INTERNAL DEVELOPMENT WORKS
DESIGN AND COST ESTIMATES

FOR

PROPOSED GROUP HOUSING (29.068 ACRES)
AT SECTOR – 85, SIKANDERPUR BADHA, GURGAON,HARYANA

<u>OWNER</u>

MIS ORRIS INFRASTRUCTURE PW. LTD.,
Regd. Office J10/5, DLF PHASE-2,
DLF PHASE9
GURGAON.

Vinod Kumar Verma
Engineer-Plumbing & Fire
Fighting Services
(Design Consultant)
NELSON.
NOIDA 201301

Praveen Kant Verma
(Architect)
CA/2007/409

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Authorised Signatory

ESTIMATE FOR PROVIDING INTERNAL DEFELPMENT WORKS FOR ORRIS INFRASTRUCTURE
PROPOSED GROUP HOUSING (29.068 ACRES)
AT SECTOR – 85, SIKANDERPUR BADHA, GURGAON, HARYANA

REPORT

Gurgaon town of Haryana State is situated on Delhi-Jaipur National Highway No.8 at a distance of 30 kms for Delhi Being in the national capital Region; the town has fast developing tendency and potential. Further, it has also started sharing the growing Industrial load of Delhi. In order to relieve the growing pressure of population in National Capital of Delhi, it has been decided by the Haryana Government to establish various residential sectors in Gurgaon. ORRIS infrastructure Ltd. has been developing Group Housing at Sikanderpur Badha, Sector-85, in Gurgaon. The total area of site is appx 29.068 acres.

WATER SUPPLY

The source of water supply shall be HSIIDC/ HUDA/ Govt. water supply connection. It has been proposed to construct underground tanks of capacity as per attached details for domestic and other purpose. The under ground tanks will be filled up from the riser and then pumped to the overhead water tanks of each tower. Entire requirement of water shall be made by Coloniser through tankers. Boring of Tubewells in Gurgaon has been banned by Govt.

DESIGN

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

PUMPING EQUIPMENTS

It has been proposed to install pumping set as described with standby of equal capacity. The provision for standby generating set has been provided in case of any electricity failure. Generator will be provided separately or added to the capacity of main generator.

SEWERAGE SCHEME

This scheme is designed for sewer connecting to the proposed sewage treatment plant and bypass to the sewer line of Gurgaon which is existing near to site. The sewerage system has been marked on the respective plans.

The sewer lines have been designed for three times average D.W.F. in relation to water supply demand. It has been assumed that about 80% of the domestic water supply shall find its way into the proposed sewer. Sewer lines shall be laid to a gradient maintaining minimum 2.46 ft/sec self cleaning velocity. Necessary provision for laying S.W/RCC pipe sewer line, construction of required number of manholes etc., have been made in the estimate.

Necessary design statement for entire sewerage system has been prepared and attached with estimate.

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STORM WATER DRAINAGE

We propose to construct under ground pipe drain, which will be connecting to the HSIDC drain along the approach road. Necessary rainwater harvesting structures shall also be constructed to recharge the underground aquifer.

SPECIFICATIONS

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

Roads
Cost of road has been taken in the estimate.

Street Lighting
Provision for lighting on surrounding area **has** been made.

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

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

Cost: 2636.00
The total cost of the scheme, including cost of all services works out to be ~~1853.12L~~acs *(Rupees Eighteen Crore Fifty Three Lakhs and Twelve Thousand Only)* including 3% contingencies & 49% departmental charges. Price escalation, unforeseen Admin charts.

For ORRIS INFRASTRUCTURE LTD.

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1	DETAILS FOR DAILY WATERCONSUMPTION (E & W)			
I	Domestic Water Demand			
S No.	Block	Units	Population	Water Requirement
a	Main DU&EWS	1758	Population@5person/Unit	8790@172.5 Ltr/Day/ Person — 1516275Ltr
b	Community Center			50000 50,000Ltr
	Total Water per day demand			1566KL....A
	Domestic Consumption(70%)			1096KL
	Flushing Consumption(30%)			470KL
II	Horticultural water requirement (Organized Green)			
	19829(4.9acre)@25 kl /acre/Per Day			122 KL....B
III	Fire demand			500 KL
	Total water demand (except fire) A+B			1688KL

2	HUDA Main water Supply Calculation		
		1095	
a	Required Fresh Water per Day	1096	KL
b	Supply Duration	8	Hrs
c	Line Flow Rate	1.57	(Cum/Min)
d	Proposed line dia.	150.00	mm
e	Flow Velocity.	1.25	(m/sec)
f	Friction Head Loss /1000m	16.73	Mtr
g	Length of line	120	Mtr
h	Total Head Loss	1.80	Mtr
3	TOTAL U.G. FIRE STORAGE AS BASED ON NBC		
i	FIRE WATER TANK 2x250 KL	500	KL
ii	TOTAL U.G. STORAGE (DOMESTIC &FLUSHING) REQUIREMENT	1585 1566	KL
	Therefore it is proposed to construct under ground tanks of capacities as follows		
	FIRE TANK –500KL 500		
	RAW WATER TANK-480KL 500		
	DOMESTIC WATER TANK-475KL (2x100+2x170)		
	FLUSHING WATER TANK-450KL(part of STP) (600 + 200)		
	Fire ,Raw ,Domestic water tanks are at One location		
	Flushing water tank and Irrigation tank located at STP		

2 locations

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4	PUMPS FOR FIRE PROTECTION					
	PUMPS DESCRIPTION	LOCATION	NOS	DISCHARGE (LPM)	**HEAD (in Mtr)**	HP
i	DIESEL ENGINE DRIVEN PUMP	PUMP ROOM	2	2850	110	
ii	HYDRANT. PUMP	PUMP ROOM	2	2280	110	90 (Dead Load)
iii	SPRINKLER PUMP	PUMP ROOM	2	2850	110	90
iv	CURTAIN PUMP	PUMP ROOM	2	1650	70	35
v	JOCKEY. PUMP	PUMP ROOM	2	180	110	7

5	PUMPS FOR DOMESTIC WATER SUPPLY FOR **BLOCK- A1,,A2,B1,B2,EWS,B3,B4,B5,B6,C1,C2,D1,D3,D4,D6,D2,D5,2A,3A,3B3C, 3D,3E,3F,3G,3H,3L3J,4I,3N,3K,3P,3L,3M,3O,4A,4C,4D,4F,4B,4E Town Houses & Independent Houses**			
i	Domestic Water Requirement Per Day (~~350~~units x 5person/unitx 172.5ltr/person x ~~70%~~ for Domestic)	~~1061~~	KL	
ii	Pumping duration per day	8	Hrs	8
iii	Clear Head Required	62	Mtr	62
iv	Friction Head Loss	8	Mtr	8
v	Total head required	70	Mtr	
vi	Discharge of Pump = ~~1061~~/8=~~132.62~~cu.m/hr=~~2210~~lpm (say ~~950lpm~~) Power Required = ~~2210~~ x 70 / 4500 x 0.65	~~52.8~~	HP	
	Say	~~55~~	HP	
	It is proposed to provide domestic water transfer pumps (1w+1s) with capacity of ~~2210~~ LPM & 70 m head			
6	PUMPS FOR DOMESTIC WATER SUPPLY FOR EWS & COMMUNITY CENTER			
i	Domestic Water Requirement Per Day(units x 5person/unit x 172.5ltr/person x 70%)+(50000ltr x 70% for Domestic)	~~194~~	KL	
ii	Pumping duration per day	8	Hrs	8
iii	Clear Head Required	~~30~~	Mtr	
iv	Friction Head Loss	5	Mtr	5
v	Total head required	~~35~~	Mtr	
vi	Discharge of Pump = ~~194~~/8=~~24.25~~cu.m/hr=~~404.16~~lpm (say 410lpm) Power Required = ~~410~~ x ~~35~~ / 4500 x 0.65	~~4.90~~	HP	
	say	5	HP	
	It is proposed to provide domestic water transfer pumps (1w+1s) with capacity of ~~410~~ LPM & ~~35~~ m head			
7	PUMPS FOR FLUSHING WATER SUPPLY FOR **BLOCK-**			

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	A1,,A2,B1,B2,EWS,B3,B4,B5,B6,C1,C2,D1,D3,D4,D6,D2,D5,2A ,3A,3B3C,3D,3E,3F,3G,3H,3I,3J,4I,3N,3K,3P,3L,3M,3O,4A,4C, 4D,4F,4B,4E Town Houses & Independent Houses Houses	East tower		West tower
i	Flushing Water Requirement Per Day(750units x 5person/unit x 172.5ltr/person x ~~30%~~ 33% for Flushing) East 365 – 65 = 300 KL West 220 – 30 = 190 KL	~~454~~ 300	KL	190
ii	Pumping duration per day	8	Hrs	8
iii	Clear Head Required	~~70~~ 62	Mtr	62
iv	Friction Head Loss	8		8
v	Total head required	78	Mtr	70
vi	Discharge of Pump =~~454~~/8=~~56.75~~cu.m/hr=~~945.8~~lpm (say ~~400~~lpm) Power Required = ~~945 x 78~~ 70 / 4500 x 0.65 = 14.98 400x70 / 4500x0.65 = 9.57	14.95 ~~25.2~~	HP	9.57
	say	~~26.0~~ 15	HP	10 HP
	It is proposed to provide Flushing water transfer pumps (1w+1s) with capacity of ~~945~~ 625 LPM & ~~78~~ 70 m head & 400 LPM with 70 m head			
8	PUMPS FOR FLUSHING WATER SUPPLY FOR EWS & COMMUNITY CENTER 2 no. sets East & West	East tower		West tower
i	**Flushing Water Requirement Per Day** (264units x 5person/unit x 172.5ltr/person x 30% +50000ltr x 30% for Flushing East = 65 KL West = 30 KL	~~83~~ 65	KL	30
ii	Pumping duration per day	8	Hrs	8
iii	Clear Head Required	~~30~~ 40	Mtr	40
iv	Friction Head Loss	~~1~~ 5		5
v	Total head required	~~31~~ 45	Mtr	45
vi	Discharge of Pump =~~83~~/8=~~10.37~~cu.m/hr=~~172.91~~lpm (say ~~100~~lpm) Power Required = ~~173 x 31~~ 140 x 45 / 4500 x 0.65 = 2.15 HP 70x45 / 4500x0.65 say = 0.72	~~1.8~~ 2.15	HP	0.72
	say	~~2~~ 2.5	HP	1 HP
	It is proposed to provide Flushing water transfer pumps (1w+1s) with capacity of ~~175~~ 140 LPM ~~31~~ 45 m head & 70 LPM 45 m head.			

9	CAPACITY OF DG SET					
	Equipment Description	No's		Each power cons (HP)	Total Power Cons (HP)	
	Bore well	2		10	20	
i	Fire jockey pump	2		~~7~~ 10	~~14~~ 20	
ii	Domestic Water Transfer Pumps for **BLOCK- A1,,A2,B1,B2,EWS,B3, B4,B5,B6,C1,C2,D1,D3 ,D4,D6,D2,D5,2A,3A,3 B3C,3D,3E,3F,3G,3H,3 I,3J,4I,3N,3K,3P,3L,3 M,3O,4A,4C,4D,4F,4B, 4E Town Houses & Independent Houses**	(1W+1S) (1W+1S)	1 1	30 20 ~~55~~	30 20 1~~10.0~~	
iii	Domestic Water Transfer Pumps for EWS & COMMUNITY	(1W+1S) (1W+1S)	1 1	5.0 2.50 ~~5.0~~	5.0 2.5 ~~10.0~~	

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	CENTER					
iv	Flushing Water Transfer Pumps **BLOCK-A1,,A2,B1,B2,EWS,B3, B4,B5,B6,C1,C2,D1,D3 ,D4,D6,D2,D5,2A,3A,3 B3C,3D,3E,3F,3G,3H,3 I,3J,4I,3N,3K,3P,3L,3 M,3O,4A,4C,4D,4F,4B, 4E Town Houses & Independent Houses**	(1W+1S) (1W+1S)	1 1	15 10 26.0	15 10 ~~52.0~~	
v	Flushing Water Transfer Pumps EWS&COMMUNITY CENTER	(1W+1S) (1W+1S)	1 1	1.0 2.5 2	1.0 2.5 ~~4.0~~	
				Total	12.6 KW	
	12.6 × 0.746 × 1.5			SAY 14099	~~190~~	HP
		Lighting		10.00	~~141.68~~	~~KW~~
				SAY 150.99	~~197.1~~	~~KVA~~

Say 160 KVA

160

Requirement of ~~178~~KVA capacity will be added in to the main D.G. set to provide standby supply.

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Orris
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NELSON

FINAL ABSTRACT OF COST

ORRIS GROUP HOUSING AT SECTOR 85, GURGAON.

Sl. NO.	Description	Amount (Rs) in Lacs
Sub Work No.1	~~Internal~~ Water Supply Scheme	~~521~~ 482.00
Sub Work No.2	~~External Water Supply~~ Sewerage scheme	~~237.56~~ ~~206.00~~ 248.65
Sub Work No.3	~~Internal Drainage (Soil waste, vent & rainwater Pipes)~~ Storm water drainage scheme	~~1685~~ 183.65
Sub Work No.4	~~External Sewerage~~ Road network	~~212.61~~ 744.80
Sub Work No.5	~~External Storm Water Drainage~~ Street light	~~297.64~~ 44.65
Sub Work No.6	~~Water Treatment Plant and Misc Items~~ Horticulture	~~22.50~~ 12.85
Sub Work No.7	~~Sewage Treatment Plant~~ Maintenance charges for recycling	~~153.50~~ 918.75
~~Sub Work No.8~~	~~Pumps and Equipments~~ of Roads after 4/5 years & 2nd	~~35~~
~~Sub Work No.9~~	~~Fire Protection system~~ after 10 year -	~~373.50~~
~~Sub Work No.10~~	~~Irrigation~~	~~373.50~~
~~Sub Work No.11~~	~~Road and Foot Paths~~ as	~~448~~
		2635.35 Lacs say Rs 2636.00 Lacs
	Total Amount	~~4059.81~~ 4128.25
	Say	~~4060~~ 4130.00

Director General
Town and Country Planning,
Haryana, Chandigarh

Checked subject to comments in for ..... Dt. ..... and notes attached with the estimate

Executive Engineer (W),
for Chief Engineer
HUDA Panchkula

(Rupees Sixty Four Crore Fifty two Lacs fifty thousand only)

2636.4130 / 29.068 = ~~142.08~~ 90.68

Cost per Acres = ~~4060 / 29~~ = ~~140~~ lacs per acre.

Superintending Engineer
HUDA Circle No. 1,
Gurgaon

Vinod Kumar Verma
Engineer-Plumbing & Fire Fighting Services
(Design Consultant)

Executive Engineer
HUDA Division No. III

Praveen Kant Verma
(Architect)

SUB WORK NO. I

Water Supply & Fire Fighting

185.8 Lacs

1.	Sub Head No. 01	Pumping Machinery	~~10332500.00~~ 73.17 Lacs
2.	Sub Head NO. 02	Water Supply Rising Main and HUDA Connection	~~7632600.00~~ 34.40 Lacs
3.	Sub Head NO. 03	Fire rising Main	~~3285500.00~~
4.	Sub Head NO. 04	Irrigation	~~1893450.00~~ 20.68 Lacs
			314.05 Lacs
		Total	~~23144050.00~~
		Add 3% contingencies & PH Charges	~~694321~~ 9.42 Lacs
		Total	~~23838371~~ 323.47 Lacs
		Add 49% Departmental charges, price escalation, unforeseen, Admin.	~~11680802~~ 158.50 Lacs
		TOTAL	~~35519173~~ 481.97 Lacs
		SAY	~~355.20 Lakhs~~ say 482.00 Lacs

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Sub Work No. 1
Sub Head No. 01

Pumping Machinery
Amount in Rs.

1.(i) Providing and installing electricity driven pumping set capable of delivering about ~~2210~~ LPM of water against a total Head of ~~78~~M complete with motor and other accessories. (for Domestic)

~~4 Nos. @ Rs 1,25,000~~ Rs. ~~500000.00~~

(ii) Providing and installing electricity driven pumping set capable of delivering about ~~410~~ LPM of water against a total Head of ~~35~~M complete with motor and other accessories. (for Domestic)

~~4 Nos. @ Rs 60,000~~ Rs. ~~240000.00~~

iii) Providing and installing electricity driven pumping set capable of delivering about ~~945~~ LPM of water against a total Head of ~~78~~M complete with motor and other accessories. (for flushing)

Rs. ~~320000.00~~

iv) Providing and installing electricity driven pumping set capable of delivering about ~~1750~~ LPM of water against a total Head of ~~41~~M complete with motor and other accessories. (for flushing)

~~4 Nos. @ Rs 50,000~~ Rs. ~~200000.00~~

2. Provision for diesel engine generator set each for standby Arrangements For Booster Pump complete with gear head arrangements of following capacities.

-1 No. ~~178~~ 160 KVA Rs.17, 00000.00

3. Providing and installing pumping set of following capacities for fire protection:

-180 lpm at 110 M head 2 No. @ Rs. Rs. ~~250,000.00~~

-2280 lpm at 110 M head 2 No. @ Rs. ~~500,000/-~~ (110HP) Rs. ~~1000,000.00~~

-2850 lpm at 110 M head 2 No. DG pump @ Rs. ~~700,000/-~~ Rs. ~~1400,000.00~~ (110 HP)

-2850 lpm at 110M head 2 No. (Sprinkler Pump) @Rs. ~~450000/-~~ Rs. ~~900000~~

-1650 lpm at 70M head 2No. (Water Curtain Pump) @ ~~270000/-~~ Rs. ~~540000~~

4. Construction of U.G Tanks ~~1455~~ 1580 KL @ Rs. ~~1500~~ 3500/- / KL Rs. ~~2182500~~.00

Provision for chlorination plant complete
2 No. @ Rs. 100,000 (LS) Rs. 2,00,000.00

6. Provision for making foundations and erection of pumping

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Machinery: (LS) Rs. 200,000.00

7. Provision for pipes, valves and specials inside boosting Chamber. (LS) Rs. 300,000.00

8. Provision for electric service connection including electrical Fittings for boosting chamber etc. (LS) Rs. 300,000.00

9. Provision for carriage of material and other unforeseen Items etc. (LS) Rs. 1,00,000.00

10. Provision of installing Tubewell i/c pumps - Tubewell chambers etc as detailed at (X) 28.50 lacs

Total ~~Rs. 10332500.00~~ 185.80 lacs

SAY ~~RS. 103.32 lakhs~~ Rs 185.80 lacs

Carry Over to Final Abstract of cost

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Sub Work NO **1** | **Water Supply**
Sub Head No. 02 | **Rising main& from HUDA**
Amount in **Rs.**

1. Providing, laying, jointing and testing pipelines including Cost of complete in all respects.

(i) 150 mm dia. Pipe ~~240~~ M. @ ~~1400~~ — ~~Rs.336000.00~~

(ii) 100 mm dia. Pipe ~~GI~~ pipe ~~1426~~M. @ ~~1200~~ — Rs.~~1711200.00~~

~~(iii) 80mm dia. Pipe GI pipe 118 M. @ 950~~ — Rs.~~112100.00~~

~~(iv) 65mm dia. Pipe GI pipe 401M. @ 850~~ — Rs.~~340850.00~~

~~(v) 50mm dia. Pipe GI pipe 1266M. @ 650~~ — ~~Rs.822900.00~~

~~(vi) 40mm dia. Pipe GI pipe 743 M. @ 550~~ — ~~Rs.408650.00~~

~~(vii) 32mm dia. Pipe GI pipe 582M. @ 450~~ — Rs.~~261900.00~~

~~(viii) 25mm dia. Pipe GI pipe 185 M. @ 350~~ — ~~Rs.127750.00~~

~~2(c)~~ Providing, laying, jointing and testing pipe lines including Cost of complete in all respects.**(From Huda Supply)**
150 mm dia. Pipe CILA pipe 125 M. @ ~~1050~~ Rs.~~1312~~50.00

2. Providing and fixing indicating plates for sluice valve and air Valves.25 Nos. @ Rs. 10000/- — Rs. 250000.00

3. Provision for carriage for materials and other unforeseen items (L/S) — Rs. 50000.00

4. Making water supply connection — Rs. 50000.00

Total — Rs. ~~7632600.00~~
Say — **Rs.~~76.33~~ lakhs**

Carry Over to Final Abstract of cost

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Sub work:1

Sub Head No:03

Material Statement for Water Supply-Domestic&Flushing (Tower No. A1,A2,B1,B2)

WATER SUPPLY (DOMESTIC)				WATER SUPPLY (FLUSHING)		
Nodes	PIPE DIA(in mm)	LENGTH(in Meter)		Nodes	PIPE DIA(in mm)	LENGTH(in Meter)
carnation _B2	100	47		STP _B2	80	43
B2_EWS	80	36		B2_EWS	50	48
EWS_B2 Tee	65	9		EWS_B2 Tee	40	9
B2 Tee to B2 shaft	40	16		B2 Tee to B2 shaft	25	13
B2 Tee to A1 shaft	50	82		B2 Tee to A1 shaft	32	82
B2_B1Tee	65	92		B2_B1Tee	40	91
B1 tee_B1 shaft	40	20		B1 tee_B1 shaft	25	20
B1 Tee_A1Shaft	50	54		B1 Tee_A1Shaft	32	54

716 mtr
Say 720 m

TOTAL (Domestic +Flushing)	
Pipe dia	LENGTH(in Meter)
~~20mm Dia~~	0
~~25mm Dia~~	~~33~~
~~32mm Dia~~	~~136~~
~~40mm Dia~~	~~136~~
~~50mm Dia~~	~~136~~
~~65mm Dia~~	~~101~~
~~80mm Dia~~	~~79~~
100mm Dia	~~47~~

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Sub work:1

Sub Head No:03

Material Statement for Water Supply-Domestic&Flushing-Carnation (Tower No. B3-B6,C1,C2,D1-D6)

WATER SUPPLY (DOMESTIC)		
Nodes	PIPE DIA(in mm)	LENGTH(in Meter)
Pump Room_1	150	31
1_2	100	28
2_Tower B6	50	26
2_3	100	14
3_Tower D1	50	27
3_4	100	15
4_tower D2	65	49
To D2 Shaft	50	12
Tower D2_ Tower D3	50	58
4_5	100	28
5_ Tower B4 & B5	65	19
To Tower B4	50	20
to Tower B5	50	9
5_6	100	10
6_Tower B3	50	75
6_Tower C2	65	21
Tower C2_tower C1	50	66
1_tower D4	100	38
To D4 Shaft	50	11
Tower D4 To Tower D5	100	45
To D5 shaft	50	11
Tower D5 To Tower D6	50	56

WATER SUPPLY (FLUSHING)		
Nodes	PIPE DIA(in mm)	LENGTH(in Meter)
STP_1	150	125
1_2	100	28
2_Tower B6	40	26
2_3	100	14
3_Tower D1	40	27
3_4	100	15
4_tower D2	50	49
To D2 Shaft	40	12
Tower D2_ Tower D3	40	58
4_5	100	28
5_ Tower B4 & B5	50	19
To Tower B4	40	20
to Tower B5	40	9
5_6	100	10
6_Tower B3	40	75
6_Tower C2	50	21
Tower C2_tower C1	40	66
1_tower D4	100	38
To D4 Shaft	40	11
Tower D4 To Tower D5	100	45
To D5 shaft	40	11
Tower D5 To Tower D6	40	56

TOTAL (Domestic +Flushing)	
Pipe dia	LENGTH(in Meter)
~~20mm Dia~~	~~0~~
~~25mm Dia~~	~~0~~
~~32mm Dia~~	~~0~~
~~40mm Dia~~	~~371~~
~~50mm Dia~~	~~480~~
~~65mm Dia~~	~~89~~
~~80mm Dia~~	~~0~~
100mm Dia	~~356~~ 358

Praveen Kumar
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Sub Work: I

Sub Head No:03

Material Statement for Water Supply-Domestic&Flushing-Aster Court & Aster Premier

WATER SUPPLY (DOMESTIC)				WATER SUPPLY (FLUSHING)		
Nodes	PIPE DIA(in mm)	LENGTH(in Meter)		Nodes	PIPE DIA(in mm)	LENGTH(in Meter)
Pump Room_1	150	180		STP_1	150	60
1_Tower 3H & 3G	100	32		1_Tower 3H & 3G	100	32
To Tower 3H &3G Shaft	50	22		To Tower 3H &3G Shaft	32	22
Tower 3G _ Tower 3F	100	20		Tower 3G to Tower 3F	100	20
To Tower 3F Shaft	50	14		To Tower 3F Shaft	32	14
Tower 3F_2	100	16		Tower 3F_2	100	16
2_ Tower 3E	65	54		2_ Tower 3E	50	54
To Tower 3E Shaft	50	5		To Tower 3E Shaft	32	5
To Tower 3D Shaft	50	14		To Tower 3D Shaft	32	15
2_ Tower 3A	100	49		2_ Tower 3A	100	49
To Tower 3A Shaft	50	2		To Tower 3A Shaft	32	2
Tower 3A Tower 3B	100	49		Tower 3A Tower 3B	100	48
To Tower 3B Shaft	50	2		To Tower 3B Shaft	32	2
Tower 3B Tower 3C	100	10		Tower 3B Tower 3C	100	10
To Tower 3C Shaft	50	2		To Tower 3C Shaft	32	2
Tower 3C _ Tower 2A	50	96		Tower 3C _ Tower 2A	40	95
1_Tower 3N	100	7		1_Tower 3N	100	7
To Tower 3N Shaft	32	26		To Tower 3N Shaft	25	26
Tower 3N Tower 3M	100	34		Tower 3N Tower 3M	100	34
To Tower 3M Shaft	32	13		To Tower 3M Shaft	25	13
Tower 3M_ Tower 3L	100	29		Tower 3M_ Tower 3L	100	29
To Tower 3L Shaft	50	3		To Tower 3L Shaft	32	3
Tower 3L 3	100	17		Tower 3L 3	100	17
3_Tower3O	100	3		3_Tower3O	100	3
To Tower 3O Shaft	50	8		To Tower 3O Shaft	32	8
Tower 3O_ 4	100	13		Tower 3O_ 4	100	13
4_Tower 3P	50	33		4_Tower 3P	32	33
4_Tower 4C	100	5		4_Tower 4C	100	5
To Tower 4C Shaft	32	10		To Tower 4C Shaft	25	10
Tower 4C_ Tower 4B	100	43		Tower 4C_ Tower 4B	100	43
To Tower 4B Shaft	32	10		To Tower 4B Shaft	25	10
Tower 4B_ Tower 4A	100	47		Tower 4B_ Tower 4A	100	47
To Tower 4A Shaft	32	8		To Tower 4A Shaft	25	8
Tower 4A_ 5	50	42		Tower 4A_ 5	40	42
5_Tower 3J	32	13		5_Tower 3J	25	14
5_Tower 3I	32	22		5_Tower 3I	25	22
3_Tower4D	100	23		3_Tower4D	100	23
To Tower 4D Shaft	32	8		To Tower 4D Shaft	25	8
Tower 4D_ Tower 3K	100	53		Tower 4D_ Tower 3K	100	53
To Tower 3K Shaft	50	9		To Tower 3K Shaft	32	9
Tower 3K_ Tower 4E	100	22		Tower 3K_ Tower 4E	100	22
To Tower 4E Shaft	32	10		To Tower 4E Shaft	25	10
Tower 4E_ Tower 4F	50	43		Tower 4E_ Tower 4F	50	43
To Tower 4F Shaft	32	11		To Tower 4F Shaft	25	11
Tower 4F_ Tower 4I	32	23		Tower 4F_ Tower 4I	25	22
VILLAS				VILLAS		
T1	25	90		T1	25	90
T1	32	90		T1	32	90
T1	40	50		T1	40	50
T1	50	140		T1	50	140
T2	65	80		T2	65	80
T3	80	20		T3	80	20
T4	100	90		T4	100	90

150mm 60+180=240m

TOTAL (Domestic +Flushing)	
Pipe dia	LENGTH (in Meter)
20mm Dia	
25mm Dia	334
32mm Dia	449
40mm Dia	237
50mm Dia	672
65mm Dia	214
80mm Dia	40
100mm Dia	1028
150mm Dia	240

3070 m

3080 M
3070 m

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Sub Work No. 1
Sub Head No. 03 **Fire rising main**
Amount in Rs.

1.	Providing, Laying, jointing and testing M.S pipes lines for fire rising main including cost of fittings, valves, connection etc. complete in all respect.			
	(i) 150 mm m.s. pipe line 575 m @ Rs. ~~1500/-~~ 1575/- per Mtr.	=	Rs.	9.06 ~~862500.00~~
	(ii) 100 mm i/ d 350m @ Rs. 1200/m	=	Rs.	4.20 lac ~~420000.00~~
	(iii)80 mm i/d 220 m @ Rs. ~~950~~ 1000/m	=	Rs.	2.20 lac ~~209000.00~~
2	Providing & fixing valve 150 mm dia 10 Nos. @ Rs.15000/-	=	Rs.	150000.00~
3.	Providing and fixing fire Hydrant 152 Nos. @ Rs. 10000/-	=	R.s.	1520000.00 ✓
4.	Providing for carriage of material as Other unforeseen items (L.S.) 2%.Hg	=	Rs.	2.00 lac ~~100000.00~~
5.	Providing for indication plates 24Nos.@ Rs. 1000./-	=	Rs.	24000.00 ✓

Total cost of Abstract of cost for Sub work No.1)

Total		Rs.	~~3285500.00~~ 34.40 lac
	Say	Rs.	34.40 lac ~~32.86Lakhs~~

Carry Over to Final Abstract of cost

Are Fighting External – Material Statement

SL.NO	NAME OF PIPE LINE	DIA	LENGTH
1	Fire Main Line	150	575 ✓
2	Fire hydrant 100 dia	100	350
3	Fire hydrant 80 dia	80	220 ✓

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Sub Work No. 1
Sub Head No. 04 **Irrigation**

1.	Providing, Laying, jointing and testing pipe line Confirming to IS 4985 including cost of Excavation etc. complete in all respect.		
	a) 25 mm dia 604 meter @ Rs. 3501-M	= Rs.	211400.00
	b) 32 mm dia 209meter @ Rs. 4501-M	= Rs.	94050.00
	c) 40mm dia 30meter @ Rs. ~~550/-~~ 500/- M	= Rs.	~~16500.00~~ 15000/-
	d) 65 mm dia 1670 meter @ Rs. 8501-M	= Rs.	1419500.00
2.	Providing and fixing 20 mm dia. Irrigation hydrant Valve complete in all respect. 65 Nos. @ ~~Rs. 800/~~ 550/- each	= Rs.	
3.	Provision for carriage of Material and other as foreseen Items.	= Rs.	100,000.00
TOTAL		= **Rs.**	~~**1893450.00**~~ 2067450/-
	SAY	= **Rs. ~~18.94~~ lakhs**	20.67 lacs.

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SUB WORK II – SEWERAGE SCHEME

Amount in Rs.

1. Providing, jointing, cutting and testing R.C.C./S.W. pipe and lowering into trenches including cost of Excavation, bed concrete, cost of manholes etc.

a) S.W. pipe 200 mm i/d avg. depth 0-2 M
~~1485~~ 880 m @ Rs. ~~800~~/M 1250/- Rs. ~~1188000.00~~ 11.00 lacs

b) S.W. pipe 250 mm i/d avg. depth 2-4 M
~~680~~ 140 m @ Rs. ~~950~~/M 1200/- Rs. ~~646000.00~~ 2.38

c) S.W. pipe 300 mm i/d avg. depth 2-4 M
~~150~~ 520 m @ Rs. ~~1200~~/M 2000/- Rs. ~~180000.00~~ 10.40 lacs

d) S.W. pipe 350 mm i/d avg. depth 2-4 M
~~95~~ 225 m @ Rs. ~~1250~~/M 2200/- Rs. ~~118750.00~~ 4.95 lacs

e) S.W. pipe 400 mm i/d avg. depth 2-4 M
~~110~~ 345 m @ Rs. ~~1400~~/M 2300/- Rs. ~~154000.00~~ 7.94 lacs

f) S.W. pipe 450 mm i/d avg. depth 2-4 M
~~70~~ 135 m @ Rs. ~~1600~~/M 2400/- Rs. ~~112000.00~~ 3.12 lacs

g) S.W. pipe 500 mm i/d avg. depth 2-4 M
~~120~~ 195 m @ Rs. ~~1650~~/M 2500/- Rs. ~~198000.00~~ .88 lacs

~~h) S.W. pipe 550 mm i/d g. depth 2-4 M~~
~~90 m @ Rs. 1800/M~~ ~~Rs. 162000.00~~

i) R.C.C. pipe 600 mm i/d avg. depth 2-4 M
~~50~~ 205 m @ Rs. ~~2750~~/M 4070/- Rs. ~~137500.00~~ 8.34 lacs

~~j) R.C.C. pipe 650 mm i/d avg. depth 2-4 M~~
~~75 m @ Rs. 2950~~ ~~Rs. 221250~~

k) R.C.C. pipe 700 mm i/d avg. depth 2-4 M
~~40~~ 100 m @ Rs. ~~3200~~/M 5000/- ~~Rs. 128000.00~~ 5.00 lacs

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2.	Provision for cartage of material an other unforeseen items (LS)	Rs.	2.00 lac ~~100000.00~~
3.	Provision for lighting and watching, vent pipe etc.	Rs.	100000.00
4.	Provision for making HUDA connection	Rs.	1.00 lac ~~50,000.00~~
5.	Cost of 1300(one 600 & other 700) KL STP at two site	Rs.	100.00 lac ~~15 00,0000.00~~
	Total	Rs.	~~18495500~~ 162.01 lacs
Add 3 % contingencies & PF charges		Rs.	~~554865~~ 4.86 lac
	Total	**Rs.**	~~19050365~~ 166.87 lac
Add 49% Departmental charges, price escalation Unforeseen, Admin.		Rs.	~~9334678~~ 81.77 lac
Total		**Rs.**	~~28385043~~ 248.64 lac
	SAY	**Rs.**	~~283.85 lakhs~~ 248.65 lac

Carry Over to Final Abstract of cost

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SUB WORK III – STORM WATER SCHEME

1. Providing and laying R.C.C. pipe drain class NP-3

   With cement joint, manholes excavation etc

   Complete in all respect

a.400 mm dia ~~350~~ 1545 m @ Rs. 1750/m	Rs.	~~612500.00~~	27.04 lacs
b.500 mm dia ~~250~~ 300 m @ Rs. ~~1800~~ 2500/m	Rs.	~~450000.00~~	7.50 lacs
c.550 mm dia ~~150~~ 165 m @ Rs. ~~2000~~ 2750/m	Rs.	~~300000.00~~	4.54 lacs
d.600 mm dia ~~210~~ 415 m @ Rs. ~~2750~~ 4025/m	Rs.	~~577500.00~~	18.89 lacs
e.650 mm dia ~~270~~ 545 m @ Rs. ~~3050~~ 4500/m	Rs.	~~823500.00~~	24.53 lacs
~~f.700 mm dia 250m @ Rs. 3250/m~~ 450mm dia 300 m @ 2050/-	Rs.	~~812500.00~~	6.15 lacs
2. Provision for Road Gully L.S	Rs.	200000.00	
3. Provision for rain harvesting arrangement @ Rs. 100,000/- per pit (for 29 Pit)	Rs.	2900000.00	
4. Provision for carriage of material cutting of road & making good to existing condition & connection with HUDA line (LS)	Rs.	~~100000.00~~	2.00 lacs
Total	Rs.	~~6776000~~	119.65 lacs
Add 3 % for contingencies and P&E charges	Rs.	~~203280~~	3.59 lacs
Total	Rs.	~~6979280.00~~	123.24 lacs
Add 49% Departmental charges, price escalation Unforeseen, Admin Charges	Rs.	~~3419847.00~~	60.39 lacs
Total	**Rs.**	**~~10399127.00~~**	183.63 lacs
	Say Rs.	**~~103.99 Lakhs~~**	183.65 lacs

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SUB WORK IV – ROAD NETWORK		AMOUNT (RS.)
1. Provision for leveling and earth filling as 1.00 Lc Per site condition 29.068 acres @ Rs. 50,000 Per acres	Rs.	29.07 Lc 1453400.00
2. (i) Soling Coat 100mm thick (63-45mm) gauge Completed to 75mm thick WBM confirming to MOT specification (Table 400-6 grading NO.2) Qty 4536cum@9507- Granular Sub base 150mm thick	Rs.	4309200.00
(ii) Wearing coat (Top Coat) 100mm thick (53 to 22.4mm gauge compacted to 75 mm thick Conforming to MOT specification (Table 400-6 Grading No.2) Wet mix Macadam 150mm thick		385.31 Lcu
Qty 4536cum@9507- 50mm thick RBM 20mm 45330 Sqm @ 850/- Sq m	Rs.	4309200.00
iii) 125 mm thk trimix flooring 45363.5 Sqm @Rs 265/cum	Rs.	12021327.00
3 iv). Provision for kerb and channels of CC (1:1.5:3) 6040 M@Rs. 300/M 1090 600/-	Rs.	6 5.40 Lcu 1812000.00
4. Provision for making approach to each block and Pavement LS@ 5000 per acres(29.068acres)	Rs.	145340 5.00 Lcu
5. Provision for guide map and other unforeseen items and indicating board etc. LS	Rs.	0.50 Lcu 87204.00
Total	Rs.	24137671 485.28 Lcu
i Add contingencies @3% APPROVED	Rs.	724130.00 14.56 Lcu 499.84 Lcu
Total	Rs.	24861801.00 244.92 Lcu
Add 49% Departmental charges unforseen. Price escalation, Admn charges.	Rs.	12182282.00 744.76 Lcu
Total	**Rs.**	**37044083.00**
Say	**Rs.**	**370.45 akhs app. 744.80 Lcu**

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Material Statement for Road Works							
NODES	6M wide road	7M wide road	7.5M wide road	9M wide road	10M wide road	12M wide road	
CARNATION	2100			500			
ASTER & ASTER PRIMER	2200			650			
TOTAL	4300	0	0	1150	0	0	
Road Total Length = 5450M							
Area of the Road = (6m x4300m)+(9m x1150m)							
+Add 10% for curves and building approach = 36150 +3615sq.m=39801sq.m							
Surface Parking(Total no.of parking 445 x 12.5sq.m/parking) =5582.5sq.m							
Total Road area = 45363.5sq.m							

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SUB WORK V – STREET LIGHTING

(i)	Providing Street lighting on roads as		
(ii)	Per standard specification of HVPN		
	29.068 acres @ Rs.~~50000/-~~ per acre	Rs.	~~1453400.00~~
	Add 3% contingencies P.~~H~~ charges	Rs.	~~43602.00~~
	Total	Rs.	~~1497002.00~~
	Add 49% Departmental charges	Rs.	~~733530.00~~
	Total	**Rs.**	**~~2230532.00~~**
	Say	**Rs.**	**~~22.31 Lakhs~~**

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SUB WORK VI – HORTICULTURE

1. Development of lawn area (organized green of ~~4.29~~ Acres) 19994.38 Sq m
   4.94

a) Trenching the ordinary soil up to dept of 60cm including removal and stacking serviceable material and disposing of by spreading and leveling within a lead of 50m and making up the trenches area to proper leads by filling with earth mixed with manure before and after flooding trench with water including cost of imported earth manure

b) Rough dressing of turfed area

c) Grassing With "Doob Grass" including watering and <u>Maintenance of lawns for 30 days till the grass forms</u> A thick lawn, free from weeds and fit for moving in rows 7.5m Apart in either direction ~~4.90~~ Acres 4.94
@ ~~70000~~ per acre 1-00lac — Rs. ~~343000.00~~ 4.94 lacs

2. Provision of trees, guards and planting trees along road at 15 M intervals

Total Road Length	= 5450 M
No. of trees 5450/~~15~~ 12	= ~~363.33~~ 454.17
Say	= ~~364~~ trees. 455

Excavation	= Rs. ~~20.00~~ 30/-
Manure	= Rs. ~~40.00~~ 60/-
Tree Plant	= Rs. ~~40.00~~ 60/-
Tree Guard	= <u>Rs. ~~200.00~~</u> 600/-
Total	= <u>Rs. ~~300.00~~</u> 750/-

~~364~~ 455 trees @ ~~300~~/tree 750/- — Rs. ~~109200.00~~ 3.41 lacs.

Total		**Rs.**	~~452200.00~~ 8.35 lacs
Add 3% contingencies P.E charges		Rs.	~~13566.00~~ 0.45 lac
	Total	Rs.	~~465766.00~~ 8.80 lacs
Add 49% Departmental charges, [illegible], price escalation, [illegible]		Rs.	~~228225.00~~ 4.21 lac
	Total	**Rs.**	~~693991.00~~ [illegible]
	Say	**Rs.**	~~**6.94 Lakhs**~~ 12.85 lacs.

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SUB WORK NO. VII **Maintenance charges & resurfacing of roads**

1.	Provision for MTC for water supply, Sewerage, Storm Drainage, Roads, Street lighting, Hort. Etc. complete i/c operational & establishment charges as per HUDA norm after completion & resurfacing of roads after 10years 29.068 ACRES @ 5.00 **lacs per acre**	**Rs.** 145.34 **lacs**
2.	Provision for resurfacing of roads after 1st 5 years 45330 Sqm @ ~~350/-~~ 400/- per Sqm	181.32 Lacs Rs. ~~158.77~~ Lacs
3.	Provision for resurfacing of roads after 10 years 45330 Sqm @ ~~350/-~~ 600/- per Sqm	271.98 Lacs RS. ~~158.77~~ Lacs
	Sub Total	**Rs.** ~~**462.88 Lacs**~~ 598.64 Lacs
	Add **3%** contingency & PE Charges	Rs. ~~13.88 Lacs~~ 17.96 Lacs
		Rs. ~~**476.76 Lacs**~~ 616.60 Lacs
	Add 49% deptt. charges, price escalation, unforeseen, Admn. Charges.	Rs. ~~233.61 Lacs~~ 302.13 Lacs ~ 1.73 Lacs
	Total	**Rs.** ~~**710.38 Lacs.**~~ Say 918.75 Lacs

C.O to final abstract of cost

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DESIGN STATEMENT SEWERAGE

Sl No	Sewer Line marked as	Self	Branch	Total Daily Water Requirement In Litre	Total Rqd. In KL	Peak Discharge 3 times DWE @80% In KLD	Peak Discharge 3 times DWE @80% In LPS	Dia of Pipe In mm	Gradiant 1/	Velocity In m/Sec	Design Discharge In LPS	CHECK FOR CARRYING CAPACITY	Length of Line In M	Fall In M	Ground Level Start	Ground Level End	Invert Level Start	Invert Level End
1	1_2	7525	0	7525.00	7.53	6.02	0.21	200	250	0.57	8.99	OK	15	0.06	900.00	900.00	400.00	340.00
2	2_3	7525.00	7525.00	15050.00	15.05	12.04	0.42	200	250	0.57	8.99	OK	14	0.06	900.00	900.00	340.00	285.00
3	3_6	15050.00	7525.00	22575.00	22.58	18.06	0.63	200	250	0.57	8.99	OK	12	0.05	900.00	900.00	285.00	235.00
4	4_5	7525	0.00	7525.00	7.53	6.02	0.21	200	250	0.57	8.99	OK	15	0.06	900.00	900.00	400.00	340.00
5	5_6	7525.00	7525.00	15050.00	15.05	12.04	0.42	200	250	0.57	8.99	OK	45	0.18	900.00	900.00	340.00	265.00
6	6_11	37625.00	7525.00	45150.00	45.15	36.12	1.25	300	400	0.59	20.96	OK	24	0.06	900.00	900.00	235.00	175.00
7	7_8	16200	0.00	16200.00	16.20	12.96	0.45	200	250	0.57	8.99	OK	7	0.03	900.00	900.00	400.00	370.00
8	8_9	16200.00	16200.00	16200.00	16.2	12.96	0.45	200	250	0.57	8.99	OK	6	0.03	900.00	900.00	370.00	345.00
9	9_10	16200.00	16200.00	32400.00	32.40	25.92	0.90	200	250	0.57	8.99	OK	8	0.03	900.00	900.00	345.00	300.00
10	10_11	32400.00	16200.00	48600.00	48.60	38.88	1.35	200	250	0.57	8.99	OK	6	0.02	900.00	900.00	300.00	290.00
11	11_12	93750.00	0.00	93750.00	93.75	75.00	2.60	300	400	0.59	20.96	OK	55	0.14	900.00	900.00	175.00	140.00
12	12_13	93750.00	16200.00	109950.00	109.95	87.96	3.05	300	400	0.59	20.96	OK	16	0.04	900.00	900.00	140.00	120.00
13	13_14	109950.00	16200.00	126150.00	126.15	100.92	3.50	300	400	0.59	20.96	OK	9	0.02	900.00	900.00	120.00	100.00
14	14_15	126150.00	0.00	126150.00	126.15	100.92	3.50	300	400	0.59	20.96	OK	20	0.05	900.00	900.00	100.00	20.00
15	15_16	126150.00	4050.00	130200.00	130.20	104.16	3.62	300	250	0.75	26.51	OK	17	0.07	900.00	900.00	20.00	-50.00
16	16_17	130200.00	4050.00	134250.00	134.25	107.40	3.73	300	250	0.75	26.51	OK	24	0.10	900.00	900.00	-50.00	-145.00
17	17_18	134250.00	0.00	134250.00	134.25	107.40	3.73	300	250	0.75	26.51	OK	24	0.10	900.00	900.00	-145.00	-245.00
18	18_25	134250.00	4050.00	138300.00	138.30	110.64	3.84	300	250	0.75	26.51	OK	19	0.08	900.00	900.00	-245.00	-320.00
19	19_20	6200	0.00	6200.00	6.20	4.96	0.17	200	250	0.57	8.99	OK	5	0.02	900.00	900.00	400.00	380.00
20	20_21	6200.00	6200.00	12400.00	12.40	9.92	0.34	200	250	0.57	8.99	OK	8	0.03	900.00	900.00	380.00	360.00
21	21_22	12400.00	6200.00	18600.00	18.60	14.88	0.52	200	250	0.57	8.99	OK	6	0.02	900.00	900.00	360.00	340.00
22	22_23	18600.00	6200.00	24800.00	24.80	19.84	0.69	200	250	0.57	8.99	OK	8	0.03	900.00	900.00	340.00	300.00

Engineer-Plumbing & Fire Fighting Services
(Design Consultant)
NELSON, C 2,Sec 7
NOIDA 201301(U.P)

ORRIS INFRASTRUCTURE PVT. LTD.

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Praveen Kant
(Archi
CA/2007/40

DESIGN STATEMENT SEWERAGE

Sl No	Sewer Line marked as	Self	Branch	Total Daily Water Requirement in Litre	Total Rqd. in KL	Peak Discharge 3 times DWE @80% in KLD	Peak Discharge 3 times DWE @80% in LPS	Dia of Pipe in mm	Gradiant 1/	Velocity in m/Sec	Design Discharge in LPS	CHECK FOR CARRYING CAPACITY	Length of Line in M	Fall in M	Ground Level Start	Ground Level End	Invert Level Start	Invert Level End
23	23_24	24800.00	6200.00	31000.00	31.00	24.80	0.86	200	250	0.57	8.99	OK	6	0.02	900.00	900.00	300.00	190.00

200 mm 15+14+12+15+45+7+6+8+6+5+8+6+8+6 = 161 Mts

300 mm 24+55+16+16+9+20+17+24+24+18 = 203 Mts

Total Page 1 to 8

200 mm 482+0+214+173 = 869 say 880 m

250 mm 17+59+0+62 = 138 say 140 Mts

300 mm 344+53+31+90 = 518 say 520 Mts

350 mm 116+101+0+8 = 225 say 225 Mts

400 mm 249+92+0 = 341 Mts say 345 M

450 mm 128+0+0 = 128 Mts say 130 M

500 mm 76+100+6 = 182 Mts say 185 M

600 mm 204+0+0 = 204 Mts say 205 M

700 mm 62+0+18 = 80

700 mm 16+0+0 = 16

96 say 100 Mts

Vinod Kumar Verma
Engineer-Plumbing & Fire Fighting Services
(Design Consultant)
NELSON, C 2,Sector 7
NOIDA 201301(U.P)

ORRIS INFRASTRUCTURE PVT. LTD.

Authorised Signatory

Praveen Kant Verma
(Arch
CA/

DESIGN STATEMENT SEWERAGE

Sl No	Sewer Line marked as	Self	Branch	Total Daily Water Requirement In Litre	Total Rqd. in KL	Peak Discharge 3 times DWE @80% In KLD	Peak Discharge 3 times DWE @80% In LPS	Dia of Pipe In mm	Gradiant 1/	Velocity In m/Sec	Design Discharge In LPS	CHECK FOR CAPACITY	Length of Line in M	Fall In M	Ground Level Start	Ground Level End	Invert Level Start	Invert Level End
24	24_25	31000.00	6200	37200	37.2	29.76	1.03	200	250	0.57	8.99	OK	13	0.052	900	900	190	140
25	25_26	175500.00	0	175500	175.5	140.4	4.88	350	300	0.76	36.51	OK	15	0.05	900	900	-320	-370
26	26_34	181700.00	5940	187640	187.64	150.112	5.21	350	300	0.76	36.51	OK	16	0.053	900	900	-370	-420
27	27_28	5940	0	5940.00	5.94	4.75	0.17	200	250	0.57	8.99	OK	8	0.032	900	900	400	370
28	28_29	5940.00	5940	11880.00	11.88	9.50	0.33	200	250	0.57	8.99	OK	5	0.020	900	900	370	350
29	29_30	11880.00	5940	17820.00	17.82	14.26	0.50	200	250	0.57	8.99	OK	4	0.016	900	900	350	330
30	30_31	17820.00	5940	23760	23.76	19.008	0.66	200	250	0.57	8.99	OK	5	0.020	900	900	330	300
31	31_32	23760.00	5940	29700	29.7	23.76	0.83	200	250	0.57	8.99	OK	7	0.028	900	900	300	270
32	32_33	29700.00	5940	35640	35.64	28.512	0.99	200	250	0.57	8.99	OK	8	0.032	900	900	270	250
33	33_34	35640.00	5940	41580	41.58	33.264	1.16	200	250	0.57	8.99	OK	12	0.048	900	900	250	210
34	34_35	229220	0	229220	229.22	183.376	6.37	400	350	0.77	48.26	OK	27	0.077	900	900	-420	-500
35	35_36	229220	0	229220	229.22	183.376	6.37	400	350	0.77	48.26	OK	27	0.077	900	900	-500	-580
36	36_37	229220	0	229220	229.22	183.376	6.37	400	350	0.77	48.26	OK	27	0.077	900	900	-580	-660
37	37_38	229220	0	229220	229.22	183.376	6.37	400	350	0.77	48.26	OK	27	0.077	900	900	-660	-740
38	38_39	229220	0	229220	229.22	183.376	6.37	400	350	0.77	48.26	OK	27	0.077	900	900	-740	-1350
39	39_40	229220	0	229220	229.22	183.376	6.37	450	400	0.78	61.80	OK	11	0.028	900	900	-1350	-1375
40	40_41	229220	0	229220	229.22	183.376	6.37	450	400	0.78	61.80	OK	25	0.063	900	900	-1375	-1435
41	41_42	229220	0	229220	229.22	183.376	6.37	450	400	0.78	61.80	OK	25	0.0625	900	900	-1435	-1495
42	42_43	229220	0	229220	229.22	183.376	6.37	450	400	0.78	61.80	OK	18	0.045	900	900	-1495	-1540
43	43_44	229220	0	229220	229.22	183.376	6.37	450	400	0.78	61.80	OK	18	0.045	900	900	-1540	-1585
44	44_55	229220	0	229220	229.22	183.376	6.37	450	400	0.78	61.80	OK	31	0.0775	900	900	-1585	-1660
45	45_46	5940	0	5940	5.94	4.752	0.17	200	250	0.57	8.99	OK	14	0.056	900	900	400	345
46	46_47	5940	5940	11880	11.88	9.504	0.33	200	250	0.57	8.99	OK	14	0.056	900	900	345	285
47	47_48	11880	5940	17820	17.82	14.256	0.50	200	250	0.57	8.99	OK	14	0.056	900	900	285	230
48	48_52	17820	5940	23760	23.76	19.008	0.66	200	250	0.57	8.99	OK	13	0.052	900	900	230	220
49	49_50	5940	0	5940	5.94	4.752	0.17	200	250	0.57	8.99	OK	14	0.056	900	900	400	345
50	50_51	5940	5940	11880	11.88	9.504	0.33	200	250	0.57	8.99	OK	14	0.056	900	900	345	290
51	51_52	11880	5940	17820	17.82	14.256	0.50	200	250	0.57	8.99	OK	15	0.06	900	900	290	220
52	52_53	41580	0	41580	41.58	33.264	1.16	300	500	0.53	18.75	OK	14	0.028	900	900	185	155
53	53_54	41580	11880	53460	53.46	42.768	1.49	300	500	0.53	18.75	OK	20	0.04	900	900	155	115
54	54_55	53460	0	53460	53.46	42.768	1.49	300	500	0.53	18.75	OK	13	0.026	900	900	115	85
55	55_56	282680	0	282680	282.68	226.144	7.85	500	450	0.79	77.16	OK	10	0.022	900	900	85	-1685
56	56_57	282680	16200	298880	298.88	239.104	8.30	500	450	0.79	77.16	OK	14	0.031	900	900	-1685	-1715
57	57_58	298880	0	298880	298.88	239.104	8.30	500	450	0.79	77.16	OK	26	0.058	900	900	-1715	-1745
58	58_72	298880	0	298880	298.88	239.104	8.30	500	450	0.79	77.16	OK	26	0.058	900	900	-1745	-1805
59	72_89	298880	32400	331280	331.28	265.024	9.20	600	550	0.80	113.50	OK	26	0.047	900	900	-1805	-1855
60	73_74	6200	0	6200	6.2	4.96	0.17	200	250	0.57	8.99	OK	6	0.024	900	900	400	370
61	74_75	6200	6200	12400	12.4	9.92	0.34	200	250	0.57	8.99	OK	6	0.024	900	900	370	340
62	75_76	12400	6200	18600	18.6	14.88	0.52	200	250	0.57	8.99	OK	6	0.024	900	900	340	315

Engineer-Plumbing Fighting Services
(Design Consultant)
NELSON, C 2,Sector-7
NOIDA 201301(U.P)

ORRIS INFRASTRUCTURE PVT. LTD.

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Praveen Kant
(Arc
CA/2007/

DESIGN STATEMENT SEWERAGE

Sl No	Sewer Line marked as	Self	Branch	Total Daily Water Requirement In Litre	Total Rqd. In KL	Peak Discharge 3 times DWE @80% In KLD	Peak Discharge 3 times DWE @80% In LPS	Dia of Pipe In mm	Gradiant 1/	Velocity In m/Sec	Design Discharge In LPS	CHECK FOR CARRYING CAPACITY	Length of Line in M	Fall In M	Ground Level Start	Ground Level End	Invert Level Start	Invert Level End
63	76_77	18600	6200	24800	24.8	19.84	0.69	200	250	0.57	8.99	OK	13	0.052	900	900	315	270
64	77_83	24800	6200	31000	31	24.8	0.86	200	250	0.57	8.99	OK	15	0.060	900	900	270	195
65	83_84	31000	6200	37200	37.2	29.76	1.03	250	400	0.52	12.89	OK	17	0.043	900	900	195	145
66	84_88	37200	24800	62000	62	49.6	1.72	300	500	0.53	18.75	OK	26	0.052	900	900	145	90
67	88_89	62000	6200	68200	68.2	54.56	1.89	300	500	0.53	18.75	OK	19	0.038	900	900	90	55
68	89_90	399480	24800	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	19	0.035	900	900	-1855	-1895
69	90_91	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	19	0.035	900	900	-1895	-1930
70	91_92	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	19	0.035	900	900	-1930	-1960
71	92_93	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	9	0.016	900	900	-1960	-1975
72	93_94	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	20	0.036	900	900	-1975	-2020
73	94_95	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	18	0.033	900	900	-2020	-2035
74	95_96	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	18	0.033	900	900	-2035	-2070
75	96_97	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	20	0.036	900	900	-2070	-2105
76	97_98	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	16	0.029	900	900	-2105	-2140
77	98_99	424280	0	424280	424.28	339.42	11.79	600	550	0.80	113.50	OK	20	0.036	900	900	-2140	-2175
78	99_100	424280	24600	448880	448.88	359.10	12.47	~~650~~ 600		0.81	134.52	OK	12	0.020	900	900	-2175	-2195
79	100_101	448880	24600	473480	473.48	378.78	13.15	~~650~~ 600		0.81	134.52	OK	25	0.042	900	900	-2195	-2235
80	101_102	473480	0	473480	473.48	378.78	13.15	~~650~~ 600		0.81	134.52	OK	12	0.020	900	900	-2235	-2235
81	102_126	473480	0	473480	473.48	378.78	13.15	~~650~~ 600		0.81	134.52	OK	13	0.022	900	900	-2255	-2280
82	103_104	4050	0	4050	4.05	3.24	0.11	200	300	0.52	8.21	OK	13	0.043	900	900	400	360
83	104_105	4050	4050	8100	8.10	6.48	0.23	200	300	0.52	8.21	OK	14	0.047	900	900	360	310
84	105_106	8100	4050	12150	12.15	9.72	0.34	200	300	0.52	8.21	OK	7	0.023	900	900	310	285
85	106_107	12150	4050	16200	16.20	12.96	0.45	200	400	0.45	7.11	OK	13	0.033	900	900	285	245
86	107_108	16200	0	16200	16.20	12.96	0.45	200	400	0.45	7.11	OK	13	0.033	900	900	245	215
87	108_109	16200	4050	20250	20.25	16.20	0.56	200	400	0.45	7.11	OK	14	0.035	900	900	215	185
88	109_110	20250	4050	24300	24.30	19.44	0.68	200	400	0.45	7.11	OK	13	0.033	900	900	185	150
89	110_111	24300	0	24300	24.30	19.44	0.68	200	400	0.45	7.11	OK	13	0.033	900	900	150	130
90	111_112	24300	0	24300	24.3	19.44	0.68	200	400	0.45	7.11	OK	25	0.063	900	900	130	-220
91	112_113	24300	24300	48600	48.6	38.88	1.35	300	250	0.75	26.51	OK	25	0.100	900	900	-220	-1350
92	113_114	48600	24300	72900	72.9	58.32	2.03	300	250	0.75	26.51	OK	10	0.040	900	900	-1350	-1390
93	114_115	72900	24300	97200	97.2	77.76	2.70	300	250	0.75	26.51	OK	9	0.036	900	900	-1390	-1530
94	115_116	97200	24300	121500	121.5	97.2	3.38	350	300	0.76	36.51	OK	24	0.080	900	900	-1530	-1595
95	116_117	121500	0	121500	121.5	97.2	3.38	350	300	0.76	36.51	OK	20	0.067	900	900	-1595	-1660
96	117_118	121500	0	121500	121.5	97.2	3.38	350	300	0.76	36.51	OK	14	0.047	900	900	-1660	-1710
97	118_119	121500	0	121500	121.5	97.2	3.38	350	300	0.76	36.51	OK	27	0.090	900	900	-1710	-1795
98	119_120	121500	0	121500	121.5	97.2	3.38	400	350	0.77	48.26	OK	15	0.043	900	900	-1795	-1835
99	120_121	121500	0	121500	121.5	97.2	3.38	400	350	0.77	48.26	OK	15	0.043	900	900	-1835	-1875
100	121_122	121500	24300	145800	145.8	116.64	4.05	400	350	0.77	48.26	OK	11	0.031	900	900	-1875	-1905
101	122_123	145800	0	145800	145.8	116.64	4.05	400	350	0.77	48.26	OK	16	0.046	900	900	-1905	-1950

V.n d Kum...
Engineer-Plumbing & Fire
Fighting S...
(Design Consultant)
NELSON, C 2,Sec.or-7
NOIDA 201301(U.P)

ORRIS INFRASTRUCTURE PVT. LTD.

Authorised Signatory

Praveen Kant V...
(Arch...)
CA/2007/...7

DESIGN STATEMENT SEWERAGE

Sl No	Sewer Line marked as	Self	Branch	Total Daily Water Requirement In Litre	Total Rqd. In KL	Peak Discharge 3 times DWE @80% In KLD	Peak Discharge 3 times DWE @80% In LPS	Dia of Pipe In mm	Gradiant 1/	Velocity In m/Sec	Design Discharge In LPS	CHECK FOR CARRYING CAPACITY	Length of Line In M	Fall In M	Ground Level Start	Ground Level End	Invert Level Start	Invert Level End
102	123_124	145800	0	145800	145.8	116.64	4.05	400	350	0.77	48.26	OK	19	0.054	900	900	-1950	-2005
103	124_125	145800	0	145800	145.8	116.64	4.05	400	350	0.77	48.26	OK	16	0.046	900	900	-2005	-2050
104	125_126	145800	0	145800	145.8	116.64	4.05	400	350	0.77	48.26	OK	22	0.063	900	900	-2050	-2280
105	126_127	619280	0	619280	619.28	495.424	17.20	700	650	0.82	157.48	OK	13	0.020	900	900	-2280	-2370
106	127_STP	619280	0	619280	619.28	495.424	17.20	700	650	0.82	157.48	OK	3	0.005	900	900	-2370	-2380

200 mm 161+13+8+5+4+5+2+6+12+14+14+14+13+14+14+15+6+6+6+13+15+13+14+7=

250 mm 208+14+20+13+26+13+5+10+9 = 344 MH

300 mm 15+18+44+20+14+7 = 118 MH

400 mm 27+27+27+23+27+17+15+11+16+19+18+12 = 242 MH

450 mm 11+25+45+18+18+31 = 148 MH

500 mm 10+14+26+26 = 76 M

600 mm 26+19+19+13+9+10+18+18+20+16+20 = 204 M

700 mm 12+13+12+13 = 62 } 78 MH
13+3 = 16 }

250 mm 17 MH

200 mm 40+13+13+14+13+13+5 = 242 MH

Engineer-Plumbing & Fire Fighting Services
(Design Consultant)
NELSON, C-2, Sector-7
NOIDA 201301(U.P)

MORRIS INFRASTRUCTURE PVT. LTD.

Authorised Signatory

Praveen Kant Verma
(Archi
CA/2007/4

DESIGN STATEMENT SEWERAGE

Sl No	Sewer Line marked as	Self	Branch	Total Daily Water Requirement	Total Rqd.	Peak Discharge		Dia of	Gradiant	Velocity	Design	CHECK FOR CARRYING CAPACITY	Length of	Fall	Ground Level		Invert Level	
					In KL	3 times DWE @80% In		Pipe in mm	1/	In m/Sec	Discharge In LPS		Line In M	In M	Start	End	Start	En
				In Litre		KLD	LPS											
1	1_2	8775	0	8775.00	8.78	7.02	0.24	250	200	0.74	18.23	OK	14	0.07	825.00	825.00	-1330.00	-140
2	2_3	8775.00	8775.00	17550.00	17.55	14.04	0.49	250	200	0.74	18.23	OK	11	0.06	825.00	825.00	-1400.00	-158
3	3_4	17550.00	21600.00	39150.00	39.15	31.32	1.09	250	200	0.74	18.23	OK	16	0.08	825.00	850.00	-1580.00	-166
4	4_5	39150.00	21600.00	60750.00	60.75	48.60	1.69	250	200	0.74	18.23	OK	18	0.09	825.00	825.00	-1660.00	-175
5	5_6	60750.00	21600.00	82350.00	82.35	65.88	2.29	300	250	0.75	26.51	OK	23	0.09	825.00	825.00	-1750.00	-184
6	6_7	82350.00	0.00	82350.00	82.35	65.88	2.29	300	250	0.75	26.51	OK	15	0.06	825.00	825.00	-1845.00	-190
7	7_8	82350.00	21600.00	82350.00	82.35	65.88	2.29	300	250	0.75	26.51	OK	15	0.06	825.00	825.00	825.00	-196
8	8_9	82350.00	21600.00	82350.00	82.35	65.88	2.2875	350	300	0.76	36.51	OK	12	0.04	850.00	800.00	-1965.00	-204
9	9_10	82350.00	0.00	82350.00	82.35	65.88	2.29	350	300	0.76	36.51	OK	12	0.04	800.00	800.00	-2045.00	-208
10	10_11	82350.00	0.00	82350.00	82.35	65.88	2.29	350	300	0.76	36.51	OK	20	0.07	800.00	800.00	-2085.00	-215
11	11_12	82350.00	21600.00	103950.00	103.95	83.16	2.89	350	300	0.76	36.51	OK	23	0.08	800.00	800.00	-2155.00	-223
12	12_13	103950.00	21600.00	125550.00	125.55	100.44	3.49	350	300	0.76	36.51	OK	16	0.05	800.00	800.00	-2235.00	-229
13	13_14	125550.00	0.00	125550.00	125.55	100.44	3.49	350	300	0.76	36.51	OK	18	0.06	800.00	800.00	-2290.00	-235
14	14_15	125550.00	21600.00	147150.00	147.15	117.72	4.09	400	350	0.77	48.26	OK	22	0.06	800.00	800.00	-2350.00	-241
15	15_16	147150.00	21600.00	168750.00	168.75	135.00	4.69	400	350	0.77	48.26	OK	12	0.03	800.00	800.00	-2415.00	-245
16	16_17	168750.00	21600.00	190350.00	190.35	152.28	5.29	400	350	0.77	48.26	OK	14	0.04	800.00	800.00	-2450.00	-249
17	17_18	190350.00	21600.00	211950.00	211.95	169.56	5.89	400	350	0.77	48.26	OK	14	0.04	800.00	800.00	-2490.00	-253
18	18_19	211950.00	21600.00	233550.00	233.55	186.84	6.49	400	350	0.77	48.26	OK	21	0.06	800.00	800.00	-2530.00	-259
19	19_20	233550.00	0.00	233550.00	233.55	186.84	6.49	400	350	0.77	48.26	OK	9	0.03	800.00	800.00	-2590.00	-261
20	20_21	233550.00	446200.00	679750.00	679.75	543.80	18.88	500	450	0.79	77.16	OK	19	0.04	750.00	750.00	-2615.00	-266
21	21_22	679750.00	0.00	679750.00	679.75	543.80	18.88	500	450	0.79	77.16	OK	21	0.05	750.00	750.00	-2660.00	-271
22	22_23	679750.00	0.00	679750.00	679.75	543.80	18.88	500	450	0.79	77.16	OK	28	0.06	800.00	800.00	-2710.00	-277
23	23_24	679750.00	8775.00	688525.00	688.53	550.82	19.13	500	450	0.79	77.16	OK	32	0.07	850.00	850.00	-2770.00	-284

250mm 14+11+16+18 = 59 M
300mm 23+15+18 = 53 M
350 mm 12+12+20+23+16+18 = 101 M
450 mm 22+12+14+14+21+19 = 252 M
500 m 19+21+28+32 = 100 m

Vinod Kumar
Engineer-Plumbing & Fire Fighting Services
(Design Consultant)
NELSON, C 2,Sec 61-7
NOIDA 201301(U.P)

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(Arch.)
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DESIGN STATEMENT SEWERAGE

Sl No	Sewer Line				Total Rqd.	Peak Discharge		Dia of	Gradiant	Velocity	Design		Length of	Fall	Ground Level		Invert Level	
	marked as	Self	Branch	TotalDaily Water Requirement	In KL	3 times DWE		Pipe	1/	In m/Sec	Discharge	CHECK FOR CARRYING CAPACITY	Line in M	In M	Start	End	Start	En
				In Litre		@80% In		In mm			In LPS							
						KLD	LPS											
24	24_43	688525.00	8775	697300	697.3	557.84	19.37	500	450	0.79	77.16	OK	16	0.04	850	850	-2840	-287
25	25_26	0.00	500.00	500.00	0.50	0.4	0.01	200	250	0.57	8.99	OK	7	0.03	750	750	400	370
26	26_27	500.00	500.00	1000.00	1.00	0.8	0.03	200	250	0.57	8.99	OK	5	0.02	800	800	370	350
27	27_28	1000.00	500.00	1500.00	1.50	1.2	0.04	200	250	0.57	8.99	OK	8	0.03	800	800	350	315
28	28_29	1500.00	500.00	2000.00	2.00	1.6	0.06	200	300	0.52	8.21	OK	14	0.05	900	900	315	260
29	29_30	2000.00	9900.00	11900.00	11.90	9.52	0.33	200	300	0.52	8.21	OK	6	0.02	900	900	260	240
30	30_31	11900.00	9900.00	21800.00	21.80	17.44	0.61	200	300	0.52	8.21	OK	11	0.04	900	900	240	200
31	31_32	21800.00	0.00	21800.00	21.80	17.44	0.61	200	300	0.52	8.21	OK	8	0.03	900	900	200	180
32	32_33	21800.00	9900.00	31700.00	31.70	25.36	0.88	200	300	0.52	8.21	OK	6	0.02	900	900	180	170
33	33_34	31700.00	9900.00	41600.00	41.60	33.28	1.16	200	300	0.52	8.21	OK	12	0.04	900	900	170	130
34	34_35	41600.00	9900.00	51500.00	51.50	41.2	1.43	200	300	0.52	8.21	OK	7	0.02	900	900	130	110
35	35_42	51500.00	9900.00	61400.00	61.40	49.12	1.71	200	300	0.52	8.21	OK	14	0.05	900	900	110	85
36	36_37	0.00	9900.00	9900.00	9.90	7.92	0.28	200	250	0.57	8.99	OK	11	0.04	900	900	315	270
37	37_38	9900.00	19800.00	29700.00	29.70	23.76	0.83	200	250	0.57	8.99	OK	7	0.03	900	900	270	240
38	38_39	29700.00	9900.00	39600.00	39.60	31.68	1.10	200	250	0.57	8.99	OK	11	0.04	900	900	240	195
39	39_40	39600.00	0.00	39600.00	39.60	31.68	1.10	200	250	0.57	8.99	OK	11	0.04	900	900	195	150
40	40_41	39600.00	0.00	39600.00	39.60	31.68	1.10	200	250	0.57	8.99	OK	6	0.02	900	900	150	125
41	41_42	39600.00	9900.00	49500.00	49.50	39.6	1.38	200	250	0.57	8.99	OK	5	0.02	900	900	125	100
42	42_43	49500.00	61400.00	110900.00	110.90	88.72	3.08	300	250	0.75	26.51	OK	31	0.12	900	800	-1100	-287
43	43_48	110900.00	697300.00	808200.00	808.20	646.56	22.45	650	600	0.81	134.52	OK	8	0.01	850	850	-2875	-289
44	44_45	0.00	9900.00	9900.00	9.90	7.92	0.28	200	250	0.57	8.99	OK	18	0.07	850	850	275	200
45	45_46	9900.00	9900.00	19800.00	19.80	15.84	0.55	200	250	0.57	8.99	OK	14	0.06	850	850	200	140
46	46_47	19800.00	9900.00	29700.00	29.70	23.76	0.83	200	250	0.57	8.99	OK	7	0.03	850	850	140	105
47	47_48	29700.00	9900.00	39600.00	39.60	31.68	1.10	200	250	0.57	8.99	OK	26	0.10	850	850	105	0
48	48_STP	39600	808200	847800	847.8	678.24	23.55	650	600	0.81	134.52	OK	10	0.02	850	850	-2890	-300

200 m 7+5+6+14+6+11+6+6+12+7+14+11+7+11+11+6+5+16+14+7+26 = 214 m

300 m 31 m

500 m 16 M

700 m 6+10 = 16 M

I Kuma. Ve ma
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DESIGN STATEMENT SEWERAGE																		
Sl No	Sewer Line marked as	Self	Branch	TotalDaily Water Requirement in Litre	Total Rqd. in KL	Peak Discharge 3 times DWE @80% in		Dia of Pipe in mm	Gradiant 1/	Velocity in m/Sec	Design Discharge in LPS	CHECK FOR CARRYING CAPACITY	Length of Line in M	Fall in M	Ground Level		Invert Level	
						KLD	LPS								Start	End	Start	End
1	1_2	11400	0	11400.00	11.40	9.12	0.32	200	150	0.74	11.61	OK	12	0.08	900.00	900.00	-45.00	-130.00
2	2_3	0	22800.00	22800.00	22.80	18.24	0.63	200	150	0.74	11.61	OK	10	0.07	900.00	900.00	-130.00	-200.00
3	3_4	22800.00	11400.00	34200.00	34.20	27.36	0.95	200	150	0.74	11.61	OK	11	0.07	900.00	900.00	-200.00	-275.00
4	4_5	34200.00	11400.00	45600.00	45.60	36.48	1.27	200	150	0.74	11.61	OK	16	0.11	900.00	900.00	-275.00	-380.00
5	5_6	45600.00	0.00	22800.00	22.80	18.24	0.63	200	150	0.74	11.61	OK	20	0.13	900.00	900.00	-380.00	-510.00
6	6_7	22800.00	34200.00	57000.00	57.00	45.60	1.58	200	150	0.74	11.61	OK	40	0.27	900.00	900.00	-510.00	-615.00
7	7_8	57000.00	0.00	57000.00	57.00	45.60	1.58	250	200	0.74	18.23	OK	12	0.06	900.00	900.00	-615.00	-680.00
8	8_9	57000.00	0.00	57000.00	57	45.6	1.58333	250	200	0.74	18.23	OK	12	0.03	900.00	900.00	-680.00	-745.00
9	9_10	57000.00	57000.00	114000.00	114.00	91.20	3.17	300	250	0.75	26.51	OK	8	0.03	900.00	900.00	-745.00	-780.00
10	10_11	114000.00	11400.00	125400.00	125.40	100.32	3.48	300	250	0.75	26.51	OK	24	0.10	900.00	900.00	-780.00	-875.00
11	11_12	125400.00	34200.00	159600.00	159.60	127.68	4.43	300	250	0.75	26.51	OK	15	0.06	900.00	900.00	-875.00	-935.00
12	12_13	159600.00	22800.00	182400.00	182.40	145.92	5.07	300	250	0.75	26.51	OK	14	0.08	900.00	900.00	-935.00	-995.00
13	13A_13B	0	34200.00	34200.00	34.20	27.36	0.95	200	150	0.74	11.61	OK	15	0.10	900.00	900.00	40.00	-65.00
14	13B_13C	34200.00	22800.00	57000.00	57.00	45.60	1.58	200	150	0.74	11.61	OK	12	0.08	900.00	900.00	-65.00	-145.00
15	13C_13D	57000.00	11400.00	68400.00	68.40	54.72	1.90	200	150	0.74	11.61	OK	13	0.09	900.00	900.00	-145.00	-235.00
16	13D_13E	68400.00	11400.00	79800.00	79.80	63.84	2.22	200	150	0.74	11.61	OK	12	0.08	900.00	900.00	-235.00	-310.00
17	13E_13F	79800.00	22800.00	102600.00	102.60	82.08	2.85	200	150	0.74	11.61	OK	12	0.08	900.00	900.00	-310.00	-390.00
18	13F_13G	102600.00	11400.00	114000.00	114.00	91.20	3.17	250	200	0.74	18.23	OK	10	0.05	900.00	900.00	-390.00	-440.00
19	13G_13H	114000.00	34200.00	148200.00	148.20	118.56	4.12	250	200	0.74	18.23	OK	14	0.07	900.00	900.00	-440.00	-510.00
20	13H_13I	148200.00	0.00	148200.00	148.20	118.56	4.12	250	200	0.74	18.23	OK	14	0.07	900.00	900.00	-510.00	-580.00
21	13I_13J	148200.00	11400.00	159600.00	159.60	127.68	4.43	300	250	0.75	26.51	OK	16	0.06	900.00	900.00	-580.00	-645.00
22	13J_13	159600.00	68700.00	228300.00	228.30	182.64	6.34	300	250	0.75	26.51	OK	13	0.05	900.00	900.00	-645.00	-995.00
23	13_14	410700.00	35500.00	446200.00	446.20	356.96	12.39	350	300	0.76	38.51	OK	8	0.03	900.00	900.00	-995.00	-1025.00

200 mm — 12+10+11+16+20+40+15+12+13+12+12 = 173m
250 mm 12+12+10+14+14 = 62 m
300 m 8+24+15+14+16+13 = 90 M
& 2 m

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(Arc;.
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DESIGN STATEMENT - STORM WATER DRAINAGE.(A1,A2,B1,B2&EWS)

SL NO.	RCC LINE MARKED AS	Area in Sq.M	AREA SERVED SELF	AREA SERVED BRANCH	AREA SERVED TOTAL	RUNOFF ASSUMING RF @ 1/4" (6.25MM)	DIA OF PIPE	GRADIANT. 1/	VELOCITY FT/SEC	DESIGN DISCHARGE.	CHECK FOR CARRYING CAPACITY	LENGTH OF LINE	FALL IN METER	GROUND LEVEL U/END	GROUND LEVEL L/END	INVERT LEVEL U/END	INVERT LEVEL L/END
			IN ACRE			IN LPS.	IN MM			IN LPS							
1	1_2	50.00	0.01	0	0.01	0.0521	400	450	0.68	42.56	OK	20	0.04	800.00	800.00	0.00	-50.00
2	2_3	75.00	0.02	0.00	0.02	0.0781	400	450	0.68	42.56	OK	14	0.03	800.00	800.00	800.00	-80.00
3	3_4	100.00	0.02	0.03	0.06	0.2344	400	450	0.68	42.56	OK	10	0.02	800.00	800.00	-80.00	-105.00
4	4_5	50.00	0.01	0.06	0.07	0.2865	400	450	0.66	42.56	OK	15	0.03	800.00	800.00	-105.00	-140.00
5	5_6	150.00	0.04	0.07	0.11	0.4427	400	450	0.68	42.58	OK	21	0.05	800.00	800.00	-140.00	-190.00
6	6_7	100.00	0.02	0.11	0.13	0.5469	400	450	0.88	42.56	OK	14	0.03	800.00	800.00	-190.00	-220.00
7	7_8	50.00	0.01	0.13	0.14	0.5990	400	450	0.88	42.58	OK	12	0.03	900.00	900.00	-220.00	-245.00
8	8_9	250	0.06	0.14	0.20	0.8594	450	500	0.69	55.27	OK	24	0.05	800.00	800.00	-245.00	-285.00
9	9_10	300.00	0.07	0.20	0.28	1.1719	450	500	0.69	55.27	OK	12	0.02	800.00	800.00	-285.00	-320.00
10	10_outfall	200.00	0.05	0.28	0.33	1.3802	450	500	0.69	55.27	OK	52	0.10	800.00	800.00	-320.00	-330.00
11	1_2	150.00	0.04	0.00	0.04	0.1563	400	450	0.68	42.56	OK	10	0.02	800.00	800.00	0.00	-25.00
12	2_3	100.00	0.02	0.04	0.06	0.2604	400	450	0.88	42.58	OK	6	0.01	800.00	800.00	-25.00	-40.00
13	3_4	125.00	0.03	0.06	0.09	0.3906	400	450	0.68	42.58	OK	10	0.02	800.00	800.00	-40.00	-65.00
14	4_5	310.00	0.08	0.09	0.17	0.7135	400	450	0.68	42.56	OK	15	0.03	800.00	800.00	-65.00	-100.00
15	5_6	450.00	0.11	0.17	0.28	1.1823	400	450	0.68	42.58	OK	8	0.02	800.00	800.00	-100.00	-115.00
16	6_7	50.00	0.01	0.28	0.29	1.2344	400	450	0.68	42.56	OK	5	0.01	800.00	800.00	-115.00	-125.00
17	7_8	210.00	0.05	0.29	0.34	1.4531	400	450	0.68	42.58	OK	11	0.02	800.00	800.00	-125.00	-145.00
18	8_9	750	0.19	0.34	0.53	2.2344	450	500	0.69	55.27	OK	16	0.03	800.00	800.00	-145.00	-180.00
19	9_10	200.00	0.05	0.53	0.58	2.4427	450	500	0.69	55.27	OK	8	0.02	800.00	800.00	-180.00	-200.00
20	10_11	125.00	0.03	0.58	0.61	2.5729	450	500	0.69	55.27	OK	18	0.04	800.00	800.00	-200.00	-235.00
21	11_12	135.00	0.03	0.61	0.64	2.7135	450	500	0.69	55.27	OK	15	0.03	800.00	800.00	-235.00	-265.00
22	12_outfall	500.00	0.12	0.64	0.77	3.2344	450	500	0.69	55.27	OK	10	0.02	800.00	800.00	-265.00	-275.00
												327					
						400 mm	259 M										
						450 m	68 M										
							327 M										

6 Total
400 mm 259+356+926.41 = 1541.41 say 1545 M
450 mm 68+112+115.50 = 295.50 say 300 M
500 mm 130+166.54 = 296.50 say 300 M
550 m 54+110 = 164 say 165 M
600 m 26+389 = 415 say 415 m
650 m 545 = 543 say 540 M

Vin d Kumar Ve ma
Engineer-Plumbing & Fire Fighting Services
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Authorised Signatory

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CA/2007/[illegible]

DESIGN STATEMENT - STORM WATER DRAINAGE.(CARNATION)

SL NO.	RCC LINE MARKED AS	Area In Sq.M	AREA SERVED SELF	AREA SERVED BRANCH	AREA SERVED TOTAL	RUNOFF ASSUMING RF @ 1/4" (6.25MM)	DIA OF PIPE	GRADIANT. 1/	VELOCITY FT/SEC	DESIGN DISCHARGE.	CHECK FOR CARRYING CAPACITY	LENGTH OF LINE	FALL IN METER	GROUND LEVEL U/END	GROUND LEVEL L/END	INVERT LEVE U/END	INVERT LEVE L/E
			IN ACRE			IN LPS.	IN MM			IN LPS							
1	1_2	150.00	0.04	0	0.04	0.1563	400	450	0.68	42.56	OK	14	0.03	750.00	750.00	300.00	250.
2	2_3	150.00	0.04	0.04	0.07	0.3125	400	450	0.68	42.56	OK	11	0.02	750.00	750.00	250.00	150.
3	3_4	200.00	0.05	0.07	0.12	0.5208	400	450	0.68	42.56	OK	14	0.03	750.00	750.00	150.00	115.
4	4_5	750.00	0.19	0.12	0.31	1.3021	400	450	0.66	42.56	OK	12	0.03	750.00	750.00	115.00	90.(
5	5_6	250.00	0.06	0.31	0.37	1.5625	400	450	0.68	42.56	OK	16	0.04	750.00	750.00	90.00	55.(
6	6_7	500.00	0.12	0.37	0.49	2.0833	400	450	0.68	42.56	OK	10	0.02	750.00	75.00	55.00	30.(
7	7_8	100.00	0.02	0.49	0.52	2.1875	400	450	0.68	42.56	OK	9	0.02	800.00	800.00	30.00	10.(
8	8_9	150	0.04	0.52	0.56	2.3438	400	450	0.68	42.56	OK	24	0.05	800.00	800.00	10.00	-40.(
9	9_10	300	0.07	0.56	0.63	2.66	450.00	500.00	0.69	55.27	OK	14	0.028	800	800	-40	-7(
11	10_11	230.00	0.06	0.63	0.69	2.8958	450	500	0.69	55.27	OK	23	0.05	800.00	800.00	-70.00	-115.
12	11_12	600.00	0.15	0.69	0.84	3.5208	450	500	0.69	55.27	OK	18	0.04	800.00	800.00	-115.00	-150.
13	12_13	125.00	0.03	0.84	0.87	3.6510	450	500	0.69	55.27	OK	16	0.04	800.00	800.00	-150.00	-180.
14	13_14	600.00	0.15	0.87	1.01	4.2760	450	500	0.69	55.27	OK	15	0.03	800.00	800.00	-180.00	-210.(
15	14_15	450.00	0.11	1.01	1.13	4.7448	450	500	0.69	55.27	OK	10	0.02	800.00	800.00	-210.00	-235.(
16	15_16	15.00	0.00	1.13	1.13	4.7604	450	500	0.69	55.27	OK	14	0.03	600.00	600.00	-235.00	-265.(
17	16_17	2500.00	0.62	1.13	1.75	7.3646	500	550	0.71	69.80	OK	15	0.03	800.00	800.00	-265.00	-295.(
18	17_18	350	0.09	1.75	1.83	7.7292	500	550	0.71	69.80	OK	20	0.04	800.00	800.00	-295.00	-320.(
19	18_19	460.00	0.11	1.83	1.95	8.2083	500	550	0.71	69.80	OK	19	0.03	800.00	800.00	-320.00	-355.(
20	19_20	125.00	0.03	1.95	1.98	8.3385	500	550	0.71	69.80	OK	21	0.04	800.00	800.00	-355.00	-395.(
21	20_21	460.00	0.11	1.98	2.09	8.8177	500	550	0.71	69.80	OK	26	0.05	800.00	800.00	-395.00	-440.(
22	21_22	1000.00	0.25	2.09	2.34	9.86	500	550	0.71	69.80	OK	27	0.05	800.00	800.00	-440.00	-485.(
23	22_23	750.00	0.19	2.34	2.52	10.64	550	600	0.72	86.16	OK	18	0.03	800.00	800.00	-485.00	-515.(
24	23_24	500.00	0.12	2.52	2.65	11.16	550	600	0.72	86.16	OK	13	0.02	800.00	800.00	-515.00	-540.(
25	24_outfall	300.00	0.07	2.65	2.72	11.47	550	600	0.72	86.16	OK	10	0.02	800.00	800.00	-540.00	-560.(
26	1A_1B	400.00	0.10	0.00	0.10	0.42	400	500	0.64	40.37	OK	12	0.02	600.00	600.00	270.00	245.0
27	1B_1C	400.00	0.10	0.10	0.20	0.83	400	500	0.64	40.37	OK	9	0.02	800.00	600.00	245.00	225.0
28	1C_1D	360.00	0.09	0.20	0.29	1.21	400	500	0.64	40.37	OK	12	0.02	800.00	800.00	225.00	200.0
29	1D_1E	250.00	0.06	0.29	0.35	1.47	400	500	0.64	40.37	OK	8	0.02	800.00	800.00	200.00	185.0
30	1E_1F	300.00	0.07	0.35	0.42	1.78	400	500	0.64	40.37	OK	14	0.03	800.00	800.00	185.00	155.0
31	1F_1M	350.00	0.09	0.42	0.51	2.15	400	500	0.64	40.37	OK	11	0.02	800.00	800.00	155.00	145.0
32	1G_1H	150.00	0.04	0.00	0.04	0.16	400	500	0.64	40.37	OK	12	0.02	800.00	800.00	300.00	275.0
33	1H_1I	155.00	0.04	0.04	0.08	0.32	400	500	0.64	40.37	OK	10	0.02	800.00	800.00	275.00	250.0
34	1I_1J	200.00	0.05	0.08	0.12	0.53	400	500	0.64	40.37	OK	12	0.02	800.00	800.00	250.00	225.0

Vin d Kumar Ve ma
Engineer-Plumbing & Fire
Fighting Services
(Design Consultant)
NE TON, C 2,Sector-7
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ORRIS INFRA STRUCTURE PVT. LTD.

Praveen Kant Verma
(Architect)
CA/2007

DESIGN STATEMENT - STORM WATER DRAINAGE.(CARNATION)

SL NO.	RCC LINE MARKED AS	Area in Sq M	AREA SERVED SELF	BRANCH	TOTAL	RUNOFF ASSUMING RF @ 1/4" (6.25MM)	D.A OF PIPE	GRADIANT. 1/	VELOCITY FT/SEC	DESIGN DISCHAROE.	CHECK FOR CARRYING CAPACITY	LENGTH OF LINE	FALL IN METER	GROUND LEVEL U/END	GROUND LEVEL UEND	INVERT LEVEL U/END	INVERT LEVEL L/E
			IN ACRE			IN LPS.	IN MM			IN LPS							
35	1J_1K	220.00	0.05	0.12	0.18	0.76	400	500	0.64	40.37	OK	9	0.02	800.00	800.00	225.00	205.
36	1K_1L	200.00	0.05	0.18	0.23	0.96	400	500	0.64	40.37	OK	13	0.03	800.00	800.00	205.00	175.
37	1L_1M	300.00	0.07	0.23	0.30	1.28	400	500	0.64	40.37	OK	13	0.03	800.00	800.00	175.00	130.
38	1M_1N	250.00	0.06	0.81	0.87	3.68	450	500	0.69	55.27	OK	16	0.03	800.00	800.00	130.00	110.
39	1N_1R	1500.00	0.37	0.87	1.24	5.24	550	800	0.83	74.62	OK	13	0.02	800.00	800.00	110.00	95.0
40	1R_1S	800.00	0.20	1.24	1.44	6.08	600	800	0.87	94.11	OK	13	0.02	800.00	800.00	95.00	80.0
41	1S_142	225.00	0.06	1.44	1.50	6.31	600	800	0.87	94.11	OK	13	0.02	800.00	800.00	80.00	60.0
42	25_26	110.00	0.03	0.00	0.03	0.11	400	450	0.88	42.56	OK	15	0.03	900.00	900.00	300.00	265.
43	26_27	125.00	0.03	0.03	0.06	0.24	400	450	0.88	42.56	OK	12	0.03	900.00	900.00	265.00	240.
44	27_28	115.00	0.03	0.06	0.09	0.36	400	450	0.88	42.56	OK	13	0.03	900.00	900.00	240.00	210.
45	28_29	300.00	0.07	0.09	0.16	0.68	400	450	0.88	42.56	OK	15	0.03	900.00	900.00	210.00	175.
46	29_30	350.00	0.09	0.16	0.25	1.04	400	450	0.88	42.56	OK	14	0.03	900.00	900.00	175.00	150.
47	30_31	450.00	0.11	0.25	0.36	1.51	400	450	0.88	42.56	OK	14	0.03	900.00	900.00	150.00	120.
48	31_138	500.00	0.12	0.36	0.48	2.03	400	450	0.88	42.56	OK	12	0.03	900.00	900.00	120.00	95.0

400 m 356 m
450 m 112 m
350 m 130 m
350 m 54 m
600 m 26 m

65 m

Vinod Kumar Verma
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Praveen Kant Verma
(Archi...
CA/20...

DESIGN STATEMENT - STORM WATER DRAINAGE(ASTER COURT& ASTER PREMIER)

SL	RCC LINE	Area	AREA SERVED			RUNOFF ASSUMING	DIA OF	GRADIANT.	VELOCITY	DESIGN	CHECK FOR	LENGTH	FALL IN	GROUND LEVEL		INVERT LEVEL	
NO.	MARKED AS	In Sq.M	SELF	BRANCH	TOTAL	RF @ 1/4" (6.25MM)	PIPE	1/	FT/SEC	DISCHARGE	CARRYING CAPACITY	OF LINE	METER	U/END	L/END	U/END	L/END
			IN ACRE			IN LPS.	IN MM			IN LPS							
1	1_2	299.00	0.07	0	0.07	0.3115	400	450	0.68	42.56	OK	25	0.06	850.00	850.00	250.00	195.00
2	2_3	299.00	0.07	0.07	0.15	0.6229	400	450	0.68	42.56	OK	21	0.05	850.00	850.00	195.00	150.00
3	3_4	100.00	0.02	0.15	0.17	0.7271	400	450	0.68	42.56	OK	24	0.05	850.00	850.00	150.00	95.00
4	4_5	100.00	0.02	0.17	0.20	0.8313	400	450	0.68	42.56	OK	19	0.04	850.00	850.00	95.00	40.00
5	5_21	100.00	0.02	0.20	0.22	0.9354	400	450	0.68	42.56	OK	22	0.05	850.00	850.00	40.00	-10.00
6	6_7	125.00	0.03	0.00	0.03	0.1302	400	450	0.68	42.56	OK	9.2	0.02	900.00	900.00	300.00	280.00
7	7_8	61.00	0.02	0.03	0.05	0.1938	400	450	0.68	42.56	OK	6.6	0.01	900.00	900.00	280.00	265.00
8	8_9	61.00	0.02	0.05	0.06	0.2573	400	450	0.68	42.56	OK	6.3	0.01	900.00	900.00	265.00	250.00
9	9_10	61.00	0.02	0.06	0.08	0.3208	400	450	0.68	42.56	OK	10	0.02	900.00	900.00	250.00	230.00
10	10_11	61.00	0.02	0.08	0.09	0.3844	400	450	0.68	42.56	OK	14.6	0.03	900.00	900.00	230.00	200.00
11	11_12	61.00	0.02	0.09	0.11	0.4479	400	450	0.68	42.56	OK	9.4	0.02	900.00	900.00	200.00	180.00
12	12_13	61.00	0.02	0.11	0.12	0.5115	400	450	0.68	42.56	OK	7.45	0.02	900.00	900.00	180.00	165.00
13	13_14	61.00	0.02	0.12	0.14	0.5750	400	450	0.68	42.56	OK	5.69	0.01	900.00	900.00	165.00	150.00
14	14_15	86.00	0.02	0.14	0.16	0.6646	400	450	0.68	42.56	OK	9.32	0.02	900.00	900.00	150.00	130.00
15	15_20	36.00	0.01	0.16	0.17	0.7021	400	450	0.68	42.56	OK	8.3	0.02	900.00	900.00	130.00	105.00
16	16_17	61.00	0.02	0.00	0.02	0.0635	400	450	0.68	42.56	OK	8.2	0.02	900.00	900.00	300.00	280.00
17	17_18	61.00	0.02	0.02	0.03	0.1271	400	450	0.68	42.56	OK	6.25	0.01	900.00	900.00	280.00	265.00
18	18_19	61.00	0.02	0.03	0.05	0.1906	400	450	0.68	42.56	OK	9	0.02	900.00	900.00	265.00	245.00
19	19_20	86.00	0.02	0.05	0.07	0.2802	400	450	0.68	42.56	OK	15.17	0.03	900.00	900.00	245.00	215.00
20	20_21	86.00	0.02	0.23	0.25	1.0719	400	450	0.68	42.56	OK	11	0.02	900.00	900.00	215.00	-10.00
21	21_22	36.00	0.01	0.48	0.49	2.0448	450	500	0.69	55.27	OK	28.2	0.06	850.00	850.00	-10.00	-65.00
22	22_23	1168.00	0.29	0.49	0.77	3.2615	450	500	0.69	55.27	OK	28	0.06	850.00	850.00	-65.00	-120.00
23	23_24	1168.00	0.29	0.77	1.06	4.4781	450	500	0.69	55.27	OK	27.3	0.05	850.00	850.00	-120.00	-175.00
24	24_33	1168.00	0.29	1.06	1.35	5.6948	450	500	0.69	55.27	OK	32	0.06	850.00	850.00	-175.00	-230.00
25	25_26	160.00	0.04	0.00	0.04	0.1667	400	450	0.68	42.56	OK	26.2	0.06	900.00	900.00	300.00	270.00
26	26_27	47.50	0.01	0.04	0.05	0.2161	400	450	0.68	42.56	OK	25.5	0.06	900.00	900.00	270.00	215.00
27	27_28	160.00	0.04	0.05	0.09	0.3828	400	450	0.68	42.56	OK	27.57	0.06	900.00	900.00	215.00	150.00
28	28_29	175.00	0.04	0.09	0.13	0.5651	400	450	0.68	42.56	OK	5.77	0.01	900.00	900.00	150.00	130.00
29	29_30	87.50	0.02	0.13	0.16	0.6563	400	450	0.68	42.56	OK	8.66	0.02	900.00	900.00	130.00	110.00
30	30_31	125.00	0.03	0.16	0.19	0.7865	400	450	0.68	42.56	OK	7.8	0.02	900.00	900.00	110.00	90.00
31	31_32	125.00	0.03	0.19	0.22	0.9167	400	450	0.68	42.56	OK	11.3	0.03	900.00	900.00	90.00	65.00
32	32_33	125.00	0.03	0.22	0.25	1.0469	400	450	0.68	42.56	OK	11.4	0.03	900.00	900.00	65.00	-230.00
33	33_34	100	0.02	1.60	1.62	6.8458	500	550	0.71	69.80	OK	35	0.06	900.00	900.00	-230.00	-295.00
34	34_35	250.00	0.06	1.62	1.69	7.1063	500	550	0.71	69.80	OK	25	0.05	900.00	900.00	-295.00	-335.00
35	35_36	175.00	0.04	1.69	1.73	7.2885	500	450	0.79	77.16	OK	19.36	0.04	900.00	900.00	-335.00	-370.00
36	36_37	180	0.04	1.73	1.77	7.4760	500	550	0.71	69.80	OK	29.98	0.05	900.00	900.00	-370.00	-425.00
37	37_38	150	0.04	1.77	1.81	7.6323	500	550	0.71	69.80	OK	25.5	0.05	900.00	900.00	-425.00	-470.00
38	38_55	180.00	0.04	1.81	1.85	7.8198	500	550	0.71	69.80	OK	31.7	0.06	900.00	900.00	-470.00	-530.00
39	39_40	305	0.08	0.00	0.08	0.3177	400	500	0.64	40.37	OK	12.25	0.02	900.00	900.00	300.00	275.00
40	40_41	315	0.08	0.08	0.15	0.6458	400	500	0.64	40.37	OK	14.47	0.03	900.00	900.00	275.00	245.00
41	41_42	377	0.09	0.15	0.25	1.0385	400	500	0.64	40.37	OK	11	0.02	900.00	900.00	245.00	220.00
42	42_43	353	0.09	0.25	0.33	1.4063	400	500	0.64	40.37	OK	17.22	0.03	900.00	900.00	220.00	185.00
43	43_44	395	0.10	0.33	0.43	1.8177	400	500	0.64	40.37	OK	10.6	0.02	900.00	900.00	185.00	165.00
44	44_45	256	0.06	0.43	0.49	2.0844	400	500	0.64	40.37	OK	10	0.02	900.00	900.00	165.00	145.00
45	45_62	256	0.06	0.49	0.56	2.3510	400	500	0.64	40.37	OK	20.22	0.04	900.00	900.00	145.00	115.00
46	46_47	270	0.07	0	0.07	0.2813	400	450	0.68	42.56	OK	9	0.02	900.00	900.00	300.00	280.00
47	47_48	300	0.07	0.07	0.14	0.5938	400	450	0.68	42.56	OK	14	0.03	900.00	900.00	280.00	245.00
48	48_49	250	0.06	0.14	0.20	0.8542	400	450	0.68	42.56	OK	10	0.02	900.00	900.00	245.00	220.00
49	49_50	200	0.05	0.20	0.25	1.0625	400	450	0.68	42.56	OK	14	0.03	900.00	900.00	220.00	190.00
50	50_51	315	0.08	0.25	0.33	1.3906	400	450	0.68	42.56	OK	10	0.02	900.00	900.00	190.00	170.00

Vin d Kuma Verma
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(Design Consultants)
NELSON, C-2, Sec-3
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ORRIS INFRASTRUCTURE PVT. LTD.

Authorised Signatory

Praveen Kant Verma
(Archi
CA/2007

DESIGN STATEMENT - STORM WATER DRAINAGE(ASTER COURT& ASTER PREMIER)

SL	RCC LINE	Area	AREA SERVED			RUNOFF ASSUMING	DIA OF	GRADIANT.	VELOCITY	DESIGN	CHECK FOR	LENGTH	FALL IN	GROUND LEVEL		INVERT LEVEL	
NO.	MARKED AS	In Sq.M	SELF	BRANCH	TOTAL	RF @ 1/4" (6.25MM)	PIPE	1/	FT/SEC	DISCHARGE.	CARRYING	OF LINE	METER	U/END	L/END	U/END	L/END
			IN ACRE			IN LPS.	IN MM			IN LPS	CAPACITY						
51	51_52	290	0.07	0.33	0.40	1.6927	400	450	0.68	42.56	OK	13	0.03	900.00	900.00	170.00	140.00
52	52_53	300	0.07	0.96	1.03	4.3563	400	450	0.68	42.56	OK	11	0.02	900.00	900.00	115.00	95.00
53	53_54	280	0.07	1.03	1.10	4.6479	400	450	0.68	42.56	OK	20	0.04	900.00	900.00	95.00	90.00
54	54_55	500	0.12	1.10	1.23	5.1688	400	450	0.68	42.56	OK	19	0.04	900.00	900.00	900.00	55.00
55	55_56	450	0.11	3.08	3.19	13.4573	550	600	0.72	86.16	OK	32	0.05	900.00	900.00	-530.00	-585.00
56	56_57	500	0.12	3.19	3.32	13.9781	550	600	0.72	86.16	OK	20	0.03	900.00	900.00	-585.00	-620.00
57	57_73	110	0.03	3.32	3.34	14.0927	550	600	0.72	86.16	OK	13	0.02	900.00	900.00	-620.00	-640.00
58	58_59	90	0.02	0	0.0222	0.0938	400	450	0.68	42.56	OK	8	0.02	900.00	900.00	300.00	285.00
59	59_60	120	0.03	0.0222	0.0519	0.2188	400	450	0.68	42.56	OK	8	0.02	900.00	900.00	285.00	265.00
60	60_61	110	0.03	0.0519	0.0791	0.3333	400	450	0.68	42.56	OK	6	0.01	900.00	900.00	265.00	250.00
61	61_62	100	0.02	0.0791	0.1038	0.4375	400	450	0.68	42.56	OK	7	0.02	900.00	900.00	250.00	235.00
62	62_63	120	0.03	0.1038	0.1334	0.5625	400	450	0.68	42.56	OK	19	0.04	900.00	900.00	235.00	195.00
63	63_64	90	0.02	0.1334	0.1557	0.6563	400	450	0.68	42.56	OK	8	0.02	900.00	900.00	195.00	175.00
64	64_65	150	0.04	0.1557	0.1927	0.8125	400	450	0.68	42.56	OK	8	0.02	900.00	900.00	175.00	160.00
65	65_66	160	0.04	0.1927	0.2323	0.9792	400	450	0.68	42.56	OK	8	0.02	900.00	900.00	160.00	140.00
66	66_67	140	0.03	0.2323	0.2669	1.1250	400	450	0.68	42.56	OK	8	0.02	900.00	900.00	140.00	125.00
67	67_73	170	0.04	0.2669	0.3089	1.3021	400	450	0.68	42.56	OK	12	0.03	900.00	900.00	125.00	100.00
68	73_74	350	0.09	3.6518	3.7383	15.7594	550	600	0.72	86.16	OK	31	0.05	900.00	900.00	-640.00	-690.00
69	74_80	250	0.06	3.7606	3.8223	16.1135	550	600	0.72	86.16	OK	14	0.02	900.00	900.00	-690.00	-715.00
70	75_76	250	0.06	0	0.0618	0.2604	400	450	0.68	42.56	OK	6	0.01	900.00	900.00	300.00	285.00
71	76_77	179	0.04	0.0618	0.1060	0.4469	400	450	0.68	42.56	OK	10	0.02	900.00	900.00	285.00	255.00
72	77_78	850	0.21	0.1060	0.3160	1.3323	400	450	0.68	42.56	OK	11	0.02	900.00	900.00	255.00	230.00
73	78_79	275	0.07	0.3160	0.3840	1.6188	400	450	0.68	42.56	OK	15	0.03	900.00	900.00	230.00	195.00
74	79_80	16	0.00	0.3840	0.3879	1.6354	400	450	0.68	42.56	OK	16	0.04	900.00	900.00	195.00	160.00
75	80_81	133	0.03	4.2103	4.2431	17.8875	600	650	0.74	104.40	OK	25	0.04	900.00	900.00	-715.00	-755.00
76	81_82	150	0.04	4.2431	4.28	18.04375	600	650	0.74	104.40	OK	8	0.01	900.00	900.00	-755.00	-770.00
77	82_83	350	0.09	4.2802	4.37	18.408	600	650	0.74	104.40	OK	9	0.01	900.00	900.00	-770.00	-785.00
78	83_84	480	0.12	4.3667	4.49	18.908	600	650	0.74	104.40	OK	20	0.03	900.00	900.00	-785.00	-815.00
79	84_85	150	0.04	4.4853	4.52	19.065	600	650	0.74	104.40	OK	12	0.02	900.00	900.00	-815.00	-835.00
80	85_86	2000	0.49	4.5224	5.02	21.148	600	650	0.74	104.40	OK	18	0.03	900.00	900.00	-835.00	-860.00
81	86_87	210	0.05	5.0166	5.07	21.367	600	650	0.74	104.40	OK	14	0.02	900.00	900.00	-860.00	-880.00
82	87_88	225	0.06	5.0684	5.12	21.601	600	650	0.74	104.40	OK	24	0.04	900.00	900.00	-880.00	-920.00
83	88_89	175	0.04	5.1240	5.17	21.783	600	650	0.74	104.40	OK	18	0.03	900.00	900.00	-920.00	-950.00
84	89_90	110	0.03	5.1673	5.19	21.898	600	650	0.74	104.40	OK	20	0.03	900.00	900.00	-950.00	-980.00
85	90_91	700	0.17	5.1945	5.37	22.627	600	650	0.74	104.40	OK	16	0.02	900.00	900.00	-980.00	-995.00
86	91_92	1100	0.27	5.3874	5.64	23.773	600	650	0.74	104.40	OK	15	0.02	900.00	900.00	-995.00	-1020.00
87	92_93	220	0.05	5.6392	5.69	24.002	600	650	0.74	104.40	OK	24	0.04	900.00	900.00	-1020.00	-1075.00
88	93_94	450	0.11	5.6936	5.80	24.471	600	650	0.74	104.40	OK	29	0.04	900.00	900.00	-1075.00	-1120.00
89	94_95	210	0.05	5.8048	5.86	24.690	600	650	0.74	104.40	OK	19	0.03	900.00	900.00	-1120.00	-1150.00
90	95_96	225	0.06	5.8567	5.91	24.924	600	650	0.74	104.40	OK	30	0.05	900.00	900.00	-1150.00	-1195.00
91	96_97	450	0.11	5.9123	6.02	25.393	600	650	0.74	104.40	OK	21	0.03	900.00	900.00	-1195.00	-1230.00
92	97_98	120	0.03	6.0235	6.05	25.518	600	650	0.74	104.40	OK	25	0.04	900.00	900.00	-1230.00	-1255.00
93	98_99	150	0.04	6.0531	6.09	25.674	600	650	0.74	104.40	OK	26	0.04	900.00	900.00	-1255.00	-1295.00
94	99_104	75	0.02	6.0902	6.11	25.752	600	650	0.74	104.40	OK	16	0.02	900.00	900.00	-1295.00	-1320.00
95	100"_101"	360	0.09	0.00	0.09	0.38	400	450	0.68	42.56	OK	25	0.06	850.00	850.00	350.00	295.00
96	101"_102"	250	0.06	0.09	0.15	0.64	400	450	0.68	42.56	OK	13	0.03	850.00	850.00	295.00	265.00
97	102"_103"	230	0.06	0.15	0.21	0.88	400	450	0.68	42.56	OK	19	0.04	850.00	850.00	265.00	220.00
98	103"_104"	100	0.02	0.21	0.23	0.98	400	450	0.68	42.56	OK	17	0.04	850.00	850.00	220.00	180.00
99	104_109	50	0.01	6.34	6.35	26.78	650	700	0.75	124.54	OK	15	0.02	850.00	850.00	180.00	-1340.00
100	105"_106'	275	0.07	0	0.07	0.29	400	450	0.68	42.56	OK	13	0.03	850.00	850.00	350.00	320.00
101	106"_107"	250	0.06	0.07	0.13	0.55	400	450	0.68	42.56	OK	20	0.04	850.00	850.00	320.00	275.00
102	107"_108"	350	0.09	0.13	0.22	0.91	400	450	0.68	42.56	OK	30	0.07	850.00	850.00	275.00	205.00

Vinod Kumar
Engineer-Plumbing
Fighting Services
(Design Consultant)
NELSON, C-2,Sector-7
NOIDA-201301(U.P.)

ORRIS INFRASTRUCTURE PVT. LTD.

Authorised Signatory

600 mm 13 M
450 mm 300 M
375 mm 110 M
600 M 385 M
864 M

1670.46

Praveen Kant Vi...
(Archi...
CA/2007/4...

DESIGN STATEMENT - STORM WATER DRAINAGE(ASTER COURT& ASTER PREMIER)

1670.48

SL NO.	RCC LINE MARKED AS	Area In Sq.M	AREA SERVED IN ACRE SELF	BRANCH	TOTAL	RUNOFF ASSUMING RF @ 1/4" (6.25MM) IN LPS.	DIA OF PIPE IN MM	GRADIANT. 1/	VELOCITY FT/SEC	DESIGN DISCHARGE. IN LPS	CHECK FOR CARRYING CAPACITY	LENGTH OF LINE	FALL IN METER	GROUND LEVEL U/END	L/END	INVERT LEVEL U/END	L/END
103	108"_109"	125	0.03	0.22	0.25	1.04	400	450	0.68	42.56	OK	16	0.04	850.00	850.00	205.00	170.00
104	109_110	750	0.19	6.60	6.79	28.61	650	700	0.75	124.54	OK	19	0.03	800.00	800.00	-1340.00	-1370.00
105	110_118	450	0.11	6.79	6.90	29.08	650	700	0.75	124.54	OK	16	0.02	800.00	800.00	-1370.00	-1390.00
106	118_119	2500	0.62	6.90	7.51	31.68	650	700	0.75	124.54	OK	80	0.11	800.00	800.00	-1390.00	-1400.00
107	119_120	70	0.02	7.51	7.53	31.75	650	700	0.75	124.54	OK	30	0.04	800.00	800.00	-1400.00	-1445.00
108	120_121	250	0.06	7.53	7.59	32.01	650	700	0.75	124.54	OK	28	0.04	800.00	800.00	-1445.00	-1485.00
109	121_122	150	0.04	7.59	7.63	32.17	650	700	0.75	124.54	OK	20	0.03	800.00	800.00	-1485.00	-1515.00
110	122_123	175	0.04	7.63	7.67	32.35	650	700	0.75	124.54	OK	20	0.03	800.00	800.00	-1515.00	-1545.00
111	123_124	180	0.04	7.67	7.72	32.54	650	700	0.75	124.54	OK	20	0.03	800.00	800.00	-1545.00	-1575.00
112	124_125	185	0.05	7.72	7.76	32.73	650	700	0.75	124.54	OK	17	0.02	800.00	800.00	-1575.00	-1600.00
113	125_126	180	0.04	7.76	7.81	32.92	650	700	0.75	124.54	OK	17	0.02	800.00	800.00	-1600.00	-1625.00
114	126_127	200	0.05	7.81	7.86	33.13	650	700	0.75	124.54	OK	27	0.04	800.00	800.00	-1625.00	-1665.00
115	127_128	115	0.03	7.86	7.89	33.25	650	700	0.75	124.54	OK	29	0.04	800.00	800.00	-1665.00	-1705.00
116	128_129	225	0.06	7.89	7.94	33.48	650	700	0.75	124.54	OK	19	0.03	800.00	800.00	-1705.00	-1730.00
117	129_135	129	0.03	7.94	7.97	33.62	650	700	0.75	124.54	OK	21	0.03	800.00	800.00	-1730.00	-1760.00
118	130_131	125	0.03	0	0.03	0.13	400	450	0.68	42.56	OK	7	0.02	900.00	900.00	300.00	285.00
119	131_132	125	0.03	0.03	0.06	0.26	400	450	0.68	42.56	OK	15	0.03	900.00	900.00	285.00	250.00
120	132_133	125	0.03	0.06	0.09	0.39	400	450	0.68	42.56	OK	7	0.02	900.00	900.00	250.00	235.00
121	133_134	125	0.03	0.09	0.12	0.52	400	450	0.68	42.56	OK	7	0.02	900.00	900.00	235.00	220.00
122	135_136	150	0.04	8.10	8.13	34.29	650	700	0.75	124.54	OK	20	0.03	900.00	900.00	-1760.00	-1790.00
123	136_137	110	0.03	8.13	8.16	34.41	650	700	0.75	124.54	OK	20	0.03	900.00	900.00	-1790.00	-1820.00
124	137_138	210	0.05	8.16	8.21	34.63	650	700	0.75	124.54	OK	34	0.05	900.00	900.00	-1820.00	-1870.00
125	138_139	2500	0.62	8.21	8.83	37.23	650	700	0.75	124.54	OK	20	0.03	900.00	900.00	-1870.00	-1900.00
126	139_140	175	0.04	8.83	8.87	37.41	650	700	0.75	124.54	OK	20	0.03	900.00	900.00	-1900.00	-1930.00
127	140_141	115	0.03	8.87	8.90	37.53	650	700	0.75	124.54	OK	20	0.03	900.00	900.00	-1930.00	-1960.00
128	141_142	125	0.03	8.90	8.93	37.66	650	700	0.75	124.54	OK	21	0.03	900.00	900.00	-1960.00	-1990.00
129	142 outfall	75	0.02	8.93	8.95	37.74	650	700	0.75	124.54	OK	10	0.01	900.00	900.00	-1990.00	-2005.00

400mm 52 M
650mm 528 M

2250.48

Ann. IV

400 mm 524.44 + 350 + 52 = 926.44 M
450 mm 115.5 = 115.50 M
500 mm 166.34 = 166.34 M
530mm 110 = 110.00 M
600 mm 389 = 389 M
650 mm 543 = 543 M

Vinod Kumar Verma
Engineer-Plumbing & Fire Fighting Services
(Design Consultant)
NELSON, ... 7
NOIDA 201301 (U.P.)

ORRIS INFRASTRUCTURE PVT. LTD.
Authorised Signatory

Praveen Kant
(Arch.)
CA/2007/40...

C.E. No. 11129
Dated 8/8/13
Annexure-A

SUB:- **Approval of service plan /estimate of Group Housing Colony namely " Carnation Residency, Aster Court & Aster Court Primer etc. on the land measuring 29.068 acres being developed by M/S. Orris Infrastructure Pvt.Ltd. (License No. 39 of 2009 & 99 of 2011) in Village Badha Sector-85, Gurgaon.**

Technical note and comments:-

1. All detailed working drawings would have to be prepared by the colonizer for Integrating the internal services proposals with the master proposals of town.
2. The correctness of the levels will be the sole, responsibility of the colonizer for the integration of internal proposals, with the master proposals, of town and will be got confiied before execution.
3. The material to be used shall the same specifications as are being adopted by HUDA and further shall also confirm to such directions, as issued by Chief Engineer, HUDA from time to time.
4. The work shall be carried out according to Haryana PWD specification or such specifications as are being followed by HUDA. Further it shall also confirm to such other directions, as are issued by Chief Engineer, HUDA from time to time.
5. The colonizer will be fully responsible to meet the demand of water supply and allied services till such time these are made available by State Government/ HUDA All link connections with the State Government/ HUDA system and services will be done by the colonizer. If necessary extra tube-wells shall also be installed to meet extra demand of water beyond the provision according to EDC deposited.
6. Structural design & drawings of all the structures, such as pump chamber, boosting chamber, RCC OHSR underground tanks quarters, manholes chamber, sections of RCC pipes sewer and SW pipes, sewer, ventilating shafts for sewerage' and Masonry Ventilation Chamber for Chamber for storm water drainage, temporary disposal/ arrangement etc. will be as per relevant I.S codes and PWD specifications; colonizer himself will be responsible for structural stability of all structures.
7. Potability of water will be checked and confirmed and the tube-wells will be put into operation after getting chemical analysis of water tested.

C.E. No. 11129
Dated:- 8/8/13

8. Only C.I/D.I pipes will be used in water supply and flushing system, UPVC/HDPE pipe for irrigation purposes.

9. A minimum 100 i/d C.I/D.I, 200mm i/d SW and 400mm id RCC NP-3 pipes will be used for water supply, sewerage and storm water drainage respectively.

10. Standard X-section for S.W. pipes sewer, RCC pipes sewer etc. will be followed as are being adopted in Haryana Public Health Engineering Deptt.or HUDA.

11. The X-section, width of roads, will be followed as approved by the Chief Town Planner, Haryana, Chandigarh. The kerbs and channels will also be provided as per approved X-section and specifications.

12. The specifications for various roads will be followed as per IRC/MORTH specifications.

13. The wiring system of street lighting and specifications of street lighting fixture will be as per relevant standards.

14. This shall confirm to such other conditions as are incorporated in the approved estimate and the letter of approval.

8/8/13

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