Street Lighting:

Provision for external lighting 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:

Total cost of the internal development scheme, including cost of all services, works out to be **Rs. 34.18 lacs** per acre including 3% contingencies @ 49% departmental charges.

For ROF Housing and Infrastructure Pvt. Ltd.


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**PROJECT:-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA)
FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.**

**Estimate For Providing Internal Services E.G. Water Supply, Sewerage & Strom Water Drainage Etc. In Respect of Industrial Plotted Colony on an Area
Measuring 33.75 Acrea (270 KANAL & 0 MARLA) Falling in Revenue Estate of Village Murthal District Sonipat, Haryana.**

	Capacity of Gen Set	Nos.	HP			
1	Tube Well Submersible Pumps	3	12.5	=	37.5	HP
2	Domestic Water Transfer Pump	2	5.0	=	10	HP
3	Flushing Water Transfer Pump	3	7.5	=	22.5	HP
4	Lighting			=	5	HP
					75	HP
	or	75	x 0.746 x 1.25		69.94	KVA
			Say		70.00	KVA
	Requirement of 100 KVA capacity will be added in to the main D.G. set to provide standby supply.					

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For ROF Housing and Infrastructure Pvt. Ltd.

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FINAL ABSTRACT OF COST

S.No.	Description	Amount (Lacs.)
1	Sub Work - I Water Supply Distribution System & Pumping Machinery	118.85
2	Sub Work - II Sewerage	89.25
3	Sub Work - III Storm Water Drainage	93.43
4	Sub Work - IV Roads & Footpath	229.79
5	Sub Work - V Street Lighting	51.80
6	Sub Work - VI - Horticulture	4.54
7	Sub Work - VII - Maintenance of Services for 10 years including resurfacing of roads after 1st 5 years & II phase i.e. 10 years of maintenance (as per HUDA norms)	566.03
Total		1153.70
Area (Acre)		33.750
Cost Per Acre		34.18
(RUPEES Twenty Nine crore Seventy Six Lakh Eighty Three thousand only)		

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Sub Work - I (ABSTRACT OF COST)

	Amount (Lacs.)	
Water Supply Distribution System & Pumping Machinery		
Sub head I. Water Supply (Head Works)	24.79	
Sub head II. Water Supply Pumping machinery	11.85	
Sub head III. Water Supply Distribution (Domestic & Flushing Water)	40.80	
Total	77.44	
Adding 3% for Contingencies & PE Charges	2.32	
Total	79.77	
Adding 49% departmental charges & price escalation etc., Unforeseen	39.09	
Say	118.85	Lacs

C.O to final abstract of cost

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Sub Work I				(Head Works) Water Supply		
Sub Head No. I						
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
1	Boring & installing tube well with rotary ring complete with 100mm dia pipe and strainer to a depth of about 120mts in all respect.	Nos.	3	200000	6.00	
2	Provision for carriage for materials and other un-foreseen items.	LS	-	-	0.50	
3	Construction of UG tanks 360 KL and 110 KL for Fire Fighting	KL	470	3200	15.04	
4	Provision of construction of tube well chambers of size 1.5 x 1.5 x 1.5 mtrs for housing tube well	Nos.	3	75000	2.25	
					23.79	
5	Provision for Const. of boosting chamber of suitable size as per P.H. req.	LS			1.00	
	(C.O. to Abstract of Cost of Sub Work No. I)				24.79	Lacs
	Sub Work I					
	Sub Head No. II				Pumping Machinery	
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
1	Providing & installing electricity driven pumping set capable of delivering 560 LPM for Each Pump of water against a total head of 45 m complete with motor and other accessories (For Domestic - 10.0 HP) (2W+1S)	Nos.	3	60000	1.80	
	680 LPM Each pump, 47 m Head , 12.5 HP for Flushing Water Transfer Pump (3W+1S)	Nos.	4	70000	2.80	
2	Provision for diesel engine generator set each for standby Arrangements for booster pump complete with gear head arrangements of following capacities.					
	1 No. - 100 KVA	LS	1		5.00	
3	Provision for making foundations & erection of pumping machinery.	LS	-	-	0.50	
4	Provision for pipes, valves & specials inside the pump chamber.	LS	-	-	0.50	
5	Provision for carriage for materials and other unforeseen items.	LS	-	-	0.50	
6	Provision for Electric Service connection incl. electric fittings for T.W chaush and cost of Transformer.	LS			0.75	
	(C.O. to Abstract of Cost of Sub Work No. I)				11.85	

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Estimate For Providing Internal Services E.G. Water Supply, Sewerage & Strom Water Drainage Etc. In Respect of Industrial Plotted Colony on an Area Measuring 33.75 Acrea (270 KANAL & 0 MARLA) Falling in Revenue Estate of Village Murthal District Sonipat, Haryana.

	Sub Work I				Water Supply	
	Sub Head No. III				Distribution System / Rising Main	
					(Domestic & Flushing)	
S. No.	Description	Unit	Qty	Rate	Amount	
1	Providing, laying, jointing and testing 151 pipe lines for domestic water supply including cost of excavation complete in all respects as per specification.					
1.1	150 mm Dia	Mtr.	310	1250	3.88	
1.2	100 mm dia	Mtr.	1350	856	11.56	
2	Providing, laying, jointing and testing PE-80 (HDPE) pipe lines for Domestic supply line including cost of excavation complete in all respects as per specification.					
2.1	50mm dia PE -80 Pipe	Mtr.	582	200	1.16	
2.2	40mm dia PE -80 Pipe	Mtr.	220	300	0.66	
3	Providing, laying, jointing and testing PE-100 (HDPE) pipe lines for flushing & garden hydrant including cost of excavation complete in all respects as per specification.					
3.1	125mm dia	Mtr.	10	1250	0.13	
3.1	100mm dia	Mtr.	600	850	5.10	
3.2	80mm dia	Mtr.	841	650	5.47	
3.3	50mm dia	Mtr.	342	455	1.56	
3.4	40 mm dia (Garden Hydrant)	Mtr.	587	320	1.88	
3.5	32 mm dia (Garden Hydrant)	Mtr.	90	250	0.23	
3.6	25 mm dia (Garden Hydrant)	Mtr.	120	160	0.19	
4	Providing, laying, jointing and testing pipe lines including cost of complete in all respects					
	(From HUDA supply)					
4.1	150 mm dia Pipe line from main HSVP line to UGT. (including in domestic water supply pipe)	Mtr.	100	1350	1.35	
5	Providing and fixing 20mm dia Irrigation gardent hydrant valve complete in all respect.	Nos.	27	1500	0.405	
6	Providing & fixing External Gardent Hydrant with masonary chambers	Nos.	27	6500	1.755	
7	Providing and fixing indicating plates for sluice valve and air valves	Nos.	4	1000	0.04	
8	Provision for carriage for materials and other unforeseen items(L/S)	L.S.			1.00	
9	Providing for making water supply connection in HUDA (line)	L.S.	1		0.50	
10	Providing and fixing External Fire Hydrants complete with masonary chambers.	Nos.	23	7000.00	1.61	
11	Providing and fixing two way inlet connection for hydrant system.	No.	1	16000.00	0.16	
12	Providing, fixing & Testing butterfly valve including cost of complete in all respects.					
a)	80 mm dia	Nos.	23	8500.00	1.96	
13	Provision for indication plates	Nos.	23	1000.00	0.23	
	(C.O. to Abstract of Cost of Sub Work No. I)				40.80	
	HUDA -A					
	Material Statement		HUDA -A			
	Line		A - U.G. Tank			
	Daily domestic demand		534.72			
	Length (Mtr.)		100			
	Dia (MM)		150 mm dia			
	Friction loss in line (M) L.S.		3.26			
	Velocity (M/S)		1.05			

For RPI Housing and Infrastructure Pvt. Ltd.


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RATTAN PAL SINGH
ARCHITECT
CA/2011/51128


 605, Madhuban
 Building
 55, Nehru Place,
 New Delhi-10

**PROJECT:-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA)
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Sub Work II					Sewerage Scheme	
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
I	Providing, laying and jointing DWC pipes as per specifications i/c excavation, bed conc, encasement /cradle section with C.C., also i/c testing etc. and construction of man holes etc. complete.					
a)	200 dia pipe for depth 0 to 3.0 m	Mtr.	1100	600	6.60	
b)	250 dia pipe	Mtr.	4172.000	700	29.20	
b)	Provision for carriage of pipes, road cuts & making good of roads.	L.S.			0.50	
c)	Provision for vent shafts	L.S.			0.50	
d)	Provision for centering & shuttering, shoring & barricading.	L.S.			0.5	
e)	Provision for watch & ward & lighting etc.	L.S.			0.25	
f)	Provision for temporary disposal arrangements	L.S.			2	
g)	Providing for Making connection with HUDA Master Sewer line, with 30 meter 160 OD overflow pipe	L.S.			1.00	
h)	Construction of STP Capacity .	KLD	550	L.S.	17.60	
	Total				58.15	
	Adding 3% for Contingencies				1.74	
	Total				59.90	
	Adding 49% departmental charges & price escalation etc.				29.35	
	Total Carry Over to Final Abstract of Cost				89.25	

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Sub Work - III					Storm Water Drain	
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
1	Providing, laying and jointing S & S RCC, NP3 pipes with rubber ring joints as per specifications i/c excavation bed & cradle section cove, also manholes & testing etc. complete.					
a)	400 dia RCC pipes Class NP 2	Mtr.	2240.00	1200	26.88	
b)	Provision for carriage of pipes, road cutting & road restoration etc.	L.S.			0.50	
c)	Provision of centering, shuttering shoring & barricading	L.S.			0.50	
d)	Provision for watch & ward & lightings etc.	L.S.			0.25	
e)	For rain harvesting wells	Nos.	31	100000	31.00	
f)	Provision of temporary arrangement for services till HUDA Services are made available	L.S.			0.25	
g)	Provision for S.W.D. connection with main on master road	L.S.			0.50	
h)	Provision for road gully with pipe connection 200mm dia	L.S.			1.00	
	Total				60.88	
	Adding 3% for Contingencies & PE Charges				1.83	
	Total				62.71	
	Adding 49% departmental charges & price escalation etc.				30.73	
	Total Carry Over to Final Abstract of Cost				93.43	

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FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.**

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Sub Work IV					Road Work	
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
1	Provision for leveling, earth filling compaction as per specification as per site conditions	Acre	33.75	50000	16.88	
2	The necessary provision for construction of roads, parks etc. Has been made in the estimate according to HUDA norms					
	The following specifications has been proposed :					
i	Construction of roads by providing granular sub base 200 mm as per MORT & H cs conforming to clause 401 grading -II 400.1					
ii	Providing and laying, spreading & compacting hand broken /crushed stone aggregate to wet mix conforming to physical requirement laid in 400 of MORT & H specification n in two layers (compacting to 25mm (125+125mm) by taking material 1:32 times of the (thickness of the layer) including premixing of material with water in mechanical mixer.					
iii	50 mm thick WBM					
iv	20 mm thick BC	Sq. mtr.	34437	350	120.53	
3	Provision of kerbs and channels with C.C 1.5:3 complete in all respects	Mtr.	2379	350	8.33	
4	Provision for making approach and pavement to each block of building				2.00	
5	Provision for traffic arrangement	L/S			1.00	
6	Provision for carriage of materials & other unforeseen item.				1.00	
	Total				149.73	
	Add 3% contingencies and P L charges				4.49	
	Total				154.22	
	Add 49% departmental charges, price escalation. Unforeseen admn				75.57	
	Total Carry over to final abstract of cost				229.79	

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Sub Work V						Street Lighting
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
1	Providing street lighting on roads as per standard specifications of HVPN approx. 33.75acres	Acre	33.75	100000	33.75	
	Add 3% contingencies and PE Charges				1.01	
	Total				34.76	
	Add 49% Departmental charges, Price Escalation, Unforeseen Adm.				17.03	
	Total Carry Over to Final Abstract of Cost	Rs.			51.80	
Sub Work VI						Horticulture
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
1	Development of lawn area					
a	Trenching the ordinary soil upto depth of 60 cm.Including removal & packing of serviceable material & disposing at a lead of 50 M and making up the trenched area to proper level by filling with earth mixed with manure before & after flooding trench with water including cost of imported earth & manure.					
b	Rough dressing of trenched area.					
c	Grassing including watering & maintenance of lawns free from weeds & fit for mowing in rows including hedges, shrubs & green belts (as per HUDA Norms)					
	0.30 acres @ Rs. 1.50 lacs / acre.	acre	0.240	150000	0.36	
2	Provision of trees, guards and planting trees along road at 12M intervals. (2492 / 12 = 210 Nos.)	Nos.	200	1300	2.60	
				Total	2.96	
	Add 3% contingencies and PE Charges				0.09	
				Total	3.05	
	Add 49% Departmental charges, Price Escalation, Unforeseen Adm.				1.49	
	Total Carry Over to Final Abstract of Cost			Total	4.54	
Sub Work VII						Maintenance Charges & Resurfacing of Roads
S. No.	Description	Unit	Qty	Rate	Amount (in Lakhs)	
1	Provision for maintenance charges for water supply, sewerage, storm water drainage, roads, street light, horticulture etc. complete including operation & establishments charges as per HUDA norms after completion & resurfacing of roads after 10 years or 1st phase.					
	33.75 acres @ 7.5 lacs per acre	per acre	33.750	200000	67.50	
2	Provision for resurfacing & strengthening of road after five years of 1st phase	Sq. mtr.	34437	400	137.75	
3	Provision for resurfacing & strengthening of road after ten years of 2 nd phase	Sq. mtr.	34437	475	163.58	
				Total	368.82	
	Add 3% contingency & PE charges				11.06	
				Total	379.89	
	Add 49% Departmental charges, Price Escalation, Unforeseen Adm.				186.15	
	Total Carry Over to Final Abstract of Cost			Total	566.03	

For ROF Housing and Infrastructure Pvt. Ltd.


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RATTAN PAL SINGH
ARCHITECT
CA/2011/51128


60C, Madhuban
Building
55, Nehru Place,
New Delhi-10

PROJECT:-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 53.75 ACRES (270 KANAL & 0 MARLA) FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.

1	2	3	4	5	6	7	8	9	10	11	14
S. No.	Description	Size Of Plot			Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Unit	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M			Water Demand (LPD)				
1	Industrial Plot-1	30.17	16.76	505.65	10.00	51	45.00	2275	1517	758	1972
2	Industrial Plot-2	30.17	16.76	505.65	10.00	51	45.00	2275	1517	758	1972
3	Industrial Plot-3	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
4	Industrial Plot-4	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
5	Industrial Plot-5	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
6	Industrial Plot-6	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
7	Industrial Plot-7	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
8	Industrial Plot-8	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
9	Industrial Plot-9	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
10	Industrial Plot-10	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
11	Industrial Plot-11	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
12	Industrial Plot-12	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
13	Industrial Plot-13	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
14	Industrial Plot-14	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
15	Industrial Plot-15	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
16	Industrial Plot-16	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
17	Industrial Plot-17	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
18	Industrial Plot-18	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
19	Industrial Plot-19	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
20	Industrial Plot-20	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
21	Industrial Plot-21	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
22	Industrial Plot-22	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
23	Industrial Plot-23	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
24	Industrial Plot-24	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
25	Industrial Plot-25	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317

RATTAN PAL SINGH
ARCHITECT
CA/2011/51128

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A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LP/CD)	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
26	Industrial Plot-26	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
27	Industrial Plot-27	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
28	Industrial Plot-28	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
29	Industrial Plot-29	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
30	Industrial Plot-30	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317

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A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @30 L/PD (65%)	Flushing @ 15L/PD (35%)	To STP 100 % of Flushing & 80 % of Domestic
31	Industrial Plot-31	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
32	Industrial Plot-32	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
33	Industrial Plot-33	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
34	Industrial Plot-34	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
35	Industrial Plot-35	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
36	Industrial Plot-36	40.69	20.90	850.42	10.00	85	45.00	3827	2551	1276	3317
37	Industrial Plot-37	29.50	15.69	462.68	10.00	46	45.00	2082	1388	694	1804
38	Industrial Plot-38	29.50	15.69	462.68	10.00	46	45.00	2082	1388	694	1804
39	Industrial Plot-39	29.50	15.69	462.68	10.00	46	45.00	2082	1388	694	1804
40	Industrial Plot-40	29.50	15.69	462.68	10.00	46	45.00	2082	1388	694	1804
41	Industrial Plot-41	29.50	15.69	462.68	10.00	46	45.00	2082	1388	694	1804
42	Industrial Plot-42	29.50	15.69	462.68	10.00	46	45.00	2082	1388	694	1804
43	Industrial Plot-43	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
44	Industrial Plot-44	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
45	Industrial Plot-45	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
46	Industrial Plot-46	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
47	Industrial Plot-47	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
48	Industrial Plot-48	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
49	Industrial Plot-49	30.21	15.30	570.73	10.00	57	45.00	2568	1712	856	2226
50	Industrial Plot-50	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
51	Industrial Plot-51	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
52	Industrial Plot-52	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
53	Industrial Plot-53	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
54	Industrial Plot-54	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
55	Industrial Plot-55	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
56	Industrial Plot-56	30.21	15.30	462.21	10.00	46	45.00	2080	1387	693	1803
57	Industrial Plot-57	30.21	15.71	474.60	10.00	47	45.00	2136	1424	712	1851
58	Industrial Plot-58	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
59	Industrial Plot-59	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
60	Industrial Plot-60	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
61	Industrial Plot-61	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
62	Industrial Plot-62	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826

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55, Nehru Place,
New Delhi-10

A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LP/CD)	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
63	Industrial Plot-63	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
64	Industrial Plot-64	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
65	Industrial Plot-65	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
66	Industrial Plot-66	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
67	Industrial Plot-67	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826

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A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LP/CD)	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
68	Industrial Plot-68	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
69	Industrial Plot-69	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
70	Industrial Plot-70	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
71	Industrial Plot-71	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
72	Industrial Plot-72	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
73	Industrial Plot-73	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
74	Industrial Plot-74	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
75	Industrial Plot-75	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
76	Industrial Plot-76	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
77	Industrial Plot-77	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
78	Industrial Plot-78	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
79	Industrial Plot-79	30.21	15.50	468.26	10.00	47	45.00	2107	1405	702	1826
80	Industrial Plot-80	28.67	14.54	416.79	10.00	42	45.00	1876	1250	625	1625
81	Industrial Plot-81	28.67	14.54	416.79	10.00	42	45.00	1876	1250	625	1625
82	Industrial Plot-82	28.67	14.54	416.79	10.00	42	45.00	1876	1250	625	1625
83	Industrial Plot-83	28.67	14.54	416.79	10.00	42	45.00	1876	1250	625	1625
84	Industrial Plot-84	30.91	14.87	459.51	10.00	46	45.00	2068	1379	689	1792
85	Industrial Plot-85	30.91	14.87	459.51	10.00	46	45.00	2068	1379	689	1792
86	Industrial Plot-86	30.91	14.87	459.51	10.00	46	45.00	2068	1379	689	1792
87	Industrial Plot-87	30.91	14.87	459.51	10.00	46	45.00	2068	1379	689	1792
88	Industrial Plot-88	30.91	14.87	459.51	10.00	46	45.00	2068	1379	689	1792
89	Industrial Plot-89	30.91	14.87	459.51	10.00	46	45.00	2068	1379	689	1792
90	Industrial Plot-90	30.91	14.87	459.51	10.00	46	45.00	2068	1379	689	1792
91	Industrial Plot-91	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
92	Industrial Plot-92	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
93	Industrial Plot-93	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
94	Industrial Plot-94	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
95	Industrial Plot-95	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
96	Industrial Plot-96	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
97	Industrial Plot-97	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
98	Industrial Plot-98	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
99	Industrial Plot-99	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484

RATTAN PAL SINGH
ARCHITECT
CA/2011/51128

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55, Nehru Place,
New Delhi-10

A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
100	Industrial Plot-100	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
101	Industrial Plot-101	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
102	Industrial Plot-102	44.29	20.17	893.39	10.00	89	45.00	4020	2680	1340	3484
103	Industrial Plot-103	29.86	16.40	489.60	10.00	49	45.00	2203	1469	734	1909
104	Industrial Plot-104	29.86	16.40	489.60	10.00	49	45.00	2203	1469	734	1909

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A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @30 LPCD (65%)	Flushing @ 15LPCD (35%)	To STP 100 % of Flushing & 80 % of Domestic
105	Industrial Plot-105	29.86	16.40	489.60	10.00	49	45.00	2203	1469	734	1909
106	Industrial Plot-106	29.86	16.40	489.60	10.00	49	45.00	2203	1469	734	1909
107	Industrial Plot-107	42.23	22.30	941.47	10.00	94	45.00	4237	2824	1412	3672
108	Industrial Plot-108	42.23	22.30	941.47	10.00	94	45.00	4237	2824	1412	3672
109	Industrial Plot-109	42.23	22.30	941.47	10.00	94	45.00	4237	2824	1412	3672
110	Industrial Plot-110	42.23	22.30	941.47	10.00	94	45.00	4237	2824	1412	3672
111	Industrial Plot-111	42.23	22.30	941.47	10.00	94	45.00	4237	2824	1412	3672
112	Industrial Plot-112	42.23	22.30	941.47	10.00	94	45.00	4237	2824	1412	3672
	TOTAL			73269		7327		329710	219807	109903	285749
	Total fresh water for Industrial Plots								219807		
1	2	3	4	5	6	7	8	9	10	11	14
B	RESIDENTIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person)	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic 100LPCD (65%)	Flushing - 55LPCD(35%)	To STP 100 % of Flushing & 80 % of Domestic
1	Residential Plot-1	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
2	Residential Plot-2	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
3	Residential Plot-3	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
4	Residential Plot-4	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
5	Residential Plot-5	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
6	Residential Plot-6	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
7	Residential Plot-7	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
8	Residential Plot-8	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
9	Residential Plot-9	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
10	Residential Plot-10	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
11	Residential Plot-11	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
12	Residential Plot-12	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
13	Residential Plot-13	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
14	Residential Plot-14	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
15	Residential Plot-15	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026

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New Delhi-110

A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litre /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
16	Residential Plot-16	21.00	7.00	388.08	As per sanction plan	13.50	172.50	2329	1514	815	2026
17	Residential Plot-17	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
18	Residential Plot-18	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
19	Residential Plot-19	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026

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A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @30 LPCD (65%)	Flushing @ 15LPCD (35%)	To STP 100 % of Flushing & 80 % of Domestic
20	Residential Plot-20	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
21	Residential Plot-21	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
22	Residential Plot-22	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
23	Residential Plot-23	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
24	Residential Plot-24	21.00	7.00	388.08		13.50	172.50	2329	1514	815	2026
25	Residential Plot-25	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
26	Residential Plot-26	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
27	Residential Plot-27	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
28	Residential Plot-28	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
29	Residential Plot-29	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
30	Residential Plot-30	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
31	Residential Plot-31	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
32	Residential Plot-32	14.20	7.00	262.38		13.50	172.50	2329	1514	815	2026
33	Commercial Space			306.53	3.00	102.18	8.00	2452	1594	858	2133
34	Staff for commercial @10% of visitors Community			767.54	3.00	10.22	45.00	460	1125	900	1800
	TOTAL			12487		800		82175	52817	30923	73177
1	2	3	4	5	6	7	8	9	10	11	14
C	COMMERCIAL PLOTS	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) as per NBC	TOTAL OCCUPANCY	Water Demand (LPCD) 32KL/Acre/Day or 8lt/ sqmt.	Total Water Demand (Litres /Day)	Domestic @35%	Flushing @ 65%	To STP 100 % of Flushing & 80 % of Domestic
1	Commercial PLOT-1	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
2	Commercial PLOT-2	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
3	Commercial PLOT-3	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
4	Commercial PLOT-4	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
5	Commercial PLOT-5	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
6	Commercial PLOT-6	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
7	Commercial PLOT-7	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
8	Commercial PLOT-8	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095

RATAN PAL SINGH
ARCHITECT
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55, Nehru Place,
New Delhi-110

A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
9	Commercial PLOT-9	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
10	Commercial PLOT-10	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
11	Commercial PLOT-11	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
12	Commercial PLOT-12	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095

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A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
13	Commercial PLOT-13	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
14	Commercial PLOT-14	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
15	Commercial PLOT-15	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
16	Commercial PLOT-16	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
17	Commercial PLOT-17	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
18	Commercial PLOT-18	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
19	Commercial PLOT-19	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
20	Commercial PLOT-20	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
21	Commercial PLOT-21	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
22	Commercial PLOT-22	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
23	Commercial PLOT-23	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
24	Commercial PLOT-24	16.36	6.00	147.24	3.00	49	8.00	1178	412	766	1095
	Total					1178					
	Staff for commercial @10% of visitors					118	45.00	5301	1125	900	1800
	TOTAL			3534		1296		33571	11020	19276	28091
1	2	3	4	5	6	7	8	9	10	11	14
D	MISC.	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person)	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @35 % (Litres /Day)	Flushing @ 65% (Litres / Day)	To STP 100 % of Flushing & 80 % of Domestic
D.1	Operators Staff Visitor @ 10 % of Total population of industrial & residential plots					50	45	2250	788	1463	2093
D.2						776	15	11638	4073	7565	10824
D.3	Green Irrigation @ 4 Liter /Sq. M/day (For 1301.16 Sq. M)			1301.16			4	5204.64	-	5205	5205
D.4	Cleaning & Washing @ 5000 Liter Lumpsum							5000	5000		4000
D.5	Back wash Lier Per Day							For ROF Housing and 100% structure 10445	10445		8332

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ARCHITECT
CA/2011/51128

Authorised Signatory

Building
55, Nehru Place,
New Delhi-110028

A	INDUSTRIAL PLOT	Length	Width	Area in Sq. M	Occupant Load (Sq.M per person) As per NBC 2016	TOTAL OCCUPANCY	Water Demand (LPCD)	Total Water Demand (Litres /Day)	Domestic @30 LPD (65%)	Flushing @ 15LPD (35%)	To STP 100 % of Flushing & 80 % of Domestic
E	Road			36077.00			1.23 Lt / sqmt.	44375	20276	44375	44375
	TOTAL							78883		58607	74828
	GRAND TOTAL					10249		524339	303920	218709	461845
	STP output @85% utilization factor										392568
	Proposed STP capacity @ 20% higher										554214
											550 KLD
F	FIRE TANK			Total Population							107
	Total Fire water demand considered			10249							

2 X 55KLD TANKS



For ROF Housing and Infrastructure Pvt. Ltd.

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PROJECT:-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA) FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.

Project Report / Estimate For Providing Internal Services E.G. Water Supply, Sewerage & Strom Water Drainage Etc. In respect of Project Report / Estimate For Providing Internal Services E.G. Water Supply, Sewerage & Strom Water Drainage Etc. In Respect Of INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA) FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.

1	TUBEWELL REQUIREMENT				
a)	Total Fresh Water Demand			303.92	KL
b)	Tube wells				
	Yield			22	KL / Hr.
	Working hours per day			8	hrs.
	No. of tube wells required			1.73	
	Say			2	Nos.
2					
a)	Pumping machinery for Tube Wells				
b)	Gross working head			70	Mtr.
c)	Average fall in S.L.			5	Mtr.
d)	Depression Head			5	Mtr.
e)	Friction loass in main			10	Mtr.
f)	Total			90	Mtr.
	Discharge			22000	LPH
	Horse Power			12.22	HP
	$(HP=(22000 \times 90) / 60 \times 60 \times 75 \times 0.6)$				
	Say			12.5	HP
3	Underground and overhead Tank				
3.1	Total Domestic water demand daily			303.92	m3/day
i	Proposed underground tank for domestic use (2/3 day storage)			210.00	m3/day
ii	Proposed overhead tank for domestic use (1/3 day storage)			100.00	m3/day
3.2	Total Fire water demand considered Through $100/(P)^{0.5}$ (Where P is population)	10249		106.67	m3
	Say			110.00	m3
3.3	Total Flushing water demand			461.84	m3/day
iv	Proposed underground tank for flushing use (2/3 day storage)			310.00	m3/day
v	Proposed overhead tank for flushing use (1/3 day storage)			160.00	m3/day

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Building
55, Nehru Place,
New Delhi-19

4	HUDA Main Water supply calculation				
a)	Required fresh water per day			303.92	m3/day
b)	Supply Duration			8	Hrs.
c)	Line flow rate			633.166	Liters / min
d)	Proposed line dia			150	mm
e)	Flow velocity			1.00	m/sec
f)	Length of line			300	Mtr.
g)	Friction head loss			1.14	Mtr.
5	Pumps For Domestic water Supply				
	Domestic water requirement per day			303.92	m3/day
	Pumping Duration per day			8	hrs.
	Depth of Pump Room			7	Mtr.
	Clear head required			20	Mtr.
	Residual Pressure			5	Mtr.
	Friction head loss			10.74	Mtr.
	Total head			42.74	Mtr.
		Say		45.00	Mtr.
	Discharge of pump			633.17	LPM
		No. of Working Pumps		2.00	Nos.
		Say		320.00	LPM
	Power Required			5	HP
	Say			5.00	HP
	It is proposed to provide domestic water transfer pumps (2W+1S) of capacity 320 LPM at 45.0 mtr. Head of 5.0 HP.				
7	Pumps For Flushing water Supply				
	Flushing water requirement per day			461.84	m3/day
	Pumping Duration per day			8	hrs.
	Depth of Pump Room			8	Mtr.
	Clear head required			20	Mtr.
	Residual Pressure			5	Mtr.
	Friction head loss			13.42	Mtr.
	Total head			46.42	Mtr.
		Say		47.00	Mtr.
	Discharge of pump			962.18	LPM
		No. of Working Pumps		3.00	Nos.
		Say		330.00	LPM
	Power Required			5.74	HP
	Say			7.50	HP
	It is proposed to provide domestic water transfer pumps (3W+1S) of capacity 330 LPM at 47.0 mtr. Head of 7.50 HP.				

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MATERIAL STATEMENT (Water Supply)

Node		Dia in MM	Length	Length in Mtr.						
From	To		Mtr	32 mm	40 mm	50 mm	65 mm	80 mm	100 mm	150 mm
Domestic Water										
HUDA LINE	PR	150	300	0	0	0	0	0	0	300
PR	W1	150	10	0	0	0	0	0	0	10
W1	W2	100	165	0	0	0	0	0	165	0
W2	W3	100	260	0	0	0	0	0	260	0
W3	W4	100	75	0	0	0	0	0	75	0
W4	W5	100	277	0	0	0	0	0	277	0
W5	W6	50	105	0	0	105	0	0	0	0
W3	W7	50	120	0	0	120	0	0	0	0
W1	W8	100	175	0	0	0	0	0	175	0
W8	W9	100	105	0	0	0	0	0	105	0
W9	W10	100	115	0	0	0	0	0	115	0
W10	W11	50	105	0	0	105	0	0	0	0
W11	W6	50	140	0	0	140	0	0	0	0
W5	W10	100	178	0	0	0	0	0	178	0
W15	W13	40	90	0	90	0	0	0	0	0
W14	W13	40	40	0	40	0	0	0	0	0
W13	W12	50	90	0	0	90	0	0	0	0
W16	W12	40	90	0	90	0	0	0	0	0
W12	W8	50	22	0	0	22	0	0	0	0
Total				0	220	582	0	0	1350	310
Total Say				0	220	582	0	0	1350	310

Node		Dia in MM	Length	Length in Mtr.						
From	To		Mtr	32 mm	40 mm	50 mm	65 mm	80 mm	100 mm	125 mm
FLUSHING WTAER										
STP	F1	125	10	0	0	0	0	0	0	10
F1	F2	100	270	0	0	0	0	0	270	0
F2	F3	80	83	0	0	0	0	83	0	0
F3	F4	80	277	0	0	0	0	277	0	0
F4	F5	50	105	0	0	105	0	0	0	0
F2	F6	50	120	0	0	120	0	0	0	0

For ROF Housing and Infrastructure Pvt. Ltd.

606 Madhuban Building

For RCF Housing and Infrastructure Pvt. Ltd.

80C, Madhuban Building
55, Nehru Place,
New Delhi-10

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F1	F7	100	60	0	0	0	0	0	60	0
F7	F8	100	270	0	0	0	0	0	270	0
F8	F9	80	106	0	0	0	0	106	0	0
F9	F10	80	115	0	0	0	0	115	0	0
F10	F11	40	135	0	135	0	0	0	0	0
F11	F5	40	140	0	140	0	0	0	0	0
F4	F10	80	170	0	0	0	0	170	0	0
F3	F10	80	90	0	0	0	0	90	0	0
F15	F13	40	90	0	90	0	0	0	0	0
F14	F13	40	42	0	42	0	0	0	0	0
F13	F12	50	95	0	0	95	0	0	0	0
F16	F12	40	90	0	90	0	0	0	0	0
F12	F8	50	22	0	0	22	0	0	0	0
Total				0	497	342	0	841	600	10
Total Say				0	497	342	0	841	600	10
Bore Well Line										
B1	B2	80	370	0	0	0	0	370	0	0
B-2	B-4 (PUMP RM.)	80	280	0	0	0	0	280	0	0
B-3	B-4 (PUMP RM.)	80	40	0	0	0	0	40	0	0
Total				0	0	0	0	690	0	0
Total Say				0	0	0	0	690	0	0

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**PROJECT-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA) FALLING IN
REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.**

DOMESTIC WATER SUPPLY DESIGN STATEMENT MASTER SCHEME - DOMESTIC LINE

Sr. No.	DESCRIPTION	SELF	BRANCH	TOTAL	PEAK	DIA	PIPE LENGTH			VELOCITY	HEAD LOSS		PUMPING HEAD	
		DOMESTIC WATER DEMAND LTR/DAY	DOMESTIC WATER DEMAND LTR/DAY	DOMESTIC WATER DEMAND IN LTR/DAY	DISCHARGE @8 HRS. IN LPM	IN mm	IN meter	Equivalent Pipe & Fittings 15%	TOTAL LENGTH	IN m/sec.	(IN m)	TERMINAL HEAD	TOTAL PUMPING HEAD (SAV)	
DOMESTIC WATER SUPPLY LINE														
1	HUDA LINE TO (W) to Plant Room	535000.000	0	535000.000	1114.583	150.00	300	45	345	1.05	3.26			
2	PR to W-1	535000.000	20000	515000.000	1072.917	150.00	10	1.5	12	1.01	0.11			
3	W-1 to W-2	515000.000	259000	256000.000	533.333	100.00	165	24.75	190	1.13	3.30			
4	W-2 to W-3	256000.000	32000	224000.000	466.667	100.00	260	39	299	0.99	4.06			
5	W-3 to W-4	224000.000	90000	134000.000	279.167	100.00	75	11.25	87	0.59	0.46			
6	W-4 to W-5	134000.000	37000	97000.000	202.083	100.00	277	41.55	319	0.43	0.92			
7	W-5 to W-6	97000.000	58000	39000.000	81.250	50.00	105	15.75	121	0.69	1.89	32.00	45.00	
8	W-3 to W-7	38000.000	0	38000.000	79.167	50.00	120	18	138	0.67	2.06			
9	W-1 to W-8	259000.000	0	259000.000	539.583	100.00	175	26.25	202	1.15	3.59			
10	W-8 to W-9	259000.000	37000	222000.000	462.500	100.00	105	15.75	121	0.98	1.62			
11	W-9 to W-10	222000.000	90000	132000.000	275.000	100.00	115	17.25	133	0.58	0.68			
12	W-10 to W-11	132000.000	89000	43000.000	89.583	50.00	105	15.75	121	0.76	2.27			
13	W-11 to W-6	43000.000	0	43000.000	89.583	50.00	140	21	161	0.76	3.02			
14	W-5 to W-10	100000.000	0	100000.000	208.333	100.00	178	26.7	205	0.44	0.63			
15	W-4 to W-10	115000.000	0	115000.000	239.583	100.00	95	14.25	110	0.51	0.44			
16	W-15 to W-13	15000.000	0	15000.000	31.250	40.00	90	13.5	104	0.41	0.82			
17	W-14 to W-13	18000.000	0	18000.000	37.500	40.00	40	6	46	0.50	0.51			
18	W-13 to W-12	48000.000	0	48000.000	100.000	50.00	90	13.5	104	0.85	2.39			
19	W-16 to W-12	11000.000	0	11000.000	22.917	40.00	90	13.5	104	0.30	0.46			
20	W-12 to W-8	64000.000	0	64000.000	133.333	50.00	22	3.3	26	1.13	1.02			

For ROF Housing and Infrastructure Pvt. Ltd.

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**PROJECT:PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA) FALLING IN
REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.**

FLUSHING WATER SUPPLY DESIGN STATEMENT MASTER SCHEME - FLUSHING LINE

Sr. No.	NODE No.	SELF	BRANCH	TOTAL	PEAK	DIA	PIPE LENGTH			VELOCITY	HEAD LOSS	PUMPING HEAD	
		FLUSHING WATER DEMAND LTR/DAY	FLUSHING WATER DEMAND LTR/DAY	FLUSHING WATER DEMAND IN LTR/DAY	DISCHARGE @8 HRS. IN LPM	IN mm	IN meter	Equivalent Pipe & Fittings 15%	Total Pipe Length	IN m/sec.	IN m (Hazen Williams Formula)	TERMINAL HEAD	TOTAL PUMPING HEAD (SAV)
FLUSHING WATER SUPPLY LINE													
1	STP (F) to F-1	501000.00		501000.00	1043.750	125.00	10	1.5	12	1.42	0.2		
2	F-1 to F-2	501000.00	253000.00	248000.00	516.667	100.00	270	40.5	311	1.10	5.10		
3	F-2 to F-3	248000.00	78000.00	170000.00	354.167	80.00	72	10.80	83	1.17	2.01		
4	F-3 to F-4	170000.00	32000.00	138000.00	287.500	80.00	277	41.55	319	0.95	5.24		
5	F-4 to F-5	138000.00	113000.00	25000.00	52.083	50.00	105	15.75	121	0.44	0.83	33.00	47.00
6	F-3 to F-6	33000.00	0.00	33000.00	68.750	50.00	120	18.00	138	0.58	1.59		
7	F-1 to F-7	253000.00	0.00	253000.00	527.083	100.00	60	9.00	69	1.12	1.17		
8	F-7 to F-8	253000.00	0.00	253000.00	527.083	100.00	270	40.50	311	1.12	5.29		
9	F-8 to F-9	253000.00	65000.00	188000.00	391.667	80.00	106	15.90	122	1.30	3.55		
10	F-9 to F-10	188000.00	86000.00	102000.00	212.500	80.00	115	17.25	133	0.70	1.25		
11	F-10 to F-11	102000.00	69000.00	33000.00	68.750	40.00	135	20.25	156	0.91	5.31		
12	F-11 to F-5	33000.00	0.00	33000.00	68.750	40.00	140	21.00	161	0.91	5.48		
13	F-4 to F-10	58000.00	0.00	58000.00	120.833	80.00	170	25.50	196	0.40	0.65		
14	F-3 to F-10	138000.00	0.00	138000.00	287.500	80.00	90	13.50	104	0.95	1.71		
15	F-15 to F-13	8000.00	0.00	8000.00	16.667	40.00	90	13.50	104	0.22	0.26		
16	F-14 to F-13	10000.00	0.00	10000.00	20.833	40.00	42	6.30	49	0.28	0.18		
17	F-13 to F-12	28000.00	0.00	28000.00	58.333	50.00	95	14.25	110	0.50	0.93		
18	F-16 to F-12	19000.00	0.00	19000.00	39.583	40.00	90	13.50	104	0.50	0.93		
19	F-12 to F-8	50000.00	0.00	50000.00	104.167	50.00	90	13.50	104	0.88	0.64		

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ARCHITECT
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Building
New Delhi-10

PROJECT-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA) FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.

Total Water Supply (Av) as per Detail for Daily Water Consumption
Formula used for Velocity adopted - Mannings Equation
 $V = \frac{1}{(D/4)^{2/3}} (S)^{1/2}$
n

SEWERAGE CALCULATION SHEET

Value of n adopted for DWG Pipes = 0.011

Sr. No.	Node No.	Length (Meter)	Water Requirement (100% of Flushing & 80% of Domestic in KLD)	Total Sewage Generated Per day (Continued in KLD)			Peak = Av x 3 in KLD	Flow per second for area (LPS)	Pipe Dia / Size of SW Pipes	Gradient Slope (S)	Fall in m	Velocity created in (V) m/s	Capacity of Pipe with 1/2 full pipe (LPS)	Check for Carrying Capacity	Ground Level (m)	Invert at Start in meters	Invert at End in meters	Depth of M.H.	Size of M.H.
				Self	Previous	Total													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	M.H. 1 to M.H. 2	25.000	1.909	1.909	-	1.909	5.73	0.066	250	200	0.125	1.01	24.835	OK	99.000	98.000	97.875	1.125	900 DIA
2	M.H. 2 to M.H. 3	32.000	3.818	3.818	1.909	5.727	17.18	0.199	250	200	0.160	1.01	24.835	OK	99.000	97.875	97.715	1.285	900 DIA
3	M.H. 3 to M.H. 4	30.000	8.877	8.877	5.727	14.604	43.81	0.507	250	200	0.150	1.01	24.835	OK	99.000	97.715	97.565	1.435	900 DIA
4	M.H. 4 to M.H. 5	40.000	6.968	6.968	14.604	21.572	64.72	0.749	250	200	0.200	1.01	24.835	OK	99.000	97.565	97.365	1.635	900 DIA
5	M.H. 5 to M.H. 6	17.000	6.968	6.968	21.572	28.540	85.62	0.991	250	200	0.085	1.01	24.835	OK	99.000	97.365	97.280	1.720	1200 DIA
6	M.H. 6 to M.H. 7	30.000	0	0.000	28.540	28.540	85.62	0.991	250	200	0.150	1.01	24.835	OK	99.000	97.280	97.130	1.870	1200 DIA
7	M.H. 7 to M.H. 8	23.000	3.586	3.586	28.540	32.126	96.38	1.115	250	200	0.115	1.01	24.835	OK	99.000	97.130	97.015	1.985	1200 DIA
8	M.H. 8 to M.H. 9	3.586	3.586	3.586	32.126	35.712	107.14	1.240	250	200	0.110	1.01	24.835	OK	99.000	97.015	96.905	2.095	1200 DIA
9	M.H. 9 to M.H. 10	19.000	3.586	3.586	35.712	39.298	117.89	1.365	250	200	0.095	1.01	24.835	OK	99.000	96.905	96.810	2.190	1200 DIA
10	M.H. 10 to M.H. 11	11.000	1.793	1.793	39.298	41.091	123.27	1.427	250	200	0.055	1.01	24.835	OK	99.000	96.810	96.755	2.245	1200 DIA
11	M.H. 11 to M.H. 12	10.000	0	0.000	41.091	41.091	123.27	1.427	250	200	0.050	1.01	24.835	OK	99.000	96.755	96.705	2.045	1200 DIA
12	M.H. 12 to M.H. 13	28.000	10.621	10.621	41.091	51.712	155.14	1.796	250	200	0.140	1.01	24.835	OK	99.000	96.705	96.565	2.185	1200 DIA
13	M.H. 13 to M.H. 14	22.000	7.137	7.137	51.712	58.849	178.45	2.043	250	200	0.110	1.01	24.835	OK	99.000	96.565	96.455	2.295	1200 DIA
14	M.H. 14 to M.H. 15	40.000	10.621	10.621	58.849	69.470	208.41	2.412	250	200	0.200	1.01	24.835	OK	99.000	96.455	96.235	2.495	1500 DIA
15	M.H. 15 to M.H. 16	36.000	10.621	10.621	69.470	80.091	240.27	2.781	250	200	0.155	1.01	24.835	OK	99.000	96.235	96.100	2.650	1500 DIA
16	M.H. 16 to M.H. 17	36.000	3.652	3.652	80.091	83.743	251.23	2.908	250	200	0.180	1.01	24.835	OK	99.000	96.100	95.920	2.830	1500 DIA
17	M.H. 17 to M.H. 18	25.000	7.344	7.344	83.743	88.087	262.03	3.235	250	200	0.125	1.01	24.835	OK	99.000	95.920	95.750	1.125	900 DIA
18	M.H. 18 to M.H. 19	44.000	9.17	9.170	88.087	97.257	312.80	3.736	250	200	0.200	1.01	24.835	OK	99.000	95.750	95.540	1.475	1500 DIA
19	M.H. 19 to M.H. 20	26.000	0	0.000	97.257	97.257	312.80	3.736	250	200	0.200	1.01	24.835	OK	99.000	95.540	95.300	3.030	1500 DIA
20	M.H. 20 to M.H. 21	40.000	6.633	6.633	107.601	114.234	342.70	3.966	250	200	0.075	1.01	24.835	OK	99.000	95.300	95.150	3.135	1500 DIA
21	M.H. 21 to M.H. 22	15.000	0	0.000	114.234	120.867	362.60	4.197	250	200	0.075	1.01	24.835	OK	99.000	95.150	95.000	3.285	1500 DIA
22	M.H. 22 to M.H. 23	15.000	6.633	6.633	120.867	127.500	379.10	4.428	250	200	0.150	1.01	24.835	OK	99.000	95.000	94.850	1.150	900 DIA
23	M.H. 23 to M.H. 24	30.000	3.251	3.251	127.500	130.751	392.85	4.659	250	200	0.060	1.01	24.835	OK	99.000	94.850	94.700	1.310	900 DIA
24	M.H. 24 to M.H. 25	30.000	0	0.000	130.751	130.751	392.85	4.659	250	200	0.160	1.01	24.835	OK	99.000	94.700	94.550	1.465	900 DIA
25	M.H. 25 to M.H. 26	12.000	3.652	3.652	130.751	134.403	406.46	4.890	250	200	0.130	1.01	24.835	OK	99.000	94.550	94.400	1.620	900 DIA
26	M.H. 26 to M.H. 27	30.000	7.304	7.304	134.403	141.707	420.21	5.121	250	200	0.150	1.01	24.835	OK	99.000	94.400	94.250	1.775	1200 DIA
27	M.H. 27 to M.H. 28	30.000	7.304	7.304	141.707	149.011	433.96	5.352	250	200	0.135	1.01	24.835	OK	99.000	94.250	94.100	1.930	1200 DIA
28	M.H. 28 to M.H. 29	30.000	7.304	7.304	149.011	156.315	447.71	5.583	250	200	0.135	1.01	24.835	OK	99.000	94.100	93.950	2.085	1200 DIA
29	M.H. 29 to M.H. 30	30.000	7.304	7.304	156.315	163.619	461.46	5.814	250	200	0.135	1.01	24.835	OK	99.000	93.950	93.800	2.240	1200 DIA
30	M.H. 30 to M.H. 31	31.000	7.304	7.304	163.619	170.923	475.21	6.045	250	200	0.135	1.01	24.835	OK	99.000	93.800	93.650	2.395	1200 DIA
31	M.H. 31 to M.H. 32	37.000	7.304	7.304	170.923	178.227	488.96	6.276	250	200	0.165	1.01	24.835	OK	99.000	93.650	93.500	2.550	1500 DIA
32	M.H. 32 to M.H. 33	33.000	1.826	1.826	178.227	180.053	490.79	6.507	250	200	0.210	1.01	24.835	OK	99.000	93.500	93.350	3.910	1500 DIA
33	M.H. 33 to M.H. 34	42.000	6.633	6.633	180.053	186.686	504.54	6.738	250	200	0.150	1.01	24.835	OK	99.000	93.350	93.200	1.150	900 DIA
34	M.H. 34 to M.H. 35	30.000	5.410	5.410	186.686	192.096	517.95	6.969	250	200	0.160	1.01	24.835	OK	99.000	93.200	93.050	1.310	900 DIA
35	M.H. 35 to M.H. 36	32.000	7.214	7.214	192.096	199.310	531.76	7.200	250	200	0.145	1.01	24.835	OK	99.000	93.050	92.900	1.465	900 DIA
36	M.H. 36 to M.H. 37	29.000	7.214	7.214	199.310	206.524	545.57	7.431	250	200	0.175	1.01	24.835	OK	99.000	92.900	92.750	1.620	900 DIA
37	M.H. 37 to M.H. 38	35.000	6.633	6.633	206.524	213.157	559.38	7.662	250	200	0.095	1.01	24.835	OK	99.000	92.750	92.600	4.005	1500 DIA
38	M.H. 38 to M.H. 39	19.000	6.633	6.633	213.157	220.790	573.19	7.893	250	200	0.205	1.01	24.835	OK	99.000	92.600	92.450	4.160	1500 DIA
39	M.H. 39 to M.H. 40	43.000	6.633	6.633	220.790	227.423	587.00	8.124	250	200	0.215	1.01	24.835	OK	99.000	92.450	92.300	4.315	1500 DIA
40	M.H. 40 to M.H. 41	41.000	6.633	6.633	227.423	234.056	600.81	8.355	250	200	0.215	1.01	24.835	OK	99.000	92.300	92.150	4.470	1500 DIA
41	M.H. 41 to M.H. 42	43.000	6.633	6.633	234.056	240.689	614.62	8.586	250	200	0.215	1.01	24.835	OK	99.000	92.150	92.000	4.625	1500 DIA
42	M.H. 42 to M.H. 43	38.000	6.633	6.633	240.689	247.322	628.43	8.817	250	200	0.190	1.01	24.835	OK	99.000	92.000	91.850	4.780	1500 DIA
43	M.H. 43 to M.H. 44	25.000	6.633	6.633	247.322	253.955	642.24	9.048	250	200	0.125	1.01	24.835	OK	99.000	91.850	91.700	4.935	1500 DIA
44	M.H. 44 to M.H. 45	25.000	6.633	6.633	253.955	260.588	656.05	9.279	250	200	0.125	1.01	24.835	OK	99.000	91.700	91.550	5.090	1500 DIA

RATTAN PAL SINGH
ARCHITECT
CA/2011/51128

Authorised Signatory

For R.O. House and Infrastructure

Sr. No.	Node No.	Length (Meter)	Water Requirement (100% of Flushing & 80% of Domestic in KLD)	Total Sewage Generated Per day (Combined in KLD)			Peak = Av x 3 in KLD	Flow per second for area (LPS)	Pipe Dia / Size of SW Pipes	Gradient Slope (S)	Fall in m	Velocity created in (V) m/s	Capacity of Pipe with 1/2 fall pipe (LPS)	Check for Carrying Capacity	Ground Level (m)	Invert at Start in meters	Invert at End in meters	Depth of M.H.	Size of M.H.
				Self	Previous	Total													
1																			
45	M.H. 44 to M.H. 45	25.000	0	0.000	228.623	228.623	685.87	7.938	250	200	0.125	1.01	24.835	OK	99.000	94.045	93.970	5.080	1500 DIA
46	M.H. 45 to M.H. 46	25.000	0	0.000	228.623	228.623	685.87	7.938	250	200	0.125	1.01	24.835	OK	99.000	93.970	93.795	5.205	1500 DIA
47	M.H. 46 to M.H. 47	37.000	1.803	1.803	1.803	5.41	0.063	0.063	250	200	0.185	1.01	24.835	OK	99.000	98.000	97.815	1.185	900 DIA
48	M.H. 47 to M.H. 48	30.000	3.606	3.606	5.409	16.23	0.188	0.188	250	200	0.150	1.01	24.835	OK	99.000	97.665	97.665	1.335	900 DIA
49	M.H. 48 to M.H. 49	17.000	0	0.000	5.409	16.23	0.188	0.188	250	200	0.085	1.01	24.835	OK	98.700	97.665	97.580	1.220	900 DIA
50	M.H. 49 to M.H. 50	12.000	2.19	2.190	2.190	6.57	0.076	0.076	250	200	0.060	1.01	24.835	OK	98.700	97.700	97.640	1.060	900 DIA
51	M.H. 50 to M.H. 51	12.000	2.19	2.190	2.190	6.57	0.076	0.076	250	200	0.060	1.01	24.835	OK	98.700	97.640	97.580	1.120	900 DIA
52	M.H. 51 to M.H. 52	12.000	1.095	1.095	4.380	16.43	0.132	0.132	250	200	0.060	1.01	24.835	OK	98.700	97.580	97.520	1.180	900 DIA
53	M.H. 52 to M.H. 53	12.000	2.19	2.190	5.475	23.00	0.266	0.266	250	200	0.060	1.01	24.835	OK	98.700	97.520	97.460	1.240	900 DIA
54	M.H. 53 to M.H. 54	12.000	2.19	2.190	7.665	29.57	0.342	0.342	250	200	0.060	1.01	24.835	OK	98.700	97.460	97.400	1.300	900 DIA
55	M.H. 54 to M.H. 55	22.000	1.095	1.095	9.855	32.85	0.380	0.380	250	200	0.110	1.01	24.835	OK	98.700	97.400	97.290	1.410	900 DIA
56	M.H. 55 to M.H. 56	14.000	4.052	4.052	4.052	12.16	0.141	0.141	250	200	0.070	1.01	24.835	OK	98.800	97.800	97.730	1.070	900 DIA
57	M.H. 56 to M.H. 57	8.000	4.052	4.052	8.104	24.31	0.281	0.281	250	200	0.040	1.01	24.835	OK	98.800	97.730	97.690	1.110	900 DIA
58	M.H. 57 to M.H. 58	14.000	8.104	8.104	16.208	48.62	0.563	0.563	250	200	0.070	1.01	24.835	OK	98.800	97.690	97.730	1.070	900 DIA
59	M.H. 58 to M.H. 59	14.000	8.104	8.104	16.208	72.94	0.844	0.844	250	200	0.070	1.01	24.835	OK	98.800	97.730	97.660	1.140	900 DIA
60	M.H. 59 to M.H. 60	9.000	8.104	8.104	8.104	24.31	0.281	0.281	250	200	0.043	1.01	24.835	OK	98.800	97.660	97.615	1.185	900 DIA
61	M.H. 60 to M.H. 61	14.000	2.026	2.026	32.416	103.33	1.196	1.196	250	200	0.070	1.01	24.835	OK	98.800	97.615	97.545	1.255	900 DIA
62	M.H. 61 to M.H. 62	12.000	4.052	4.052	34.442	115.48	1.337	1.337	250	200	0.060	1.01	24.835	OK	98.800	97.545	97.485	1.315	900 DIA
63	M.H. 62 to M.H. 63	16.000	2.062	2.062	38.494	121.67	1.408	1.408	250	200	0.080	1.01	24.835	OK	98.800	97.485	97.405	1.395	900 DIA
64	M.H. 63 to M.H. 64	24.000	4.052	4.052	40.556	133.82	1.549	1.549	250	200	0.120	1.01	24.835	OK	98.800	97.405	97.285	1.515	900 DIA
65	M.H. 64 to M.H. 65	21.000	4.052	4.052	55.558	178.83	2.070	2.070	250	200	0.105	1.01	24.835	OK	98.700	97.290	97.185	1.515	900 DIA
66	M.H. 65 to M.H. 66	12.000	2.190	2.190	2.190	6.57	0.076	0.076	250	200	0.060	1.01	24.835	OK	98.700	97.185	97.185	1.515	900 DIA
67	M.H. 66 to M.H. 67	12.000	2.190	2.190	2.190	6.57	0.076	0.076	250	200	0.060	1.01	24.835	OK	98.700	97.185	97.185	1.515	900 DIA
68	M.H. 67 to M.H. 68	12.000	2.190	2.190	2.190	6.57	0.076	0.076	250	200	0.060	1.01	24.835	OK	98.700	97.185	97.185	1.515	900 DIA
69	M.H. 68 to M.H. 69	12.000	2.190	2.190	6.570	26.28	0.304	0.304	250	200	0.060	1.01	24.835	OK	98.700	97.530	97.520	1.180	900 DIA
70	M.H. 69 to M.H. 70	12.000	2.190	2.190	8.760	32.85	0.380	0.380	250	200	0.060	1.01	24.835	OK	98.700	97.460	97.460	1.240	900 DIA
71	M.H. 70 to M.H. 71	12.000	2.190	2.190	10.950	39.42	0.456	0.456	250	200	0.060	1.01	24.835	OK	98.700	97.400	97.340	1.300	900 DIA
72	M.H. 71 to M.H. 72	10.000	2.190	2.190	13.140	45.99	0.532	0.532	250	200	0.060	1.01	24.835	OK	98.700	97.340	97.290	1.360	900 DIA
73	M.H. 72 to M.H. 73	23.000	4.052	4.052	74.940	216.98	2.743	2.743	250	200	0.115	1.01	24.835	OK	99.000	97.185	97.070	1.930	1200 DIA
74	M.H. 73 to M.H. 74	38.000	6.633	6.633	78.992	256.88	2.973	2.973	250	200	0.190	1.01	24.835	OK	99.000	97.070	96.880	2.120	1200 DIA
75	M.H. 74 to M.H. 75	42.000	6.633	6.633	85.625	276.77	3.203	3.203	250	200	0.210	1.01	24.835	OK	99.000	96.880	96.670	2.330	1500 DIA
76	M.H. 75 to M.H. 76	39.000	6.633	6.633	92.258	276.77	3.203	3.203	250	200	0.195	1.01	24.835	OK	99.000	96.670	96.475	2.535	900 DIA
77	M.H. 76 to M.H. 77	9.000	0	0.000	6.633	19.90	0.230	0.230	250	200	0.045	1.01	24.835	OK	98.800	97.755	97.755	1.045	900 DIA
78	M.H. 77 to M.H. 78	14.000	2.062	2.062	8.695	32.27	0.302	0.302	250	200	0.070	1.01	24.835	OK	98.800	97.755	97.685	1.115	900 DIA
79	M.H. 78 to M.H. 79	14.000	2.062	2.062	10.757	38.46	0.445	0.445	250	200	0.070	1.01	24.835	OK	98.800	97.685	97.615	1.185	900 DIA
80	M.H. 79 to M.H. 80	8.000	2.062	2.062	12.819	45.99	0.532	0.532	250	200	0.070	1.01	24.835	OK	99.000	97.615	97.545	1.255	900 DIA
81	M.H. 80 to M.H. 81	41.000	6.633	6.633	105.077	335.13	3.879	3.879	250	200	0.205	1.01	24.835	OK	99.000	96.475	96.270	2.730	1500 DIA
82	M.H. 81 to M.H. 82	40.000	6.633	6.633	111.710	355.03	4.109	4.109	250	200	0.200	1.01	24.835	OK	99.000	96.270	96.070	2.930	1500 DIA
83	M.H. 82 to M.H. 83	42.000	6.633	6.633	118.343	374.93	4.339	4.339	250	200	0.210	1.01	24.835	OK	99.000	96.070	95.870	3.140	1500 DIA
84	M.H. 83 to M.H. 84	27.000	6.633	6.633	124.976	394.83	4.570	4.570	250	200	0.135	1.01	24.835	OK	99.000	95.870	95.725	3.275	1500 DIA
85	M.H. 84 to M.H. 85	32.000	0	0.000	131.609	394.83	4.570	4.570	250	200	0.160	1.01	24.835	OK	99.000	95.725	95.565	3.435	1500 DIA
86	M.H. 85 to M.H. 86	30.000	0	0.000	131.609	394.83	4.570	4.570	250	200	0.150	1.01	24.835	OK	99.000	95.565	95.415	3.585	1500 DIA
87	M.H. 86 to M.H. 87	10.000	0	0.000	360.232	1080.69	12.000	12.000	250	200	0.050	1.01	24.835	OK	99.000	95.415	95.365	3.635	1500 DIA
Total 250 mm dia Pipe		2098.000																	
160 mm dia STP Overflow to HUDA Sewage Line		30.000																	

Water

RATAN PAL SINGH
ARCHITECT
CA/2011/51128

For ROF Housing and Infrastructure Pvt. Ltd.

Authorised Signatory



PROJECT-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA) FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONPAT, HARYANA

[illegible]

Sl.No	Node No.	Total Area (m ²)	Total Area (Hectare)	Total Self Flow (Q-100) (m ³ /hr)	Contribution from other Area (m ³ /hr)	Total Flow in Line (m ³ /hr)	Absorption in R.W.H. (m ³ /hr)	Balance Flow after Absorption (m ³ /hr)	Balance Flow in Line (LPS)	Water Pipe Dia.	Velocity (m/sec)	Capacity of Pipe (LPS)	Check for Capacity	Coefficient (Shape)	Pipe Length (m)	Full Meter	Ground Level	Invert at Start (m)	Invert at End (m)	Depth of M.H.	Size of M.H.
55	M.H.54 to M.H.55	571	0.058	2.1600	2.160	2.160	0.000	2.160	0.6000	400	0.88	111.262	OK	350	25.000	0.071	99.000	98.320	98.220	0.271	900 mm
56	M.H.55 to M.H.56	0	0.000	0.0000	0.000	0.000	0.000	0.000	0.0000	400	0.88	111.262	OK	350	24.000	0.069	99.000	98.220	98.100	0.840	900 mm
57	M.H.56 to RWH-2 to M.H.57	1934	0.191	7.1775	2.160	9.338	0.000	9.338	1.4826	400	0.88	111.262	OK	350	30.000	0.076	99.000	98.100	98.000	0.916	900 mm
58	M.H.57 to M.H.59	3550	0.355	5.8125	5.338	11.150	0.000	11.150	3.0972	400	0.88	111.262	OK	350	30.000	0.086	99.000	97.999	97.999	0.916	900 mm
59	M.H.59 to RWH-2 to M.H.60	3278	0.328	12.0975	11.150	23.248	0.000	23.248	6.3394	400	0.88	111.262	OK	350	34.000	0.147	99.000	97.848	97.848	1.354	900 mm
60	M.H.60 to RWH-2 to M.H.61	3177	0.318	13.0975	10.218	23.316	0.000	23.316	6.3394	400	0.88	111.262	OK	350	34.000	0.147	99.000	97.848	97.848	1.354	900 mm
61	M.H.61 to RWH-2 to M.H.62	4554	0.455	17.0775	20.164	37.242	0.000	37.242	12.8531	400	0.88	111.262	OK	350	42.000	0.150	99.000	97.579	97.579	1.421	900 mm
62	M.H.62 to RWH-2 to M.H.63	2610	0.261	9.7875	16.278	26.066	0.000	26.066	7.2456	400	0.88	111.262	OK	350	33.000	0.144	99.000	97.434	97.434	1.568	900 mm
63	M.H.63 to RWH-2 to M.H.64	1872	0.187	9.0900	11.153	20.243	0.000	20.243	5.6008	400	0.88	111.262	OK	350	24.000	0.067	99.000	97.194	97.230	2.867	900 mm
64	M.H.64 to RWH-2 to M.H.65	2049	0.205	7.8400	11.153	18.993	0.000	18.993	5.1833	400	0.88	111.262	OK	350	24.000	0.067	99.000	96.194	96.194	2.867	900 mm
65	M.H.65 to RWH-2 to M.H.66	410	0.041	1.5375	1.538	3.075	0.000	3.075	0.8542	400	0.88	111.262	OK	350	4.000	0.061	98.800	97.863	97.863	0.833	900 mm
66	M.H.66 to RWH-2 to M.H.67	410	0.041	1.5375	1.538	3.075	0.000	3.075	0.8542	400	0.88	111.262	OK	350	4.000	0.061	98.800	97.863	97.863	0.833	900 mm
67	M.H.67 to RWH-2 to M.H.68	410	0.041	1.5375	1.538	3.075	0.000	3.075	0.8542	400	0.88	111.262	OK	350	4.000	0.061	98.800	97.863	97.863	0.833	900 mm
68	M.H.68 to RWH-2 to M.H.69	410	0.041	1.5375	1.538	3.075	0.000	3.075	0.8542	400	0.88	111.262	OK	350	4.000	0.061	98.800	97.863	97.863	0.833	900 mm
69	M.H.69 to RWH-2 to M.H.70	410	0.041	1.5375	1.538	3.075	0.000	3.075	0.8542	400	0.88	111.262	OK	350	4.000	0.061	98.800	97.863	97.863	0.833	900 mm
70	M.H.70 to RWH-2 to M.H.71	410	0.041	1.5375	1.538	3.075	0.000	3.075	0.8542	400	0.88	111.262	OK	350	4.000	0.061	98.800	97.863	97.863	0.833	900 mm
71	M.H.71 to RWH-2 to M.H.72	410	0.041	1.5375	1.538	3.075	0.000	3.075	0.8542	400	0.88	111.262	OK	350	4.000	0.061	98.800	97.863	97.863	0.833	900 mm
72	M.H.72 to RWH-2 to M.H.73	1300	0.130	4.8750	205.121	210.000	0.000	210.000	58.225	400	0.88	111.262	OK	350	12.000	0.034	98.600	96.139	96.139	2.076	1500 mm
73	M.H.73 to RWH-2 to M.H.74	0	0.000	0.0000	270.796	270.796	0.000	270.796	74.1501	400	0.88	111.262	OK	350	5.000	0.014	98.400	96.139	96.000	2.740	1500 mm
74	M.H.74 to RWH-2 to M.H.75	0	0.000	0.0000	270.796	270.796	0.000	270.796	74.1501	400	0.88	111.262	OK	350	5.000	0.014	98.400	96.000	96.000	2.740	1500 mm
75	M.H.75 to RWH-2 to M.H.76	0	0.000	0.0000	270.796	270.796	0.000	270.796	74.1501	400	0.88	111.262	OK	350	5.000	0.014	98.400	96.000	96.000	2.740	1500 mm
76	M.H.76 to RWH-2 to M.H.77	762	0.076	2.8575	2.858	5.715	0.000	5.715	1.5975	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
77	M.H.77 to RWH-2 to M.H.78	762	0.076	2.8575	2.858	5.715	0.000	5.715	1.5975	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
78	M.H.78 to RWH-2 to M.H.79	762	0.076	2.8575	2.858	5.715	0.000	5.715	1.5975	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
79	M.H.79 to RWH-2 to M.H.80	762	0.076	2.8575	2.858	5.715	0.000	5.715	1.5975	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
80	M.H.80 to RWH-2 to M.H.81	1114	0.111	4.1775	8.565	12.743	0.000	12.743	3.4386	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
81	M.H.81 to RWH-2 to M.H.82	0	0.000	0.0000	8.743	8.743	0.000	8.743	2.4386	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
82	M.H.82 to RWH-2 to M.H.83	428	0.043	1.6050	2.678	4.283	0.000	4.283	1.1878	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
83	M.H.83 to RWH-2 to M.H.84	714	0.071	2.6775	2.678	5.355	0.000	5.355	1.4817	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
84	M.H.84 to RWH-2 to M.H.85	714	0.071	2.6775	2.678	5.355	0.000	5.355	1.4817	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
85	M.H.85 to RWH-2 to M.H.86	480	0.048	1.6050	2.678	4.283	0.000	4.283	1.1878	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
86	M.H.86 to RWH-2 to M.H.87	800	0.080	2.2500	18.395	20.645	0.000	20.645	5.7340	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
87	M.H.87 to RWH-2 to M.H.88	800	0.080	2.2500	18.395	20.645	0.000	20.645	5.7340	400	0.88	111.262	OK	350	14.000	0.040	98.200	95.800	95.800	0.740	900 mm
88	M.H.88 to RWH-2 to M.H.89	0	0.000	0.0000	18.443	18.443	0.000	18.443	5.1340	400	0.88	111.262	OK	350	13.000	0.029	98.000	95.565	95.565	2.446	1500 mm
89	M.H.89 to RWH-2 to M.H.90	977	0.098	3.6030	205.278	208.881	0.000	208.881	57.917	400	0.88	111.262	OK	350	13.000	0.029	98.000	95.565	95.565	2.446	1500 mm
90	M.H.90 to RWH-2 to M.H.91	700	0.070	2.6500	2.660	5.310	0.000	5.310	1.5033	400	0.88	111.262	OK	350	13.000	0.034	98.000	95.000	95.000	0.734	900 mm
91	M.H.91 to RWH-2 to M.H.92	700	0.070	2.6500	2.660	5.310	0.000	5.310	1.5033	400	0.88	111.262	OK	350	13.000	0.034	98.000	95.000	95.000	0.734	900 mm
92	M.H.92 to RWH-2 to M.H.93	700	0.070	2.6500	2.660	5.310	0.000	5.310	1.5033	400	0.88	111.262	OK	350	13.000	0.034	98.000	95.000	95.000	0.734	900 mm
93	M.H.93 to RWH-2 to M.H.94	700	0.070	2.6500	2.660	5.310	0.000	5.310	1.5033	400	0.88	111.262	OK	350	13.000	0.034	98.000	95.000	95.000	0.734	900 mm
94	M.H.94 to RWH-2 to M.H.95	700	0.070	2.6500	2.660	5.310	0.000	5.310	1.5033	400	0.88	111.262	OK	350	13.000	0.034	98.000	95.000	95.000	0.734	900 mm
95	M.H.95 to RWH-2 to M.H.96	700	0.070	2.6500	2.660	5.310	0.000	5.310	1.5033	400	0.88	111.262	OK	350	13.000	0.034	98.000	95.000	95.000	0.734	900 mm
96	M.H.96 to RWH-2 to M.H.97 / GRCH	0	0.000	0.0000	302.045	302.045	0.000	302.045	82.7686	400	0.88	111.262	OK	350	75.000	0.254	98.600	95.951	95.647	0.999	C.L.

RATAN PAL SINGH
ARCHITECT
CA/2011/5/1128

Authorised Signatory

For ROF Housing and Infrastructure Pvt. Ltd.

600, Medhuvan Building
85, Nehru Place,
New Delhi-10

PROJECT:-PLAYOUT PLAN OF INDUSTRIAL PLOTTED COLONY ON AN AREA MEASURING 33.75 ACRES (270 KANAL & 0 MARLA) FALLING IN REVENUE ESTATE OF VILLAGE MURTHAL DISTRICT SONIPAT, HARYANA.

Sub Work IV				Road Work
<u>MATERIAL STATEMENT (ROAD WORK)</u>				
TAG	LENGTH (M)	WIDTH (M)	AREA	UNIT
A	165.10	15.00	2476.50	SQM.
B	89.26	15.00	1338.90	SQM.
C	88.10	15.00	1321.50	SQM.
D	329.70	18.00	5934.60	SQM.
E	62.37	15.00	935.55	SQM.
F	185.50	15.00	2782.50	SQM.
G	81.03	15.00	1215.45	SQM.
H	109.08	15.00	1636.20	SQM.
I	365.83	15.00	5487.45	SQM.
J	385.44	18.00	6937.92	SQM.
K	92.12	15.00	1381.80	SQM.
L	102.00	9.00	918.00	SQM.
M	41.05	9.00	80.79	SQM.
N	41.70	9.00	80.79	SQM.
O	64.89	15.00	134.65	SQM.
P	62.44	15.00	134.65	SQM.
TOTAL	2265.61		32797.24	SQM.
Add 10% for Curves	226.561		3279.72	SQM.
	2492.171		36076.97	SQM.
Say	2492		36077.00	SQM.

Rattan
RATTAN PAL SINGH
ARCHITECT
CA/2011/51128

For ROF Housing and Infrastructure Pvt. Ltd.

M
 Authorised Signatory



ANNEXURE 1

RAIN WATER HARVESTING PIT CALCULATION

S.No.	Description	Area (in sq mts)	Coefficient of run-off (As per NBC 2016 Part 9 Section 2 Drainage and Sanitation)	Peak rainfall intensity during one hour of rainfall (in mts) (as per Manual on norms and standards for environment clearance of large construction projects)	Rain water harvesting potential / hour (in m3)	Unit
1	Roof-top/ paved area	80908.00	0.90	0.040	2912.7	m3
2	Paved podium areas and asphalted roads	54412.00	0.80	0.040	1741.2	m3
3	Lawns and parks	1300.00	0.15	0.040	7.8	m3
TOTAL						m3
4	Considering 10 minutes retention time, total storm water load is				776.9	m3
5	Taking the radius as 1.5 m and effective depth as 3.5 m, volume of a RWH pit ($\pi r^2 h$) is				24.7	m3
6	Hence no. of pits required in approx = Total storm water load considering 10 minutes retention time / Volume of a RWH pit				31.42	Nos.
Say						Nos.
						31.00

For ROF Housing and Infrastructure Pvt. Ltd.



Authorised Signatory

