DESIGN AND COST ESTIMATE
For
EXTERNAL DEVELOPMENT WORKS

(WATER SUPPLY, SEWERAGE, STORM WATER DRAINAGE, STREET LIGHTING, ROADS AND HORTICULTURE)

PROPOSED AFFORDABLE RESIDENTIAL PLOTTED COLONY AREA MEASURING 7.94375Acres, UNDER DEEN DAYAL JAN AWAS YOJNA IN VILLAGE NAURANGPUR ,SECTOR-78, DISTT. TEHSIL-MANESAR, GURUGRAM HARYANA BEING DEVELOPED BY MAPSKO BUILDERS PVT. LTD.

Submitted by

MAPSKO BUILDERS PVT. LTD.

MAPSKO BUILDERS PVT. LTD.

PROJECT REPORT / ESTIMATES FOR PROVIDING INTERNAL SERVICES e.g. WATER SUPPLY, FIRE, SEWERAGE & STORM WATER DRAINAGE ETC. IN RESPECT OF PROPOSED AFFORDABLE RESIDENTIAL PLOTTED COLONY AREA MEASURING 7.94375Acres, UNDER DEEN DAYAL JAN AWAS YOJNA IN VILLAGE NAURANGPUR ,SECTOR-78, DISTT. TEHSIL-MANESAR, GURUGRAM HARYANA BEING DEVELOPED BY MAPSKO BUILDERS PVT. LTD.

The Haryana Government has prepared a master plan for development of Gurugram area.
Ms. MAPSKO BUILDERS PVT. LTD. has decided to develop a part of the area in this master plan and has named this part as 7.94375 Acres DDJAY colony. This colony is located in Sector 78, Distt. Tehsil-Manesar of HSVP, Gurugram. License has already been granted for by D.G.T.C.P drawing No. 8872 to be read with License No. 211, DATED 26/12/2022. The brief details of the colony are as under:

1 **Water Supply**

The source of water supply shall be HSVP water supply connection. It has been proposed to construct undergorund tanks of capacity as per attached detaileds for domestic and other purpose.

i.) **Source**

The source of water supply in this area is tubewells at present as the underground water is potable and fit for human consumption. Moreover water is available at reasonable depth. The average yield of tubewell with 40-45 m strainers will be about 22500 litre per hour. The recharging of underground water table in this belt is stated to be good. However still we shall resort to rain water harvesting system to keep up the recharging system. The number of tube wells required for the above area has been worked out and the tubewells will be bored in tune with growth of demand to avoid absolence of the tubewells. The ultimate requirement of tubewells includes provisions of 10% stand by. Ultimately, water shall be supplied Haryana Shehri Vikas Pradhikaran, Gurugram.
It has been proposed to construct underground tanks of capacity as per attached details for domestic purpose. The underground tanks will be filled up from the HSVP riser and then pumped to the tanks of each plot proposed on the terrace of the building. Water supply system has been designed as per Hazen William's formula.

ii.) **Design**

The scheme has been designed for population of 1984.50 persons in 7.94375 Acre. The rate of water supply per head per day has been taken assumed as 172.5 litres per head per day as per HSVP norms. In addition to above necessary provision of water for Community building, Commercial building, parks etc. have been taken into account for calculating the maximum number of tubewell water required.

iii.) **Pumping Equipments**

It is proposed to equip each tubewell with an electrically driven set ejecto type or submersible pump capable of delivering of 22500 litre per hour. It is also proposed to equip required 2 Nos. pumping set with stand by diesel engins/gen set engines for operation during failure of electricity.

iv.) **Under Ground Storage**

Underground storage tank provision has been made for 250 KL capacity in two compartments, which caters for the Raw and Domestic requirement. In addition to this, one no. Recycled water tank capacity of 160 KL shall be proposed in STP pump room to cater the Flushing and Horticulture demand.

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v.) Boosting Station

The boosting station is being planned near UGSR catering to the above requirement.

vi.) Distribution System

The distribution system for this development has been designed to supply @ 112.125 litre per head her day for drinking water and 60.375 liter per head per day for flushing @ 3 times the average rate of flow on 'Hazen William' formula with C-100. Necessary provision for laying C.I. / D.I. pipes only conforming to relevant IS standards along with valves and specials has been made in this estimate. The minimum terminal head at any point in this system will be minimum 28.0 meters so that it can serve the 4 storied constructions envisaged in the plan. Minimum pipe diameter for distribution is kept as 100 mm dia for Domestic Water supply.

vii.) Rising Mains

Rising mains from HSVP water main on sector road to water works have also been designed and provision for G.I./D.I. pipe line (dia as/design) has been made in this estimate.

2 Sewerage

This scheme is designed for sewer connecting to the proposed sewage treatment plant. The sewerage system has been marked on the respective plans.

The sewer lines have been designed for 3 times average DWR in relation to the water supply demand assuming that 80% fo the domestic water supply shall find its way into the proposed sewer SW pipe sewers have been proposed designed to run half full. The sewers have been designed on minimum 0.75 mtr. per second velocity ie. Self cleansing velocity. Necessary provisions for laying SW pipes manholes etc. has been made in this estimate.

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

3 Storm Water Drainage

The storm water drain is being designed to carry 6.25 mm rain fall per hour. Also suitable provisions are contemplated in our scheme to ensure better recharging of under ground water table in the area. RCC NP_3 pipe drain with minimum 400 mm dia is proposed in this area.

4 Roads

Cost of road has been taken in the estimate.

5 Street Lighting

Provision for street lighting on surrounding area has been made.

5 Horticulture

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

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The boosting station is being planned near UGSR catering to the above requirement.

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3 **Storm Water Drainage**

The storm water drain is being designed to carry 6.25 mm rain fall per hour. Also suitable provisions are contemplated in our scheme to ensure better recharging of under ground water table in the area. RCC NP_3 pipe drain with minimum 400 mm dia is proposed in this area.

4 **Roads**

Cost of road has been taken in the estimate.

5 **Street Lighting**

Provision for street lighting on surrounding area has been made.

5 **Horticulture**

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

7 Specifications :

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

8 Rates

Estimates for providing services in this site has been prepared on the recent HSVP rates.

9 Cost

The total cost of development in this Project including various PH & B & R services works out to **Rs. 581.24 Lakh** which includes 3% contingency and PE charges and 49% departmental charges also.

The cost per gross acre for this phase works out to **Rs. 73.19 Lakh/acre** which covers the provision of services like water supply, sewerage, storm water drainage, roads, street lighting and plantations including plantations maintenance thereof as well as future expansion whatsoever indicated.

MS. MAPSKO BUILDERS PVT. LTD.

Authorised Signatory

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DESIGN CALCULATION

	Total No. of Plots			147 Nos.	
	Population per plot (4.5 x 4)			13.5 persons	
1	Total Population			1984.5 persons	
			SAY	**1985 persons**	
	Water requirement for plots		@	172.50 Lpd.	
				Domestic @ 65 %	**Flushing @ 35 %**
	Water requirement for plots		@	112.125	60.375 Lpd.
				222512	119814 Lpd.
2	**Community Facility (0.794 Acre)**	LS	1.00	34737.5	
	Daily water requirement (@ 25KL/acres / FAR)			**Domestic @ 55 %**	**Flushing @ 45 %**
	Therefore daily water requirement			19105.625	15631.875 Lpd.
3	**Commercial (0.318 Acre)**	LS	1.00	13912.50	
	Daily water requirement (@ 25KL/acres/ FAR)			**Domestic @ 55 %**	**Flushing @ 45 %**
	Therefore daily water requirement			7651.875	6260.625 Lpd.
	Total Domestic Water Requirement (1+2+3+4)		**Total**	**249269.56**	**141706.69 Lpd.**
			or	**250.0**	**142.0 Kld.**
4	**Area under Parks (in Acre)**		0.6210		
	Daily water requirement		@	-	25000 Ltr./Acre
				-	15525 Lpd.
					16.0 Kld.
5	**Area under Roads (in Acre)**		1.7400		
	Daily water requirement		@	-	5000 Ltr./Acre
				-	8700 Lpd.
					9.0 Kld.

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I	**Total daily requirement**			
	a) For Domestic+Flushing use (1+2)		250.00	142.00 Kld.
	b) Area under Parks (3)		0.00	16.00 Kld.
	Total Daily Requirement		250.00	158.00 Kld.
		SAY	**250.0**	**158.0 Kld.**
II	**Tubewell**			
	Assuming working hours of tubewells			12 Hours
	Assuming discharge/hour of each tubewell			23 KL/Hours
	Total domestic demand			**250.0 Kld.**
	No. of tubewells required	250.00 /22.5/12		0.93
		Add 10% stand by		0.09
		Total		1.02
		Say		2.0 Nos.
	No. of tubewells proposed			**2.0 Nos.**
III	**Pumping machinery for tubewell**			
	Gross working load		=	45.00 Mtr.
	Average fall in SL		=	3.00 Mtr.
	Depression head		=	6.00 Mtr.
	Friction loss in main		=	6.00 Mtr.
			=	60.00 Mtr.
		Say	=	60.00 Mtr.
	BHP = 22500x60x1/60/60/75/0.6		=	8.33 HP
	With 60% efficiency	**Say**		**10.0 HP**
IV	**Underground Tank**			
	Daily requirement for domestic use		=	250.0 Kld.
	Capacity of under ground tank			
	One day storage			250.0 KL
	Raw Water Tank @ 1/2 day storage			125.0 KL
		Say	=	**125.0 KL**
	Domestic Water Tank @ 1/2 day storage			125.0 KL
		Say	=	**125.0 KL**
	Daily requirement for Flushing use		=	158.0 KL
	Flushing Water Tank in STP Pump room @ 1 day storage			158.0 KL
		Say	=	**160.0 KL**

It is proposed to provide under ground tank of capacity **410 KL** which also includes **160 KL** capacity for flushing and horticulture purpose.

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	b) Area under Parks (3)		0.00	16.00 Kld.
	Total Daily Requirement		250.00	158.00 Kld.
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	No. of tubewells required	250.00 /22.5/12		0.93
		Add 10% stand by		0.09
		Total		1.02
		Say		2.0 Nos.
	No. of tubewells proposed			**2.0 Nos.**
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	Gross working load		=	45.00 Mtr.
	Average fall in SL		=	3.00 Mtr.
	Depression head		=	6.00 Mtr.
	Friction loss in main		=	6.00 Mtr.
			=	60.00 Mtr.
		Say	=	60.00 Mtr.
	BHP = 22500x60x1/60/60/75/0.6		=	8.33 HP
	With 60% efficiency	**Say**		**10.0 HP**
IV	**Underground Tank**			
	Daily requirement for domestic use		=	250.0 Kld.
	Capacity of under ground tank			
	One day storage			250.0 KL
	Raw Water Tank @ 1/2 day storage			125.0 KL
		Say	=	**125.0 KL**
	Domestic Water Tank @ 1/2 day storage			125.0 KL
		Say	=	**125.0 KL**
	Daily requirement for Flushing use		=	158.0 KL
	Flushing Water Tank in STP Pump room @ 1 day storage			158.0 KL
		Say	=	**160.0 KL**

It is proposed to provide under ground tank of capacity **410 KL** which also includes **160 KL** capacity for flushing and horticulture purpose.

V BOOSTING MACHINERY

a) Pumps for Domestic Water Supply

Daily requirement for domestic use		=	250.00 Kld.
Assuming 8 hours pumping			
Discharge/hour	250.00 / 8	=	31.25 cum/hr.
Head of pump			
i) Suction lifts		=	0.0 Mtr.
ii) Friction loss in M<main & specials		=	7.0 Mtr.
iii) Clear head		=	28.0 Mtr.
iv) Residual head		=	5.0 Mtr.
		=	40.0 Mtr.
vi) No. of Pumps working		=	2.0 Nos.
vii) Flow rate of each pump		=	15.6 cum/hr.
BHP of motor = Head of Pump x Flow rate in LPM / 4500 x Efficiency of Pump		=	3.9 HP
		Say	**4.5 HP**

b) Pumps for Flushing Water Supply

Daily requirement for domestic use		=	158.00 Kld.
Assuming 6 hours pumping			
Discharge/hour	158.00 / 6	=	26.33 cum/hr.
Head of pump			
i) Suction lifts		=	0.0 Mtr.
ii) Friction loss in M<main & specials		=	7.0 Mtr.
iii) Clear head		=	28.0 Mtr.
iv) Residual head		=	5.0 Mtr.
		=	40.0 Mtr.
vi) No. of Pumps working		=	1.0 Nos.
vii) Flow rate of each pump		=	26.3 cum/hr.
BHP of motor = Head of Pump x Flow rate in LPM / 4500 x Efficiency of Pump		=	6.5 HP
		Say	**7.5 HP**

VI Gen Set

	Nos.	HP	
Tube well Pumps	2	10.0	20 HP
Pumps for Domestic Water	2	4.5	9 HP
Pumps for Flushing Water	1	7.5	7.5 HP
Total			36.5 HP
or	36.5 x0.746x1.5	=	40.84 KVA
Lighting		=	5 KVA
Total			45.84 HP
		Say	**50.00 KVA**

VII Capacity of Sewage Treatment Plant

Gross Domestic+Flushing water requirment / day	=	392.00 Kld.
Sewage flow 80% of total load		313.60 Kld.
Add 10% extra for marginal factor		344.96 Kld.
STP. Capacity	**Say**	**350.0 Kld.**

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Estimate for Providing in Internal Development works for
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Description	Amount (Lakh.)
Sub Work - I Water Supply System	163.38
Sub Work - II Sewerage System	78.10
Sub Work - III Storm Water Drainage System	66.28
Sub Work - IV Roads & Footpath	115.92
Sub Work - V Street Lighting	18.29
Sub Work - VI - Horticulture	4.74
Sub Work - VII - Maintenance of Services for 10 years including resurfacing of roads after 1st 5 years & II phase i.e. 10 years of maintenance (as per HSVP norms)	134.53
Total	581.24 Lakh
Devdopment cost per acre	73.19 Lakh

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PROPOSED DDJAY PLOTTED COLONY AREA MEASURING 7.94375 Acres IN SECTOR-78, MANESAR, GURUGRAM

FINAL ABSTRACT OF REVISED COST

Description		Amount (Lakh.)
Sub Head - (I) Head Works		49.26
Sub Head - (II) Pumping Machinery		25.25
Sub Head - (III) Rising Main from HSVP		3.84
Sub Head - (IV) Distribution System		28.11
	Total	106.46
Add 3% Contingencies		3.19
	Total	109.65
Add 49% Departmental Charges		53.73
	Grand Total	163.38
(CO to final abstract of cost)	Say	163.38 Lakh

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Sub Work I — Water Supply
Sub Head No. I — Head Works

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount Rs. (Lakh)
1	Boring and installing 510 mm i/d tubewells with reverse/direct rotary rig complete with pipe strainer to a depth of about 120 m. complete.	Nos.	2	1000000.00	20.00
2	Constructing pump chambers as per standard design of PWD PH/HSVP of size 1.50x1.50 m.	Nos.	2	100000.00	2.00
3	Construction of boosting chambers of suitable size along with under ground tank & pumping machinery and generating set etc. complete in all respects.				
	Details of boosting station				
i)	construction of boosting chambers	Nos.	1	400000.00	4.00
ii)	construction of UG tank (Domestic & Flushing)	KL	410	4500.00	18.45
4	Provision for carriage of material and other unforeseen items.	LS	-	-	1.50
5	Provision for Rising mains, connecting tube wells with water main C.I./D.I./G.I. and bye-pass arrangements.				
i)	100 mm dia	M	185	1250	2.31
6	Provision for Sluice Valves	LS	-	-	1.00
					49.26 Lakh
	(C.O. to abstract of cost of Sub-work No.I)			**Say**	**49.26 Lakh**

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Sub Work I — Water Supply
Sub Head No. II — Pumping Machinery

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (in Lakhs)
1	Supply and installation of electrically driven Submersible Pumping sets in TWs complete with lowering pipes, submersible cables, control panels and other accessories on tube wells Discharge 22.5 kl/hr @ 60 m Head, with 10 HP motor.	Nos.	2	250000.00	5.00
2	Supply and installation of electrically driven Pumping sets, complete including cost of control panels for boosting station.				
i)	Domestic Water Pumps (2 working + 1stand by) Capacity - 4.50 H.P. each	Nos.	3	125000.00	3.75
ii)	Flushing Water Pumps (1 working + 1stand by) Capacity - 7.50 H.P. each	Nos.	2	175000.00	3.50
3	Provision for diesel engine generator set for standby arrangements for Tube well / domestic water / flushing water pump complete with gear head arrangements of following capacities.				
i)	50 KVA (Rs 10000/KVA)	KVA	50	10000.00	5.00
4	Provision for chlorination plant complete.	Nos.	1	100000.00	1.00
5	Provision for making foundations & erection of pumping machinery.	LS	-	-	1.00
6	Provision for pipes, valves & specials inside the pump chamber.	LS	-	-	2.00
7	Provision for electric services connection including electric fittings for tubewells chambers complete including cost of transformer.	LS	-	-	3.00
8	Provision for carriage for materials and other unforeseen items.	LS	-	-	1.00
				Total	**25.25**
	(C.O. to abstract of cost of Sub-work No.I)			**Say**	**25.25 Lakh**

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Sub Work I — Water Supply
Sub Head No. III — Rising Main from HSVP

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing, laying, jointing & testing G.I./D.I. K-9 pipes including cost of excavation complete as per ISI marked.				
i)	80 mm dia	M	75	1000.00	75000.00
2	Providing, fixing & testing Butterfly / Sluice valves including cost of surface boxes and masonary chambers etc. complete in all respects.				
i)	80 mm i/d	Nos.	1	7500.00	7500.00
3	Providing and fixing indicating plates for butterfly valve, air valve etc.	Nos.	1	1000.00	1000.00
4	Provision for carriage of material	LS	-	-	50000.00
5	Provision for cutting the roads and making to its original conditions.	LS	-	-	100000.00
6	Provision for making connection with HSVP main line on master road.	LS	-	-	150000.00
				Total	383500.00
	(C.O. to abstract of cost of Sub-work No.I)			Say	3.84 Lakh

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Sub Work I
Sub Head No. IV

Water Supply Domestic & Flushing Distribution System

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing, laying , jointing & testing C.I. / D.I. / G.I. pipe lines including fittings, valves, cost of excavation complete in all respects.				
i)	100 mm dia	M	976	1250.00	1220000.00
ii)	150 mm dia	M	0	1750.00	0.00
2	Providing, laying , jointing & testing PVC pipe lines including fittings, valves, cost of excavation complete in all respects. (**Note:** For Flushing water supply line)				
i)	75 OD	M	163	550.00	89650.00
ii)	90 OD	M	773	650.00	502450.00
iii)	110 OD	M	82	950.00	77900.00
3	Providing, fixing & testing Butterfly / Sluice valves including cost of complete in all respects.				
i)	65 mm i/d	Nos.	1	6000.00	6000.00
ii)	80 mm i/d	Nos.	4	7500.00	30000.00
iii)	100 mm i/d	Nos.	11	12000.00	132000.00
iv)	150 mm i/d	Nos.	0	15000.00	0.00
4	Provision and fixing fire hydrants complete with brick masonry chamber.	Nos.	9	10000.00	90000.00
5	Providing and fixing air valves and scour valves including cost of complete in all respects.	Nos.	8	10000.00	80000.00
6	Providing and fixing indicating plates for butterfly valve, fire hydrant, scour & air valve etc.	Nos.	33	1000.00	33000.00
7	Provision for carriage of material	LS	-	-	150000.00
8	Provision for cutting the roads and making to its original conditions.	LS	-	-	200000.00
9	Making water supply connection.	LS	-	-	200000.00
				Total	2811000.00
	(C.O. to abstract of cost of Sub-work No.I)			Say	28.11 Lakh

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Sub Work II — Sewerage Scheme

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing, jointing, cutting & testing S.W. pipe Class 'A' and lowering into trenches including cost of excavation, bed concrete cost of manholes, erecting / fixing vent shafts as per norms etc. complete in all respects.				
i)	**200 mm i/d**				
a)	Average depth up to 2.0 m	M	691	800.00	552800.00
ii)	**250 mm i/d**				
a)	Average depth up to 2.0 m	M	0	1000.00	0.00
iii)	**200 mm i/d**				
a)	Average depth from 2.0 to 4.0 m	M	275	950.00	261250.00
iv)	**250 mm i/d**				
a)	Average depth from 2.0 to 4.0 m	M	0	1250.00	0.00
2	Provision for lighting, watching and temporary diversion of traffic	LS	-	-	100000.00
3	Provision for cutting of roads and carriage of materials etc. and other unforsean charges.	LS	-	-	200000.00
4	Provision for connection with HSVP sewer.	LS	-	-	200000.00
5	Cost of 350 Kld Sewerage Treatment Plant (Note: The STP cost is inclusive of civil & electromechanical part)	KL	350.0	10500	3675000.00
6	Provision for timbering and shoring etc.	LS	-	-	100000.00
				Total	**5089050.00**
	Add 3% contingencies				152671.5
				Total	5241721.50
	Add 49% Deptt. Charges				2568443.535
				Total	**7810165.04**
	(C.O. to abstract of cost of Sub-work No. 2)			**Say**	**78.10 Lakh**

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Sub Work - III — Storm Water Drain

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing, lowering, laying and jointing R.C.C.pipes class NP-3 and specials with cement joints in trenches including cost of manholes Chambers, excavation of trenches & manholes, back filling and disposal of surplus earth etc. complete in all respects.				
i)	**400 mm i/d**				
a)	Average depth up to 2.0 m	M	903	2000.00	1806000.00
ii)	**400 mm i/d**				
a)	Average depth from 2.0 m to 4.0 m	M	5	2500.00	12500.00
2	Provision for Road Gully & Drain.	LS	-	-	300000.00
3	Provision for cutting of roads and carriage of materials etc. and other unforseen items	LS	-	-	150000.00
4	Provision for disposal arrangements Recharge Pit.	Nos	7	250000.00	1750000.00
5	Provision for lighting, watching and temporary diversion of traffic	LS	-	-	100000.00
6	Provision for connection with HSVP storm water manhole	LS	-	-	200000.00
				Total	**4318500.00**
	Add 3% contingencies				129555.00
				Total	4448055.00
	Add 49% Deptt. Charges				2179546.95
				Total	**6627601.95**
				SAY	**66.28 Lakh**

(C.O. to abstract of cost of Sub-work No. 3

Sub Work IV — Road Work

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Provision for leveling & earth filling as per site condition 7.94375 acre @ 100000/acre	Acres	7.9438	100000	794375.00
2	Construction of road by:- i) Providing 200 mm thick GSB ii) 250 mm thick WMM iii) 50 mm thick DBM iv) 40 mm thick BC	Sq. mtr.	4566.0	1000	4566000.00
3	Provision for kerb stone of 6m wide road with complete specification.6 mtrs wide road (761 x 2 =1522)	mtr.	1522.0	300	456600.00
4	Provision for foot path of precast conc. 80mm thick over cement concrete 1:4:8	Sq. mtr.	2472.00	500	1236000.00
5	Provision for Carriage of material	LS.	-	-	100000.00
6	Provision for traffic lighting and guide map/ indicators	LS.	-	-	200000.00
7	Provision for Plot indicator	LS.	-	-	100000.00
8	Provision for demarc above and unformation items	LS.	-	-	100000.00
				Total	**7552975.00**
	Add 3% contingencies				226589.25
				Total	7779564.25
	Add 49 % department charges				3811986.48 Lakh
				Total	11591550.73
	(C.O. to abstract of cost of Sub-work No. 4			**SAY**	**115.92 Lakh**

M/S. MAPSKO BUILDERS PVT. LTD.

MAPSKO BUILDERS PVT. LTD.

Sub Work V — Street Lighting

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Providing street lighting on internal roads as per standard specifications of HVPNL with CFL	per acre	7.94375	150000.00	**1191562.50**
	Add 3% contingencies				35746.88
				Total	**1227309.38**
	Add 49% Deptt. Charges				601381.59
				Total	**1828691.00**
	(C.O. to abstract of cost of Sub-work No. 5			SAY	**18.29 Lakh**

M/S. MAPSKO BUILDERS PVT. LTD.

MAPSKO BUILDERS PVT. LTD.

Sub Work VI — Horticulture

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Development of lawn area a) Trenching the ordinary soil upto depth of 60 cm.Including removal & packing of serviceable material & disposing at a lead of 50 M and making up the trenched area to prope level by filling with earth mixed with manure befor & after flodding trench with water including cost of imported earth & manure.				
	b) Rough dressing of trenched area.				
	c) Grassing including watering & maintenance of lawns free from weeds & fit for mowing in rows including hedges, shrubs & green belts (as per HSVP Norms)				
	0.621 acres @ Rs. 1.5 Lakh.	per acre	0.6210	150000.00	93,150
	Planting of tree with tree guards on green at 12 m intervals along with road Road (721 / 12 = 60 x 2 = 120 Nos.), 120 trees @ Rs. 1800/- each	Nos.	120	1800.00	2,16,000
				Total	309150.00
	Add 3% contingency charges				9274.50
				Total	318424.50
	Add 49% Deptt. Charges				156028.01
				Total	474452.51
	(C.O. to abstract of cost of Sub-work No. 6			Say	4.74 Lakh

M/S. MAPSKO BUILDERS PVT. LTD.

MAPSKO BUILDERS PVT. LTD.

Sub Work VII

Maintenance Charges & Resurfacing of Roads

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Provision for maintenance charges for water supply, sewerage,storm water drainage, roads, street light, horticulture etc. complete including operation & establishments charges as per HSVP norms after completion & resurfacing of roads after 10 years or 1st phase.				
	7.94375 acres @ 7.5 Lakh per acre	per acre	7.94375	500000.00	3971875
2	Provision for resurfacing & strengthening of road after five years of Ist phase @ 450/- per sqm with 50mm thick BM & 25mm thick MSS	Sq. mtr.	4566.0	450	2054700.00
3	Provision for resurfacing & strengthening with (Bituminous macadam) BM of road after ten years of 2nd phase @ 600/- per sqm with 50mm thick BM & 25mm thick MSS	Sq. mtr.	4566.0	600	2739600.00
				Total	8766175.00
	Add 3% contingency & PE charges				262985.25
				Total	9029160.25
	Add 49% Departmetal charges				4424288.523
				Total	13453448.77
	(C.O. to abstract of cost of Sub-work No. 7			say	**134.53 Lakh**

M/S. MAPSKO BUILDERS PVT. LTD.

MAPSKO BUILDERS PVT. LTD.

Sub Work VII

Maintenance Charges & Resurfacing of Roads

S. No.	Description	Unit	Qty	Rate (Rs.)	Amount (Rs.)
1	Provision for maintenance charges for water supply, sewerage,storm water drainage, roads, street light, horticulture etc. complete including operation & establishments charges as per HSVP norms after completion & resurfacing of roads after 10 years or 1st phase.				
	7.94375 acres @ 7.5 Lakh per acre	per acre	7.94375	500000.00	3971875
2	Provision for resurfacing & strengthening of road after five years of Ist phase @ 450/- per sqm with 50mm thick BM & 25mm thick MSS	Sq. mtr.	4566.0	450	2054700.00
3	Provision for resurfacing & strengthening with (Bituminous macadam) BM of road after ten years of 2nd phase @ 600/- per sqm with 50mm thick BM & 25mm thick MSS	Sq. mtr.	4566.0	600	2739600.00
				Total	8766175.00
	Add 3% contingency & PE charges				262985.25
				Total	9029160.25
	Add 49% Departmetal charges				4424288.523
				Total	13453448.77
	(C.O. to abstract of cost of Sub-work No. 7			say	**134.53 Lakh**

M/S. MAPSKO BUILDERS PVT. LTD.

TITLE : LOAD ON DOMESTIC WATER SUPPLY LINES

Line No.	General Plots		Others Land		Total Population	Daily Domestic Water Requirement. @ 112.125 lpcd	Non Residential Load				Gross Water Requirement (Self Load on Line) LPD
	Nos.	Population @ 13.5 persons / Plot.	Area In Acres	Population			Area In Acres	Type of Building	Basis of Domestic Water Requirement LPD	Total Water Requirement. LPD	
		(a)		(b)	(c)=(a)+(b)	(d)				(e)	(f)=(d)+(e)
W1-W2	0	0		0	0	0					0
W2-W3	32	432		0	432	48438					48438
W3-W4	3	40.5		0	41	4541					4541
W3-W5	6	81		0	81	9082					9082
W5-W6	4	54		0	54	6055					6055
W6-W7	18	243		0	243	27246					27246
W6-W9	17	229.5		0	230	25733					25733
W7-W8	3	40.5		0	41	4541					4541
W7-W9	6	81		0	81	9082					9082
W9-W10	8	108		0	108	12110					12110
W2-W11	7	94.5		0	95	10596					10596
W11-W12	7	94.5		0	95	10596	0.318	Commercial	13750 13.75 KL/Acre/FAR	7652	18248
W11-W13	0	0		0	0	0	0.794	Community	13750 13.75 KL/Acre/FAR	19106	19106
W13-W14	3	40.5		0	41	4541					4541
W13-W15	19	256.5		0	257	28760					28760
W15-W16	10	135		0	135	15137					15137
W15-W5	4	54		0	54	6055					6055
	147				1984.5	222512				26758	**249270**

MAPSKO BUILDERS PVT. LTD.

Title : Design of Domestic Water Supply Lines

S.NO	LINE NO.	SELF LOAD ON LINES	PREVIOUS LOAD ON LINES	TOTAL LOAD ON LINES	PEAK FACTOR	PEAK FLOW	FLOW RATE	FLOW RATE	LENGTH OF PIPE IN MTR.	INCLUDING FITTINGS @ 15 %	DIA OF PIPE	VALUE OF 'C'	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS	VELOCITY	ELEVATION AT START	HYDRAULIC LVL AT START	HEAD AT START	ELEVATION AT END	HYDRAULIC LVL AT END	HEAD AT END	REMARKS
		LPD	LPD	LPD		LPD	LPH	LPM	MTR.	MM	MM		MTR.	MTR.	M/SEC	MTR.	MTR.	MTR.	MTR.	MTR.	MTR.	
1	W1-W2	0	249270	249270	3	747809	31159	519.31	10	12	100	100	0.024	0.272	1.10	-5.500	34.50	**40.00**	0.000	34.23	34.2	PUMP ROOM
2	W2-W3	48438	98390	146828	3	440483	18353	305.89	121	139	100	100	0.009	1.237	0.65	0.000	34.23	34.23	0.000	32.99	33.0	AT GROUND
3	W3-W4	4541	0	4541	3	13623	568	9.46	19	22	100	100	0.000	0.000	0.02	0.000	32.99	32.99	0.000	32.99	33.0	AT GROUND
4	W3-W5	9082	84767	93849	3	281546	11731	195.52	47	54	100	100	0.004	0.210	0.41	0.000	32.99	32.99	0.000	32.78	32.8	AT GROUND
5	W5-W6	6055	78712	84767	3	254300	10596	176.60	26	30	100	100	0.003	0.096	0.37	0.000	32.78	32.78	0.000	32.68	32.7	AT GROUND
6	W6-W7	27246	25733	52979	3	158937	6622	110.37	62	71	100	100	0.001	0.096	0.23	0.000	32.68	32.68	0.000	32.59	32.6	AT GROUND
7	W6-W9	25733	0	25733	3	77198	3217	53.61	104	120	100	100	0.000	0.042	0.11	0.000	32.68	32.68	0.000	32.64	32.6	AT GROUND
8	W7-W8	4541	0	4541	3	13623	568	9.46	22	25	100	100	0.000	0.000	0.02	0.000	32.59	32.59	0.000	32.59	32.6	AT GROUND
9	W7-W9	9082	12110	21192	3	63575	2649	44.15	42	48	100	100	0.000	0.012	0.09	0.000	32.59	32.59	0.000	32.58	32.6	AT GROUND
10	W9-W10	12110	0	12110	3	36329	1514	25.23	29	33	100	100	0.000	0.003	0.05	0.000	32.64	32.64	0.000	32.64	32.6	AT GROUND
11	W2-W11	10596	91846	102442	3	307326	12805	213.42	45	52	100	100	0.005	0.236	0.45	0.000	34.23	34.23	0.000	33.99	34.0	AT GROUND
12	W11-W12	18248	0	18248	3	54743	2281	38.02	114	131	100	100	0.000	0.025	0.08	0.000	33.99	33.99	0.000	33.97	34.0	AT GROUND
13	W11-W13	19106	54493	73598	3	220795	9200	153.33	45	52	100	100	0.002	0.128	0.33	0.000	33.99	33.99	0.000	33.86	33.9	AT GROUND
14	W13-W14	4541	0	4541	3	13623	568	9.46	68	78	100	100	0.000	0.001	0.02	0.000	33.86	33.86	0.000	33.86	33.9	AT GROUND
15	W13-W15	28760	21192	49952	3	149855	6244	104.07	118	136	100	100	0.001	0.164	0.22	0.000	33.86	33.86	0.000	33.70	33.7	AT GROUND
16	W15-W16	15137	0	15137	3	45411	1892	31.54	66	76	100	100	0.000	0.010	0.07	0.000	33.70	33.70	0.000	33.69	33.7	AT GROUND
17	W15-W5	6055	0	6055	3	18164	757	12.61	38	44	100	100	0.000	0.001	0.03	0.000	33.70	33.70	0.000	33.70	33.7	AT GROUND

MAPSKO BUILDERS PVT. LTD.

TUBE WELL LINES

S.N0	LINE NO	AVERAGE DEMAND	PEAK DEMAND @ 1.5 TIMES	FLOW RATE	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS	VELOCITY	DIA OF PIPE
		KLD	KLD	LPM	MTR.	MTR.	MTR.	M/SEC	MM
1	TUBE WELL - 1 TO U.G.T.	22.50	33.75	562.50	10	0.02747	0.27	1.19	100
2	TUBE WELL - 2 TO U.G.T.	22.50	33.75	562.50	175	0.02747	4.81	1.19	100

HSVP RISING MAIN

S.N0	LINE NO	AVERAGE DEMAND	PEAK DEMAND @ 1.5 TIMES	FLOW RATE	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS	VELOCITY	DIA OF PIPE
		KLD	KLD	LPM	MTR.	MTR.	MTR.	M/SEC	MM
1	MAIN - U.G.T.	249.27	373.90	259.66	75	0.01946	1.46	0.86	80

TUBE WELL LINES

S.N0	LINE NO	AVERAGE DEMAND	PEAK DEMAND @ 1.5 TIMES	FLOW RATE	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS	VELOCITY	DIA OF PIPE
		KLD	KLD	LPM	MTR.	MTR.	MTR.	M/SEC	MM
1	TUBE WELL - 1 TO U.G.T.	22.50	33.75	562.50	10	0.02747	0.27	1.19	100
2	TUBE WELL - 2 TO U.G.T.	22.50	33.75	562.50	175	0.02747	4.81	1.19	100

HSVP RISING MAIN

S.N0	LINE NO	AVERAGE DEMAND	PEAK DEMAND @ 1.5 TIMES	FLOW RATE	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS	VELOCITY	DIA OF PIPE
		KLD	KLD	LPM	MTR.	MTR.	MTR.	M/SEC	MM
1	MAIN - U.G.T.	249.27	373.90	259.66	75	0.01946	1.46	0.86	80

MAPSKO BUILDERS PVT. LTD.

TITLE :- Domestic Water Supply (Material Statement)

S.NO	LINE NO.	LENGTH OF LINES	DIA OF RISER	PIPE DIA IN MM								VALVES ON LINES							
			MM	250	200	150	100	80	65	32	25	250	200	150	100	80	65	32	25
1	W1-W2	10	100	0	0	0	10	0	0	0	0				1				
2	W2-W3	121	100	0	0	0	121	0	0	0	0				1				
3	W3-W4	19	100	0	0	0	19	0	0	0	0								
4	W3-W5	47	100	0	0	0	47	0	0	0	0								
5	W5-W6	26	100	0	0	0	26	0	0	0	0								
6	W6-W7	62	100	0	0	0	62	0	0	0	0				1				
7	W6-W9	104	100	0	0	0	104	0	0	0	0				1				
8	W7-W8	22	100	0	0	0	22	0	0	0	0								
9	W7-W9	42	100	0	0	0	42	0	0	0	0								
10	W9-W10	29	100	0	0	0	29	0	0	0	0								
11	W2-W11	45	100	0	0	0	45	0	0	0	0				1				
12	W11-W12	114	100	0	0	0	114	0	0	0	0				1				
13	W11-W13	45	100	0	0	0	45	0	0	0	0								
14	W13-W14	68	100	0	0	0	68	0	0	0	0				1				
15	W13-W15	118	100	0	0	0	118	0	0	0	0				1				
16	W15-W16	66	100	0	0	0	66	0	0	0	0								
17	W15-W5	38	100	0	0	0	38	0	0	0	0				1				
TOTAL		976		0	0	0	976	0	0	0	0	0	0	0	9	0	0	0	0
TUBE WELL LINES																			

MAPSKO BUILDERS PVT. LTD.

TITLE :- Domestic Water Supply (Material Statement)

S.N0	LINE NO.	LENGTH OF LINES	DIA OF RISER	PIPE DIA IN MM								VALVES ON LINES							
			MM	250	200	150	100	80	65	32	25	250	200	150	100	80	65	32	25
1	TUBE WELL - 1 TO U.G.T.	10	100	0	0	0	10	0	0	0	0				1				
2	TUBE WELL - 2 TO U.G.T.	175	100	0	0	0	175	0	0	0	0				1				
HSVP RISING MAIN																			
1	MAIN - U.G.T.	75	80	0	0	0	0	75	0	0	0					1			

MAPSKO BUILDERS PVT. LTD.

TITLE : LOAD ON FLUSHING WATER SUPPLY LINES

Line No.	General Plots		Others Land		Total Population	Daily Flushing Water Requirement. @ 60.375 lpcd	Non Residential Load				Gross Water Requirement (Self Load on Line) LPD
	Nos.	Population @ 13.5 persons / Plot.	Area In Acres	Population			Area In Acres	Type of Building	Basis of Flushing Water Requirement LPD	Total Water Requirement. LPD	
		(a)		(b)	(c)=(a)+(b)	(d)				(e)	(f)=(d)+(e)
F1-F2	0	0		0	0	0	0.196	Green	25000 25 KL / Acre	4900	4900
F2-F3	3	40.5		0	41	2445	0.318	Commercial	11250 11.25 KL/Acre/FAR	6261	8706
F2-F4	0	0		0	0	0					0
F4-F5	19	256.5		0	257	15486	0.301	Green	25000 25 KL / Acre	7525	23011
F5-F6	10	135		0	135	8151					8151
F5-F7	4	54		0	54	3260					3260
F7-F8	3	40.5		0	41	2445					2445
F7-F14	7	94.5		0	95	5705					5705
F8-F9	18	243		0	243	14671					14671
F8-F11	18	243		0	243	14671	0.124	Green	25000 25 KL / Acre	3100	17771
F9-F10	2	27		0	27	1630					1630
F9-F11	6	81		0	81	4890					4890
F11-F12	9	121.5		0	122	7336					7336
F4-F13	0	0		0	0	0					0
F13-F14	39	526.5		0	527	31787					31787
F14-F15	2	27		0	27	1630					1630
F13-F16	7	94.5		0	95	5705	0.794	Community	11250 11.25 KL/Acre/FAR	15632	21337
										Total	157232

MAPSKO BUILDERS PVT. LTD.

Design of Flushing Water Supply Lines

LINE NO.	SELF LOAD ON LINES	PREVIOUS LOAD ON LINES	TOTAL LOAD ON LINES	PEAK FACTOR	PEAK FLOW	FLOW RATE	FLOW RATE	LENGTH OF PIPE IN MTR.	INCLUDING FITTINGS @ 15.%	DIA OF PIPE	VALUE OF 'C'	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS	VELOCITY	ELEVATION AT START	HYDRAULIC LVL AT START	HEAD AT START	ELEVATION AT END	HYDRAULIC LVL AT END	HEAD AT END	REMARKS
	LPD	LPD	LPD		LPD	LPH	LPM	MTR.	MM	MM		MTR.	MTR.	M/SEC	MTR.	MTR.	MTR.	MTR.	MTR.	MTR.	
F1-F2	4900	152332	157232	4	628927	26205	436.75	40	46	100	120	0.012	0.564	0.93	-6.500	33.50	**40.00**	0.000	32.94	32.94	PUMP ROOM
F2-F3	8706	0	8706	4	34823	1451	24.18	33	38	65	120	0.000	0.018	0.12	0.000	32.94	32.94	0.000	32.92	32.92	AT GROUND
F2-F4	0	143626	143626	4	574504	23938	398.96	42	48	100	120	0.010	0.501	0.85	0.000	32.94	32.94	0.000	32.43	32.43	AT GROUND
F4-F5	23011	65860	88871	4	355484	14812	246.86	115	132	80	120	0.013	1.672	0.82	0.000	32.43	32.43	0.000	30.76	30.76	AT GROUND
F5-F6	8151	0	8151	4	32603	1358	22.64	72	83	65	120	0.000	0.034	0.11	0.000	30.76	30.76	0.000	30.73	30.73	AT GROUND
F5-F7	3260	54449	57709	4	230837	9618	160.30	30	35	80	120	0.006	0.196	0.53	0.000	30.76	30.76	0.000	30.57	30.57	AT GROUND
F7-F8	2445	46298	48744	4	194974	8124	135.40	25	29	80	120	0.004	0.120	0.45	0.000	30.57	30.57	0.000	30.45	30.45	AT GROUND
F7-F14	5705	0	5705	4	22822	951	15.85	46	53	80	120	0.000	0.004	0.05	0.000	30.57	30.57	0.000	30.56	30.56	AT GROUND
F8-F9	14671	13856	28527	4	114109	4755	79.24	78	90	80	120	0.002	0.138	0.26	0.000	30.45	30.45	0.000	30.31	30.31	AT GROUND
F8-F11	17771	0	17771	4	71085	2962	49.36	119	137	80	120	0.001	0.088	0.16	0.000	30.45	30.45	0.000	30.36	30.36	AT GROUND
F9-F10	1630	0	1630	4	6521	272	4.53	13	15	65	120	0.000	0.000	0.02	0.000	30.31	30.31	0.000	30.31	30.31	AT GROUND
F9-F11	4890	7336	12226	4	48904	2038	33.96	42	48	80	120	0.000	0.016	0.11	0.000	30.31	30.31	0.000	30.29	30.29	AT GROUND
F11-F12	7336	0	7336	4	29342	1223	20.38	34	39	65	120	0.000	0.013	0.10	0.000	30.29	30.29	0.000	30.28	30.28	AT GROUND
F4-F13	0	54755	54755	4	219020	9126	152.10	46	55	80	120	0.005	0.285	0.50	0.000	32.43	32.43	0.000	32.15	32.15	AT GROUND
F13-F14	31787	1630	33418	4	133670	5570	92.83	159	183	80	120	0.002	0.378	0.31	0.000	32.15	32.15	0.000	31.77	31.77	AT GROUND
F14-F15	1630	0	1630	4	6521	272	4.53	11	13	65	120	0.000	0.000	0.02	0.000	31.77	31.77	0.000	31.77	31.77	AT GROUND
F13-F16	21337	0	21337	4	85349	3556	59.27	111	128	80	120	0.001	0.115	0.20	0.000	32.15	32.15	0.000	32.03	32.03	AT GROUND

MAPSKO BUILDERS PVT. LTD.

TITLE :- Flushing Water Supply (Material Statement)

S.N0	LINE NO.	LENGTH OF LINES	DIA OF RISER	PIPE DIA IN MM								VALVES ON LINES							
			MM	250	200	150	100	80	65	32	25	250	200	150	100	80	65	32	25
1	F1-F2	40	100	0	0	0	40	0	0	0	0				1				
2	F2-F3	33	65	0	0	0	0	0	33	0	0						1		
3	F2-F4	42	100	0	0	0	42	0	0	0	0				1				
4	F4-F5	115	80	0	0	0	0	115	0	0	0								
5	F5-F6	72	65	0	0	0	0	0	72	0	0								
6	F5-F7	30	80	0	0	0	0	30	0	0	0								
7	F7-F8	25	80	0	0	0	0	25	0	0	0					1			
8	F7-F14	46	80	0	0	0	0	46	0	0	0					1			
9	F8-F9	78	80	0	0	0	0	78	0	0	0								
10	F8-F11	119	80	0	0	0	0	119	0	0	0								
11	F9-F10	13	65	0	0	0	0	0	13	0	0								
12	F9-F11	42	80	0	0	0	0	42	0	0	0								
13	F11-F12	34	65	0	0	0	0	0	34	0	0								
14	F4-F13	48	80	0	0	0	0	48	0	0	0								
15	F13-F14	159	80	0	0	0	0	159	0	0	0					1			
16	F14-F15	11	65	0	0	0	0	0	11	0	0								
17	F13-F16	111	80	0	0	0	0	111	0	0	0					1			
	TOTAL	1018		0	0	0	82	773	163	0	0	0	0	0	2	4	1	0	0

MAPSKO BUILDERS PVT. LTD.

TITLE : LOAD ON SEWAGE LINES

Name of Sewer Line	Plot (General)		Future Plots		Total Population	Daily Water Requirement @ 172.50 lpcd (LPD)	Non Residential Load				Gross Water Requirement (LPD)	Sewage Flow @ 80% of Gross Water Requirement (LPD)	Sewage Flow (Self Load on Line) KLD
	Nos.	Population @ 13.5 persons / Plot.	Nos.	Population @ 13.5 persons / Plot.			Area In Acres	Type of Building	Basis of Water Requirement LPD	Water Requirement LPD			
		(a)		(b)	(c) = (a) + (b)	(d) = (c) x 172.50							
S1-S3	8	108	0	0	108	18630					18630	14904	14.90
S2-S3	9	121.5	0	0	121.5	20959					20959	16767	16.77
S3-S5	18	243	0	0	243	41918					41918	33534	33.53
S4-S5	18	243	0	0	243	41918					41918	33534	33.53
S5-S7	4	54	0	0	54	9315					9315	7452	7.45
S6-S7	6	81	0	0	81	13973					13973	11178	11.18
S7-S9	5	67.5	0	0	67.5	11644					11644	9315	9.32
S8 - S9	10	135	0	0	135	23288					23288	18630	18.63
S9-S14	18	243	0	0	243	41918					41918	33534	33.53
S10-S11	7	94.5	0	0	94.5	16301					16301	13041	13.04
S11-S13	0	0	0	0	0	0	0.794	Community	@ 25000 ltr / acrs. / FAR	34737.50	34738	27790	27.79
S12-S13	41	553.5	0	0	553.5	95479					95479	76383	76.38
S13-S14	0	0	0	0	0	0					0	0	0.00
S14-S16	0	0	0	0	0	0					0	0	0.00
S15-S16	3	40.5	0	0	40.5	6986	0.318	Commercial	@ 25000 ltr / acrs. / FAR	13912.50	20899	16719	16.72
S16-STP	0	0	0	0	0	0					0	0	0.00
TOTAL	147	1984.5	0	0	1984.5	342326					390976	312781	312.78

MAPSKO BUILDERS PVT. LTD.

GE HYDRAULIC DESIGN

E NO.	SEWAGE FLOW	Previous Load	Progressive Discharge	Progressive Discharge (Peak)	Infilteration @ 500 L/KM/CM of Pipe Dia	Total Discharge	Total Discharge	Length of line	Dia of Pipe	Average Slope 1 IN	Fall in Line	Value of (n)	Velocity Flowing Full	Capacity of Pipe Flowing Full (Q)	Capacity of Pipe Flowing 1/2 flow (Q)	Levels at Start		Levels at End		Manhole Depth	
																Ground Lvl. at Start	Invert Lvl at Start	Ground lvl at End	Invert lvl at End		
	KLD	KLD	KLD	KLD	KLD	KLD	LPS	mtr	mm		mtr		m/sec	lps	lps	mtr	mtr	mtr	mtr	U/End	L/End
-S3	14.90	0.000	14.90	44.71	0.58	45.29	0.52	58	200	190	0.31	0.013	0.76	23.80	11.90	0.000	-1.250	0.000	-1.555	1.25	1.56
2-S3	16.77	0.000	16.77	50.30	0.31	50.61	0.59	31	200	190	0.16	0.013	0.76	23.80	11.90	0.000	-1.250	0.000	-1.413	1.25	1.41
3-S5	33.53	31.671	65.21	195.62	1.18	196.80	2.28	118	200	190	0.62	0.013	0.76	23.80	11.90	0.000	-1.555	0.000	-2.176	1.56	2.18
4-S5	33.53	0.000	33.53	100.60	0.67	101.27	1.17	67	200	190	0.35	0.013	0.76	23.80	11.90	0.000	-1.250	0.000	-1.603	1.25	1.60
5-S7	7.45	98.739	106.19	318.57	0.25	318.82	3.69	25	200	190	0.13	0.013	0.76	23.80	11.90	0.000	-2.176	0.000	-2.308	2.18	2.31
6-S7	11.18	0.000	11.18	33.53	0.37	33.90	0.39	37	200	190	0.19	0.013	0.76	23.80	11.90	0.000	-1.250	0.000	-1.445	1.25	1.44
7-S9	9.32	117.369	126.68	380.05	0.35	380.40	4.40	35	200	190	0.18	0.013	0.76	23.80	11.90	0.000	-2.308	0.000	-2.492	2.31	2.49
- S9	18.63	0.000	18.63	55.89	0.69	56.58	0.65	69	200	190	0.36	0.013	0.76	23.80	11.90	0.000	-1.250	0.000	-1.613	1.25	1.61
-S14	33.53	145.314	178.85	536.54	1.13	537.67	6.22	113	200	190	0.59	0.013	0.76	23.80	11.90	0.000	-2.492	0.000	-3.087	2.49	3.09
0-S11	13.04	0.000	13.04	39.12	0.84	39.96	0.46	84	200	190	0.44	0.013	0.76	23.80	11.90	0.000	-1.250	0.000	-1.692	1.25	1.69
1-S13	27.79	13.041	40.83	122.49	0.35	122.84	1.42	35	200	190	0.18	0.013	0.76	23.80	11.90	0.000	-1.802	0.000	-1.986	1.80	1.99
2-S13	76.38	0.000	76.38	229.15	1.61	230.76	2.67	161	200	190	0.85	0.013	0.76	23.80	11.90	0.000	-1.250	0.000	-2.097	1.25	2.10
3-S14	0.00	117.214	117.21	351.64	0.38	352.02	4.07	38	200	190	0.20	0.013	0.76	23.80	11.90	0.000	-2.097	0.000	-2.297	2.10	2.30
4-S16	0.00	296.062	296.06	888.19	0.37	888.56	10.28	37	200	190	0.19	0.013	0.76	23.80	11.90	0.000	-3.087	0.000	-3.282	3.09	3.28
5-S16	16.72	0.000	16.72	50.16	0.31	50.47	0.58	31	200	190	0.16	0.013	0.76	23.80	11.90	0.000	-1.800	0.000	-1.963	1.80	1.96
6-STP	0.00	312.781	312.78	938.34	0.27	938.61	10.86	27	200	190	0.14	0.013	0.76	23.80	11.90	0.000	-3.282	0.000	-3.424	3.28	3.42

MAPSKO BUILDERS PVT. LTD.

SEWERAGE QUANTITY SHEETS

Name of Sewer Line	Length of line	Dia of Pipe	Depth of Line			Line Depth Upto 2.0 Mtr				Line Depth 2.0 Mtr. to 4.0 Mtr				Line Depth 4.0 Mtr. to 6.0 Mtr				Line Depth 6.0 Mtr. to 8.0 Mtr			
	MTR	MM	U/End	L/End	Average Depth	200 Dia	250 Dia	300 Dia	400 Dia	200 Dia	250 Dia	300 Dia	400 Dia	200 Dia	250 Dia	300 Dia	400 Dia	200 Dia	250 Dia	300 Dia	400 Dia
S1-S3	58	200	1.25	1.56	1.40	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S2-S3	31	200	1.25	1.41	1.33	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S3-S5	118	200	1.56	2.18	1.87	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S4-S5	67	200	1.25	1.60	1.43	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S5-S7	25	200	2.18	2.31	2.24	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0
S6-S7	37	200	1.25	1.44	1.35	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S7-S9	35	200	2.31	2.49	2.40	0	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0
S8 - S9	69	200	1.25	1.61	1.43	69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S9-S14	113	200	2.49	3.09	2.79	0	0	0	0	113	0	0	0	0	0	0	0	0	0	0	0
S10-S11	84	200	1.25	1.69	1.47	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S11-S13	35	200	1.80	1.99	1.89	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S12-S13	161	200	1.25	2.10	1.67	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S13-S14	38	200	2.10	2.30	2.20	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	0
S14-S16	37	200	3.09	3.28	3.18	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0
S15-S16	31	200	1.80	1.96	1.88	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S16-STP	27	200	3.28	3.42	3.35	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0
TOTAL						**691**	**0**	**0**	**0**	**275**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

TITLE : STORM WATER DRAIN HYDRAULIC DESIGN

S.No	Line From	Line To.	Length of Line in mtr.	Self Area in sq mtr.	Self Area (Hec)	Previous area in hec.	Total Area (Hec)	Rain Fall mm/hr	Discharge in lps	Pipe Dia in mm	Slope 1 in	Velocity m/sec.	Cap of pipe in lps.	Fall in line mtr.	Road level at Start	H.F.L at Start	Invert Level at Start	Road level at end	H.F.L at End	Invert Level at End	Depth at Start	Depth at End
1	D1	D3	59	1953	0.195	0.000	0.195	6.25	3.39	400	550	0.61	76.99	0.11	0.000	-1.050	-1.450	0.000	-1.157	-1.557	1.45	1.56
2	D2	D3	29	1466	0.147	0.000	0.147	6.25	2.55	400	550	0.61	76.99	0.05	0.000	-1.050	-1.450	0.000	-1.103	-1.503	1.45	1.50
3	D3	D5	104	3335	0.334	0.342	0.675	6.25	11.73	400	550	0.61	76.99	0.19	0.000	-1.157	-1.557	0.000	-1.346	-1.746	1.56	1.75
4	D4	D5	55	2519	0.252	0.000	0.252	6.25	4.37	400	550	0.61	76.99	0.10	0.000	-1.050	-1.450	0.000	-1.150	-1.550	1.45	1.55
5	D5	D7	25	598	0.060	0.927	0.987	6.25	17.14	400	550	0.61	76.99	0.05	0.000	-1.346	-1.746	0.000	-1.392	-1.792	1.75	1.79
6	D6	D7	64	1496	0.150	0.000	0.150	6.25	2.60	400	550	0.61	76.99	0.12	0.000	-1.050	-1.450	0.000	-1.166	-1.566	1.45	1.57
7	D7	D9	45	1074	0.107	1.137	1.244	6.25	21.60	400	550	0.61	76.99	0.08	0.000	-1.392	-1.792	0.000	-1.474	-1.874	1.79	1.87
8	D8	D9	59	1573	0.157	0.000	0.157	6.25	2.73	400	550	0.61	76.99	0.11	0.000	-1.050	-1.450	0.000	-1.157	-1.557	1.45	1.56
9	D9	D13	129	4425	0.443	1.401	1.844	6.25	32.01	400	550	0.61	76.99	0.23	0.000	-1.474	-1.874	0.000	-1.708	-2.108	1.87	2.11
10	D10	D11	171	7765	0.777	0.000	0.777	6.25	13.48	400	550	0.61	76.99	0.31	0.000	-1.050	-1.450	0.000	-1.361	-1.761	1.45	1.76
11	D11	D13	41	586	0.059	0.777	0.835	6.25	14.50	400	550	0.61	76.99	0.07	0.000	-1.361	-1.761	0.000	-1.435	-1.835	1.76	1.84
12	D12	D13	72	3445	0.345	0.000	0.345	6.25	5.98	400	550	0.61	76.99	0.13	0.000	-1.400	-1.800	0.000	-1.531	-1.931	1.80	1.93
13	D13	OUTFALL-1	5	100	0.010	2.188	2.198	6.25	38.17	400	550	0.61	76.99	0.01	0.000	-1.708	-2.108	0.000	-1.717	-2.117	2.11	2.12
14	D15	D16	47	4995	0.500	0.000	0.500	6.25	8.67	400	550	0.61	76.99	0.09	0.000	-1.400	-1.800	0.000	-1.485	-1.885	1.80	1.89
15	D16	OUTFALL-2	3	100	0.010	0.500	0.510	6.25	8.85	400	550	0.61	76.99	0.01	0.000	-1.485	-1.885	0.000	-1.491	-1.891	1.89	1.89

MAPSKO BUILDERS PVT. LTD.

Title : **Storm Water Drainage Qty Sheet**

S.No	Line From	Line To	Length in mtr.	Pipe dia	Depth at Start	Depth at End	Average Depth	Pipe Upto 2mtr Depth					Pipe from 2 to 4 mtr Depth				
								400 Dia	450 Dia	500 Dia	600 Dia	700 Dia	400 Dia	450 Dia	500 Dia	600 Dia	700 Dia
1	D1	D3	59	400	1.45	1.56	1.50	59	0	0	0	0	0	0	0	0	0
2	D2	D3	29	400	1.45	1.50	1.48	29	0	0	0	0	0	0	0	0	0
3	D3	D5	104	400	1.56	1.75	1.65	104	0	0	0	0	0	0	0	0	0
4	D4	D5	55	400	1.45	1.55	1.50	55	0	0	0	0	0	0	0	0	0
5	D5	D7	25	400	1.75	1.79	1.77	25	0	0	0	0	0	0	0	0	0
6	D6	D7	64	400	1.45	1.57	1.51	64	0	0	0	0	0	0	0	0	0
7	D7	D9	45	400	1.79	1.87	1.83	45	0	0	0	0	0	0	0	0	0
8	D8	D9	59	400	1.45	1.56	1.50	59	0	0	0	0	0	0	0	0	0
9	D9	D13	129	400	1.87	2.11	1.99	129	0	0	0	0	0	0	0	0	0
10	D10	D11	171	400	1.45	1.76	1.61	171	0	0	0	0	0	0	0	0	0
11	D11	D13	41	400	1.76	1.84	1.80	41	0	0	0	0	0	0	0	0	0
12	D12	D13	72	400	1.80	1.93	1.87	72	0	0	0	0	0	0	0	0	0
13	D13	OUTFALL-1	5	400	2.11	2.12	2.11	0	0	0	0	0	5	0	0	0	0
14	D15	D16	47	400	1.80	1.89	1.84	47	0	0	0	0	0	0	0	0	0
15	D16	OUTFALL-2	3	400	1.89	1.89	1.89	3	0	0	0	0	0	0	0	0	0
TOTAL								903	0	0	0	0	5	0	0	0	0

MAPSKO BUILDERS PVT. LTD.

ROAD AREA CALCULATION

ROAD NO.	LENGTH (M)	WIDTH (M)	METAL PORTION IN (M)	AREA OF METAL PORTION (SQM.)	AREA OF FOOTPATH (SQM.)
R1	97.23	9	6	583.38	291.69
R2	60	9	6	360	180
R3	60	9	6	360	180
R4	134.1	9	6	804.6	402.3
R5	67	9	6	402	201
R6	139.5	9	6	837	418.5
R7	147	9	6	882	441
R8	56.2	9.85	6	337.2	357.8
TOTAL	**761**			**4566**	**2472**

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