EXTERNAL DEVELOPMENT WORKS DESIGN AND COST ESTIMATES

FOR

COMMERCIAL COLONY AREA MEASURING 2.625 ACRES IN SECTOR 34, SOHNA BEING DEVELOP BY SMT. MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

DEVELOPED BY

NAVI ESTATES LLP, NEW DELHI

COMMERCIAL COLONY AREA MEASURING 2.625 ACRES IN SECTOR 34, SOHNA BEING DEVELOP BY SMT. MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

REPORT

COMMERCIAL COLONY AREA MEASURING 2.625 ACRES IN SECTOR 34, SOHNA BEING DEVELOP BY SMT. MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.

Gurgaon, officially named Gurugram, is a city located in the northern Indian state of Haryana. It is situated near the Delhi-Haryana border, about 30 kilometres (19 mi) southwest of the national capital New Delhi and 268 km (167 mi) south of Chandigarh, the state capital.[3] It is one of the major satellite cities of Delhi and is part of the National Capital Region of India.[4] As of 2011, Gurgaon had a population of 876,900.[1]
Gurgaon has become a leading financial and industrial hub with the third-highest per capita income in India.[5] The city's economic growth story started when the leading Indian automobile manufacturer Maruti Suzuki India Limited established a manufacturing plant in Gurgaon in the 1970s.[6] Today, Gurgaon has local offices for more than 250 Fortune 500 companies.[7] Gurgaon is categorised as very high on the Human Development Index, with an HDI of 0.889 (2017), which is also the highest in India.[8]
In March 2019, Gurgaon was named the most polluted city in the world, according to data released by IQ Air Visual and Greenpeace.[9][10]

WATER SUPPLY

At present the source of water supply in this area is Municiapl. It has been proposed to construct the under ground 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 borewell and HUDA supply, which will feed overhead tanks on the roof of the buildings. The water supply system has been designed as per Hazen Williams formula.

DESIGN

The scheme has been designed for population of as calculation. The rate of water supply per head / day has been taken as per NBC / HUDA norms in addition to above necessary provision of water for facilites and parks etc. have been taken into account for calculating the maximum quantity of water requirement.

PUMPING REQUIREMENTS

It has been proposed to install pumping set as described with standby of equal capacity. The provision for standby generating set has also been provided in case of any electricity failure.

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UNDERGROUND STORATE TANK

Underground storage tank provision has been made in two compartments, which cater for the domestic as well as for fire fighting requirement. The water for fire water compartment shall overflow to the domestic compartment so that the water in the fire compartment also remain full & fresh and wilil not contaminate.

BOOSTING STATION

The boosting station is being planned near underground storage tank catering to above requirement.

DISTRIBUTION SYSTEM

The distribution system for this development has been designed to supply as per calculation @ 3 times the average rate of flow on Hazen William formula. Necessary provisiton for laying G.I. pipes confirming to relevant IS standard along with valves and special has been made in the project. THe minimum terminal head at any point will be more than 65 Mtrs. so that it can be serve the G+10 floors construction envisaged in the plan. Minimum pipe dia. for distribuiton is kept as 50 mm dia.

RISING MAIN

Raising main from HUDA water main or sector road to water work have also been proposed as provision has been made in this estimate.

SEWERAGE SCHEME

This scheme has been designed for sewer connecting to STP & over flow of STP connected to HUDA sewer main. The sewerage system has been marked on 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 R.C.C. NP2 pipe sewer line, construction of required number of manholes etc. has been made in the estimate.

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

STORM WATER DRAINAGE

Since the Master Scheme has been proposed with pipe drain, we proposed to lay pipe drains with required number of catch basins for disposal of storm water. The intensity of rain fall has been taken as ¼" per hour. A maximum size of 450 mm dia NP2 pipe storm water pipe will be provided and designed as per Manning's formula.

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FIRE

As per N.B.C. (National Buiding Code), fire tanks & required capacity pumps have been provided the plan as shown on the plan. Similarlly irrigation pumps of required capacity provided as shown on the plan.

SPECIFICATIONS

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

ROADS

The Roads have been planned as minimum 6 M wide. The following specification have been adopted which are reproduced below:

Bituminous Road

Specification : 200mm GSB, 250mm WMM, 50mm WBM, 20mm MSS

STREETLIGHTING

Provision of lighting on surrounding area has been made.

HORTICULTURE

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

RATES

The estimate has been prepared based on the present market rates.

COST

The total cost of the scheme, including cost of all services works out to Rs. 179.09 Lacs Including 3% contingencies and 49% departmental charges, price escalation & other unforseen charges. Cost per acres equals to Rs 114.80 Lacs.

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Water demand calculation

S. No.	Description	Occupancy	Cold Water		Flushing Water		Total Water
			LPCD	LPD	LPCD	LPD	LPD
A.	**Ground Floor**						
i.	Water requirement for approximately 723 people @ 3 sqm per person for 2170 sqm area	723	5	3615	10	7230	10845
ii	Staff: 74 People @ 3 person per shop for 18 No. shops & 10 person per anchor store for 2 nos. anchor store	74	25	1850	20	1480	3330
	Total			**5465**		**8710**	**14175**
B.	**First Floor**						
i.	Water requirement for approximately 361 people @ 6 sqm per person for 2170 sqm area	361	5	1805	10	3610	5415
ii	Staff: 86 People @ 3 person per shop for 22 No. shops & 10 person per anchor store for 2 nos. anchor store	86	25	2150	20	1720	3870
	Total			**3955**		**5330**	**9285**
C.	**Second Floor**						
i.	Water requirement for approximately 323 people @ 6 sqm per person for 1940 sqm area	323	5	1615	10	3230	4845
ii	Staff: 64 People @ 3 person per shop for 18 No. shops & 10 person per anchor store for 1 nos. anchor store	64	25	1600	20	1280	2880
iii	Food Court(Capacity 130 people) @ 2 sqm per person for area of 260 sqm	130	25	3250	10	1300	4550
	Total			**6465**		**5810**	**12275**
D.	**Third Floor & Fourth Floor**						
i	Multiplex (Capacity 320 people)	320	5	1600	10	3200	4800
i.	Water requirement for approximately 54 people @ 6 sqm per person for 322 sqm area	54	5	270	10	540	810
ii	Staff: 10 People @ 10 person per kids gamming zone	10	25	250	20	200	450
	Total			**2120**		**3940**	**6060**
E.	**Fifith Floor**						
i.	Water requirement for approximately 21 people @ 10 sqm per person for 201 sqm area	21	25	525	20	420	945
ii	Water requirement for approximately 10 visitors	10	5	50	10	100	150
ii	Banquet Hall & Prefunction: Water requirement for approximately 630 people @ 1.5 sqm per person for 944 sqm area	630	9	5670	6	3780	9450
	Total			**6245**		**4300**	**10545**
F.	**Sixth Floor**						
i.	Water requirement for approximately 58 people @ 2 person for studio apartment (29 no. Room)	58	120	6960	60	3480	10440
	Total			**6960**		**3480**	**10440**
G.	**Seventh Floor**						

i.	Water requirement for approximately 58 people @ 2 person for studio apartment (29 no. Room)	58	120	6960	60	3480	10440
	Total			**6960**		**3480**	**10440**
H.	**Eigth Floor**						
i.	Water requirement for approximately 58 people @ 2 person for studio apartment (29 no. Room)	58	120	6960	60	3480	10440
	Total			**6960**		**3480**	**10440**
I.	**Ninth Floor**						
i.	Water requirement for approximately 160 people @ 10 sqm per person for 1591 sqm area	160	25	4000	20	3200	7200
ii	Water requirement for approximately 20 visitors	20	5	100	10	200	300
	Total			**4100**		**3400**	**7500**
j.	**Tenth Floor**						
i.	Water requirement for approximately 140 people @ 10 sqm per person for 1388 sqm area	140	25	3500	20	2800	6300
ii	Water requirement for approximately 20 visitors	20	5	100	10	200	300
	Total			**3600**		**3000**	**6600**
i	Back Wash Filters - L.S.			10000			10000
	Grand Total			**62830**		**44930**	**107760**
	Say			**63 KLD**		**45 KLD**	**108 KLD**

Sewage Treatment Plant Capacity

Average Sewerage Contribution Considering 80% of domestic water demand & 90% of Flushing demand = 0.8x63+0.9x45 = 91KLD

Sewage Treatment Plant Capacity (KLD) = 100 KLD

Sewage scheme

Peak discharge @ 3 times of sewage discharge plus sub soil infiltration @ 10% of total water demand = 311800 Liters

= 69289 GPD

= 0.128 Cusces

Hence 200 mm dia pipe having design capacity 0.47 cusces is sufficient to carry the above discharge

Horticulture & Road Work Plantation

a Area under park 1321.44 sqmt. @ 5 Liters / sqmt. = 6607 Liters/day

b Area under road & other area (Plot Area -(ground coverage+green area) .689 acres @ 25 KL/Acre = 17225 Liters/day

Total = 23832 Liters/day

Or Say = 24000 Liters/day

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(I) Boosting Machinery

a) For Under Ground Tank

Total water demand (Domestic)	=	63.00	KLD
Pumping 6 hour pumping	=	175.00	LPM
Or Say	**=**	**200.00**	**LPM**

Gross Working Head

- Suction lift	**=**	3.00	Meters
- Delivery head	**=**	5.00	Meters
- Frictional loss in Mains & Specials+ Positive head	**=**	7.00	Meters
- Clear head required (S+11) =10+11x4	**=**	45.00	Meters
Total	=	60.0	Meters
Or Say	**=**	**65.0**	**Meters**

Pump HP = $\frac{200 \times 65 \times 100}{60 \times 75 \times 65}$ = 4.44 H.P.

Or Say 5.0 H.P.

It is proposed to provide 2 nos. of motors of 5 HP sets of 200 LPM discharge at 65M head (One pump are working and one as standby for domestic supply & generator set of same capacity in case of electric failure) for domestice purpose.

b) Flushing water supply requirement

Flushing water demand (KLD)	=	45.00	KLD
Or Say	=	45.00	KLD
Pumping per hour @ 6 hour pumping (L.P.M)			
LPM	=	125.00	LPM
Say	=	130.00	LPM
Pump HP = $\frac{130 \times 65 \times 100}{60 \times 75 \times 65}$	=	2.89	H.P.
Or Say		3.00	H.P.

It is proposed to provide 2 nos. of motors 3 HP sets of 130 LPM discharge at 65m head (one pumps working & one pump stand by & generator set of same capacity in case of electric failure.

(II) Irrigation Pumping

a) Plot Area

	=	1.56	Acres
	=	6218.00	Sqmt
Water Demand of Horticulture + Road Area Plantation	=	24000.00	LPD
6 Hours Pumping	=	66.67	LPM
Say	=	100	LPM
Head	=	35	Mtr.
Pump HP = $\frac{100 \times 35 \times 100}{60 \times 75 \times 70}$	=	1.11	H.P.
Or Say	=	1.50	H.P.

It is proposed to provide 2 nos. of motors of 1.5 HP sets of 100 LPM discharge at 35 M head (One pump are working and one as standby & generator set of same capacity in case of electric failure.)

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(I) PUMPS FOR FIRE PROTECTION

S. No.	Parameters	Location	Pump sets		
			Jockey	**Main**	**Diesel**
1	Discharge in lpm	Pump Room	180 lpm	2850 lpm	2850 lpm
2	Head in metre		100	100	100
3	HP		7.5	100	100
4	Quantity in nos.		2	2	1
(II)	**GENERATING SETS**				
S. No	**Equipment**	**QTY**	**HP**	**Total HP**	
1	Fire Jockey pumps	2	7.5	15.0	
2	Booster Pump (for domestic) + Flushing+ irrigation pump	1 + 1 + 1	5 + 3 + 1.5	9.5	
	Total			**24.50**	
				18.28	**KW**
	Disversity 0.8 & Power factor 0.8			**28.56**	**KVA**
	Or Say			**30.00**	**KVA**

It is proposed to add 30 KVA capacity for above said machinery to the main DG set.

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FINAL ABSTRACT OF COST

Sub Head	Description	Amount (Rs.) in Lacs
I	Water Supply Scheme	47.99
II	Irrigation Scheme	4.78
III	Sewerage Scheme	30.01
IV	Storm Water Drainage	15.00
V	Road	32.00
VI	Street Lighting	2.99
VII	Horticulture	2.00
VIII	Fire Hydrant	9.99
VIIII	Maintenance Charges for 10 Years including Resurfacing of Roads after Ist 5 year & IInd 5 years of mtc	34.32
	Total (in Lacs)	**179.09**
	Cost per acres (1.56 ACRES) =	**114.80**

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Sub Head No.I		**Water Supply**
Sub Head	**Description**	**Amount (Rs.). In lacs**
1	Head Works	8.93
2	Pumping Machinery	35.07
3	Rising Main	3.99
	Say (In Lacs)	47.99

Sub Head No-1					Water Supply	
Sub Work No-01					Head Works	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs.)**
1	Provision for Rising Main connecting Municipal with water main and by-pass arrangement					
1.1	80 mm dia. G.I. Pipe	40	x	800	Rs.	0.32
1.2	100 mm dia. G.I. Pipe	40	x	1000	Rs.	0.40
2	Providing Boosting arrangement by pumps 5 HP, capacity 200 LPM at 65 M head, 1+1 nos. each & @ Rs. 125,000/- each (For UGT) complete with panel, foundation etc.	2	x	125000	Rs.	2.50
3	Provision for carriage of materials	2	x	25000	Rs.	0.50
4	Construction of U.G. tanks of total cap.(70 KL @ Rs. 3000 KL)	70	x	3000	Rs.	2.10
	TOTAL				**Rs.**	**5.82**
	Add 3% contingencies				**Rs.**	**0.17**
	TOTAL				**Rs.**	**5.99**
	Add 49% Department charges, Price Esclation & other unforseen Charges.				**Rs.**	**2.94**
	TOTAL COST				**Rs.**	**8.93**

Sub Work No-1					Water Supply	
Sub Work No-02					Pumping Machinery	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs.)**
1	Provision for diesel engine genset each for standby arrangements for T.W., booster pumps complete with gear head arrangement. - 1 No. 30 KVA	1	x	250000	Rs.	2.50
2	Providing and installing pumping set of following capacities for Fire protections :-					
(i)	180 lpm at100 M head 1 Nos. Jockey Pump @ Rs. 1,20,000/-	2	x	120000	Rs.	2.40
(ii)	2850 lpm at 100 M head 1 Nos. Main Fire Pump @ Rs. 4,20,000/-	2	x	420000	Rs.	8.40
(iii)	2850 lpm at 100 M head 1 No. Diesel Pump @ Rs. 5,50,000/-	1	x	550000	Rs.	5.50
4	Providing for chlorination plant complete. 1 set @ 60,000/-	1	x	60000	Rs.	0.60
5	Provision for making foundations and erection of Pumping machinery @ Rs. 75000/-	1	x	75000	Rs.	0.75
6	Provision for pipes, valves and specials inside boosting chamber - 1 Set (L.S.) Rs. 75000/- for each	1	x	75000	Rs.	0.75
7	Providing and installing electricity driven Submersible pumping set capable of delivery about 3 LPS of water against a total Head of 10 M complete with motor and other accessories, 1 Nos @ 60,000/-	1	x	60000	Rs.	0.60
8	Provision for carriage of material and unforeseen item. L.S. Rs. 60000/-	1	x	60000	Rs.	0.60
9	Provision for electric services connection including electric fitting for boosting chamber & cost of transformer etc. Rs. 100000/-	1	x	75000	Rs.	0.75
	TOTAL				**Rs.**	**22.85**
	Add 3% contingencies				**Rs.**	**0.69**
	TOTAL				**Rs.**	**23.54**
	Add 49% Department charges, Price Esclation & other unforseen Charges.				**Rs.**	**11.53**
	TOTAL COST				**Rs.**	**35.07**

Sub Work No-1					Water Supply	
Sub Work No-03					Rising Main from HUDA	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs)**
1	Providing, laying, jointing & testing 80 mm dia. G.I. pipe lines including cost of excavation complete in all respects.	40	@	950	Rs.	0.38
2	Providing and fixing 80 mm dia. sluice valves including cost of surface boxes and masonary chambers etc., complete in all respects.	2	@	10000	Rs.	0.20
3	Providing and fixing indicating plates for sluice valves and air valves.	2	@	1000	Rs.	0.020
4	Provision for carriage of material & other foreseen items etc., L.S.	1		50000	Rs.	0.50
5	Provision for making connection with HUDA main (L.S.) 1 job1 complete in all respect	1		75000	Rs.	0.75
6	Provision for cutting road and making good the same (L.S.) 1 job	1		75000	Rs.	0.75
	TOTAL				**Rs.**	**2.60**
	Add 3% contingencies				**Rs.**	**0.08**
	TOTAL				**Rs.**	**2.68**
	Add 49% Department charges, Price Esclation & other unforseen Charges.				**Rs.**	**1.31**
	Total Cost					**3.99**

Material Statement and design statement of HUDA Rising Mains

S. No.	Name of line			Dia. in mm	Length in m from municipal to U.G.T.
1	Municiple Main To UGT			80	40
1	Municiple Main To UGT			100	40

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Sub Work No-1					**Water Supply**	
Sub Work No-06					**Irrigation**	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs)**
1	Providing, laying, jointing and testing uPVC pipe line confirming to I.S 4985 including cost of excavation etc., complete in all respects.					
	25 mm O/D for Garden Pipe	20	@	200	Rs.	0.04
	63 mm O/D for Ring Main	460	@	500	Rs.	2.30
2	Providing and fixing Irrigation hydrant valve complete in all respect.	10	@	2000	Rs.	0.20
3	Provision for carriage of material & other foreseen items etc., (L.S.) 1 jobs	1	@	5000	Rs.	0.05
4	Providing & fixing ball valve 20 mm	10	@	250	Rs.	0.03
6	Providing nad fixinf irrigation pump 2nos. 1.5 HP, 100 LPM @ 35 Mtr. Head complete with control panel etc.	2	@	25000		0.50
	TOTAL				**Rs.**	**3.12**
	Add 3% contingencies				**Rs.**	**0.09**
	TOTAL				**Rs.**	**3.21**
	Add 49% Department charges, Price Esclation & other unforseen Charges.				**Rs.**	**1.57**
	TOTAL COST				**Rs.**	**4.78**

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Sub Work No-II					Sewerage Scheme	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs)**
2	Providing, lowering, laying and jointing R.C.C NP-2 pipes and specials into trenches including manholes, chambers etc., excavation, back filling and disposal of surplus earth complete in all respects.					
	150 mm I/D Avg. depth upto 0 - 4.00 M (S.W. Pipe)	230	@	400.00	Rs.	0.92
	200 mm I/D Avg. depth upto 0 - 4.00 M (S.W. Pipe)	5	@	600.00	Rs.	0.03
3	Provision for lighting & watching and timbering & shuttering L.S.	LS	@	50000.00	Rs.	0.50
5	Provision of 150 mm dia line form STP to HUDA main by pumping	155	@	1250.00	Rs.	1.94
7	Provision for making STP (KLD)	180	@	8150.00	Rs.	14.67
9	Provision for carriage of maternal (L.S.)	1	@	100000.00	Rs.	1.00
10	Provision of cutting road & making it good as same in original condition - 1 job	1	@	50000.00	Rs.	0.50
	TOTAL				**Rs.**	**19.56**
	Add 3% contingencies				**Rs.**	**0.59**
	TOTAL				**Rs.**	**20.14**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**9.87**
	TOTAL COST				**Rs.**	**30.01**

Material statement of Sewerage System

S. No.	Name of Pipe Line	Length of Pipe in M	
		150 mm	**200 mm**
1	1 to 2	18	
1	2 to 3	31	
2	3 to 4	34	
3	4 to 5	15	
4	5 to 6	29	
5	6 to 7	39	
6	7 to 8	36	
7	8 to 9	28	
8	9 to STP	---	2
	Total	**230**	**2**

Material statement of Irrigation System

S. No.	Line Name		63 mm OD	25 mm OD	Irrigation Hydrants
1	Pump Room to ring main.		30		
2	Garden hydrant ring main around the building		430	-	-
3	pipe for Green area from ring main			-	-
4	Garden hydrant 45 x 2 mts (AV)		-	20	-
5	Garden hydrant		-	-	10
	Total		**460**	**20**	**10**

S. No.	Node		Water Demand	Sewerage Quantity			Sewerage Discharge			Infiltration Factor	Sewerage Discharge (incl. Infiltration)	Size of Pipe	Velocity		Design Discharge	Design Discharge	Length of Line	Slope	Fall Due to Slope		Ground Level (in Meter)		Invert Level (in Meter)	
				Self	Branch	Total	Avg	Peak	Peak												Start	End	Start	End
	Fr.	To	LPD	LPD	LPD	LPD	LPS	LPS	m^3/sec	m^3/sec	m^3/sec	mm	ft/sec	m/s	Cusec	m^3/sec		1 in :	Gradient	M.	M.	M.	M.	M.
1	1	2	21552.	19 397	0	19 397	0.22	0.674	0.0007	0.000004	0.0007	150	2.83	0.86	0.27	0.0076	18	100	0	0.180	0.000	0.000	-0.600	-0.780
2	2	3			19 397	19 397	0.22	0.674	0.0007	0.000008	0.0007	150	2.83	0.86	0.27	0.0076	31	100	0	0.310	0.000	0.000	-0.780	-1.090
3	3	4			19 397	19 397	0.22	0.674	0.0007	0.000008	0.0007	150	2.83	0.86	0.27	0.0076	34	100	0	0.340	0.000	0.000	-1.090	-1.430
4	4	9			19 397	19 397	0.22	0.674	0.0007	0.000004	0.0007	150	2.83	0.86	0.27	0.0076	15	100	0	0.150	0.000	0.000	-1.430	-1.580
5	5	6	21552.	19 397		19 397	0.22	0.674	0.0007	0.000007	0.0007	150	2.83	0.86	0.27	0.0076	29	100	0	0.290	0.000	0.000	-1.800	-2.090
6	6	7	21552.	19 397	19 397	38 794	0.45	1.347	0.0013	0.000010	0.0014	150	2.83	0.86	0.27	0.0076	39	100	0	0.390	0.000	0.000	-2.090	-2.480
7	7	8	21552.	19 397	38 794	58 190	0.67	2.021	0.0020	0.000009	0.0020	150	2.83	0.86	0.27	0.0076	36	100	0	0.360	0.000	0.000	-2.480	-2.840
8	8	9	21552.	19 397	58 190	77 587	0.90	2.694	0.0027	0.000006	0.0027	150	2.83	0.86	0.27	0.0076	23	100	0	0.230	0.000	0.000	-2.840	-3.070
9	9	STP			96 984	96 984	1.12	3.368	0.0034	0.000000	0.0034	200	2.80	0.85	0.47	0.0134	2	150	0	0.013	0.000	0.000	-3.070	-3.083
TOTAL			**1 07 760**																					

COMMERCIAL COLONY AREA MEASURING 2.625 ACRES IN SECTOR 34, SOHNA BEING DEVELOP BY SMT. MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

Sub Work No-III **Storm water drain**

S. No.	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Providing, lowering, laying and jointing R.C.C NP-3 pipes and specials into trenches including manholes, chambers etc., excavation, back filling and disposal of surplus earth complete in all respects.					
1.1	200 mm I/D Avg. depth upto 2.0 M.	90	@	600	Rs.	0.54
1.2	250 mm I/D Avg. depth upto 2.0 M.	100	@	700	Rs.	0.70
1.3	300 mm I/D Avg. depth upto 2.0 M.	220	@	750	Rs.	1.65
1.5	450 mm I/D Avg. depth ABOVE 2.0 M.	20	@	1175	Rs.	0.24
2	Provision for Road Gullies L.S.	LS			Rs.	1.65
5	Provision for carriage of material & other foreseen items etc., L.S.				Rs.	1.00
6	Provision for Rain water harvesting arrangements for 1.56 acre @ 2,00,000.00 / each (2 Nos.) for Rain Water Harvesting	2	@	200000	Rs.	4.00
	TOTAL				**Rs.**	**9.78**
	Add 3% contingencies				**Rs.**	**0.29**
	TOTAL				**Rs.**	**10.07**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**4.93**
	TOTAL				**Rs.**	**15.00**

Material statement of drainag System

S. No.	Name of Pipe Line	Length of Pipe in M			
		450 mm	300 mm	250 mm	200 mm
1	1 to 2	-	-	-	18
2	2 to 3	-	-	-	18
3	3 to 4	-	-	-	14
4	4 to 5	-	-	22	-
5	5 to 6	-	-	25	-
6	6 to 7	-	30	-	-
7	7 to 8	-	15	-	-
8	8 to RWHP-1	-	2	-	-
9	RWHP-1 to 9	-	6	-	-
10	9 to 10	-	22	-	-
11	10 to11	-	18	-	-
12	11 to RWHP-2	-	7	-	-
13	12 to 13	-	-	-	13
14	13 to 14	-	-	-	10
15	14 to 15	-	-	-	12
16	15 to 16	-	-	16	-
17	16 to 17	-	-	30	-
18	17 to 18	-	18	-	-
19	18 to 19	-	31	-	-
20	19 to 20	-	25	-	-
21	20 to 21	-	30	-	-
22	21 to RWHP-2	-	10	-	-
23	RWHP-2 to external	20	-	-	-
	Total	**20**	**214**	**93**	**85**
	Say	**20**	**220**	**100**	**90**

S. No.	Drain Nodes		Total Area for Calculation of Drain Line (in M2)			Max. Design Discharge @ 0.00714 Liters per sec / m2 area		Max. Design Discharge considered in m^3/sec	Hydraulic Size of Drain or Pipe		Pipe	Pipe	Pipe	Mannings	Velocity	Discharge Capacity	Length of Section	Slope	Fall in Metres		Ground level Meter		Invert Level in Meters		Average depth
	From	*To*	*Self Area (m2)*	*Previous*	*Total*	*liters/sec*	*m^3/sec*	*m^3/sec*	*B or Dia in mm*	*D1 – Depth in MM*	CSA	P	HMR	*n*	*For Pipe in m/s*	*For Pipe in m^3/sec*	*Meter*	*1 in*	*Gradient*	*As per slope*	*Start*	*End*	*Start*	*End*	*Meter*
1	1	2	107	0	107	0.764	0.001	**0.010**	200		0.031415927	0.628318531	0.05	0.015	0.64	**0.020**	18	200	0.000	0.090	0.00	0.00	-0.60	-0.690	0.645
2	2	3	152	107	259	1.849	0.002	**0.010**	200		0.031415927	0.628318531	0.05	0.015	0.64	**0.020**	18	200	0.000	0.090	0.00	0.00	-0.690	-0.780	0.735
3	3	4	304	259	563	4.020	0.004	**0.010**	200		0.031415927	0.628318531	0.05	0.015	0.64	**0.020**	14	200	0.000	0.070	0.00	0.00	-0.780	-0.850	0.815
4	4	5	332	563	895	6.390	0.006	**0.010**	250		0.049087385	0.785398163	0.0625	0.015	0.66	**0.033**	22	250	0.000	0.088	0.00	0.00	-0.850	-0.938	0.894
5	5	6	487	895	1382	9.867	0.010	**0.010**	250		0.049087385	0.785398163	0.0625	0.015	0.66	**0.033**	25	250	0.000	0.100	0.00	0.00	-0.938	-1.038	0.988
6	6	7	487	1382	1869	13.345	0.013	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	30	300	0.000	0.100	0.00	0.00	-1.038	-1.138	1.088
7	7	8	433	1869	2302	16.436	0.016	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	15	300	0.000	0.050	0.00	0.00	-1.138	-1.188	1.163
8	8	RWHP-1	282	2302	2584	18.450	0.018	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	2	300	0.000	0.007	0.00	0.00	-1.188	-1.195	1.191
9	RWHP-1	9		2584	2584	18.450	0.018	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	6	300	0.000	0.020	0.00	0.00	-1.195	-1.215	1.205
10	9	10	197	2584	2781	19.856	0.020	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	22	300	0.000	0.073	0.00	0.00	-1.215	-1.288	1.251
11	10	11	187	2781	2968	21.192	0.021	**0.030**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	18	300	0.000	0.060	0.00	0.00	-1.288	-1.348	1.318
12	11	RWHP-2	155	2968	3123	22.298	0.022	**0.030**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	7	300	0.000	0.023	0.00	0.00	-1.348	-1.371	1.360
1	12	13	231	0	231	1.649	0.002	**0.010**	200		0.031415927	0.628318531	0.05	0.015	0.64	**0.020**	13	200	0.000	0.065	0.00	0.00	-0.60	-0.665	0.633
2	13	14	92	231	323	2.306	0.002	**0.010**	200		0.031415927	0.628318531	0.05	0.015	0.64	**0.020**	10	200	0.000	0.050	0.00	0.00	-0.665	-0.715	0.690
3	14	15	56	323	379	2.706	0.003	**0.010**	200		0.031415927	0.628318531	0.05	0.015	0.64	**0.020**	12	200	0.000	0.060	0.00	0.00	-0.715	-0.775	0.745
4	15	16	304	379	683	4.877	0.005	**0.010**	250		0.049087385	0.785398163	0.0625	0.015	0.66	**0.033**	16	250	0.000	0.064	0.00	0.00	-0.775	-0.839	0.807
5	16	17	332	683	1015	7.247	0.007	**0.010**	250		0.049087385	0.785398163	0.0625	0.015	0.66	**0.033**	30	250	0.000	0.120	0.00	0.00	-0.86	-0.975	0.915
6	17	18	487	1015	1502	10.724	0.011	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	18	300	0.000	0.060	0.00	0.00	-2.000	-2.060	2.030
7	18	19	487	1502	1989	14.201	0.014	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	31	300	0.000	0.103	0.00	0.00	-2.060	-2.163	2.112
8	19	20	432	1989	2421	17.286	0.017	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	11	300	0.000	0.037	0.00	0.00	-2.163	-2.200	2.182
9	20	21	237	2421	2658	18.978	0.019	**0.020**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	25	300	0.000	0.083	0.00	0.00	-2.200	-2.283	2.242
10	21	RWHP-2	432	2658	3090	22.063	0.022	**0.030**	300		0.070685835	0.942477796	0.075	0.015	0.68	**0.048**	6	300	0.000	0.020	0.00	0.00	-2.283	-2.303	2.293
11	RWHP-2	EXTERNAL		6213	6213	44.361	0.044	**0.050**	450		0.159043128	1.413716694	0.1125	0.015	0.73	**0.116**	4	450	0.000	0.009	0.00	0.00	-2.303	-2.312	2.308

MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

SUB HEAD NO. - IV					Road Work	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs)**
1	Provision for leveling - earth filling / cutting as per site conditions. (In Acres)					
	Area = 0.49 Acre	0.49	@	135000	Rs.	0.66
2	Providing and laying 6 mtr wide 100mm thick PCC under pavement, cement concrete of specified grade 1:4:8 and 150mm thick RMC grade M-40 OR Providing and Laying Bituminous road 200mm GSB, 250mm WMM, 50mm WBM, 20mm MSS.	2,210.10	@	700	Rs.	15.47
3	Provision for Kerbs & channels of CC 1:2:4	716.00	@	345	Rs.	2.47
4	Provision for making approach to each block for C.C. pavements L.S.	LS			Rs.	0.75
5	Provision of guide maps at selected place (L.S.)	LS			Rs.	0.25
6	Provision for Traffic light control / Parking Arrangment, L.S.	LS			Rs.	0.75
7	Provision of carriage of material and unforseen items - L.S.				Rs.	0.50
	TOTAL				**Rs.**	**20.85**
	Add 3% contingencies				**Rs.**	**0.63**
	TOTAL				**Rs.**	**21.48**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**10.52**
	TOTAL				**Rs.**	**32.00**

MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

	Road Work					
S. No.	**Name of Road**	**Length of Road (in Mtrs.)**	**Thickness of road (in mm)**	**Metalled Width (Mtrs.)**		**Volume in Cum**
	A	**B**		**C**		**B x C**
1	Road No. 1	143.43	0.17	6	Mts.	146.29452
2	Road No. 2	15.39	0.17	6	Mts.	15.6927
3	Road No. 3	37.03	0.17	6	Mts.	37.77162
4	Road No. 4	15.87	0.17	6	Mts.	16.18638
5	Road No. 5	96.86	0.17	6	Mts.	98.80026
6	Road No. 6	16.16	0.17	6	Mts.	16.48116
				Area		
	Total	**324.73**		**1948.39**		331.23
	Add 10 % for curves	32.4732		194.839		33.12
	Total	357.21		2143.23		364.35
	Add for surface plaza/ parking					4.00
	Total	**400**		**2500**		**368.35**
	Say (A)					**369.00**
	Total Length of road	324.73				
	Add 10% curves	32.47				
	Total Length	357.21				
	Say (B)	**358.00**	**Mtrs.**			
	No of 2 wheeler parking open	2.00	Nos.			
	Area (0.8 x 2.5 x 1029)	4.00	Sqmts.			
	surface plaza/ parking	4.00				
	Kerb Stone on both side of Road (C) = 1700x2	716.00	Mts.			
	Grand Total of Road					
	Total Road Volume	**369.00**	**Sq.Mts.**			
	Total Road Length	**358.00**	**Mts.**			
	Total Kerb Stone on both side of Road	**716.00**	**Mts.**			
Sub Work No-V					**Street Lighting**	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs)**
1	Providing street lighting on roads as per standard specifications on HVPN with LED					
	Area = 1.56 Acre	1.56	@	125000	Rs.	1.950
	TOTAL				**Rs.**	**1.95**
	Add 3% contingencies				**Rs.**	**0.06**
	TOTAL				**Rs.**	**2.01**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**0.98**
	TOTAL				**Rs.**	**2.99**

MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

Sub Work No-VI						**Plantation & Road side trees**
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs)**
1	Development of Lawn Area :-					
	a) Trenching the ordinary soil upto depth of 60 cm. including removal and packing of serviceable material and disposing at a lead of 50 M. and making up the trenched area to proper level 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 trenched area.					
	c) Grassing with "doob grass" including watering and maintenance of lawns free from weeds and fit for moving in rows 7.50 cm. in either direction including for hedges and grill and barred wire fencing around park and green belts (As per HUDA norms)					
	Area = 0.32 acre	0.32	@	150000	Rs.	0.48
2	Providing and planting Trees along the boundary @ 10 m interval (358/10 = 35.8 say 40)	40.00	@	2050		0.82
	TOTAL				**Rs.**	**1.30**
	Add 3% contingencies				**Rs.**	**0.04**
	TOTAL				**Rs.**	**1.34**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**0.66**
	TOTAL				**Rs.**	**2.00**

MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

SUB WORK NO. VII:				**MTC. CHARGES AND RESURFACING OF ROADS.**		
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Lacs)**
1	Provision for maintenance charges for water supply, sewerage, storm water, drainage, roads, street light, Hort., etc. complete including operation & establishment charges as per HUDA norms after completion.					
	Area = 1.56 Acre	1.56	@	300000	Rs.	4.68
2	Provision for resurfacing of roads after first five years of maintenance.	2,210.10	@	350	Rs.	7.74
3	Provision for resurfacing of roads after 10 years of Mtc.	2,210.10	@	450	Rs.	9.95
	TOTAL				**Rs.**	**22.36**
	Add 3% contingencies				**Rs.**	**0.67**
	TOTAL				**Rs.**	**23.03**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**11.29**
	TOTAL				**Rs.**	**34.32**

COMMERCIAL COLONY AREA MEASURING 2.625 ACRES IN SECTOR 34, SOHNA BEING DEVELOP BY SMT. MONIKA RAIZADA W/O SH. NAVEEN RIZADA IN COLLABORATION WITH NAVI ESTATES LLP.(LICENCE NO 79. OF 2018 DATED 17/11/2018)

Sub Work No-III **Fire Hydrant**

S. No.	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Supplying, laying, testing and commissioning of pipes of following sizes of MS 'C' class heavy duty along with necessary clamps, vibration isolators and fittings such as elbows, tees, flanges, tapers, nut bolts, gaskets etc..but excluding valves, strainers, gauges etc. adequately supported on cement concrete supports, anti corrosive treatment with coaltar / Asphalt tape as per IS : 10221 duly painted and buried in ground, excavation and refilling the trench etc. as per specifications and as required complete in all respect.					
1.1	80 mm	25	@	850	Rs.	0.21
1.2	150 mm	480	@	1000	Rs.	4.80
2	Provision and fixing fire hydrant accessories	8	@	7500	Rs.	0.60
3	Provision for security services for fire arramngement	L.S.	@	30000	Rs.	0.30
4	Provision and fixing indicating plate	10	@	1000	Rs.	0.10
5	Provision for carriage of material	`	@	50000	Rs.	0.50
	TOTAL				**Rs.**	**6.51**
	Add 3% contingencies				**Rs.**	**0.20**
	TOTAL				**Rs.**	**6.71**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**3.29**
	TOTAL				**Rs.**	**9.99**