LC-2157

SERVICE ESTIMATE, DESIGN REPORT AND CALCULATION OF

INTERNAL DEVELOPMENT WORKS

FOR

REVISED "COMMERCIAL COLONY MEASURING 2.0229 ACRES (LICENSE NO.43 OF 2010 DATED 08.06.2010) IN SECTOR - 66, GURUGRAM – MANESAR URBAN COMPLEX BEING DEVELOPED BY M/S FRENCH BUILDMART PVT. LTD.

SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF INTERNAL DEVELOPMENT WORKS FOR REVISED "COMMERCIAL COLONY MEASURING 2.0229 ACRES (LICENSE NO. 43 OF 2010 DATED 08.06.2010) IN SECTOR – 66, GURUGRAM MANESAR URBAN COMPLEX BEING DEVELOPED BY M/S FRENCH BUILDMART PVT. LTD.

REPORT :-

Gurugram town of Haryana State situated on N.H.- 48 road at a distance of 35 Km from Delhi. Being in the national capital region the town has fast developing tendency and potential. Further, it has also started sharing the growing residential, commercial and Industrial load of Delhi. In order to review the growing pressure of population in National Capital of Delhi, It has been decided by the Haryana Government to develop various infrastructure facilities in Gurugram Manesar Urban Complex. This report is for a part of service estimate for revised "commercial colony" measuring 2.0229 acres (License No. 43 of 2010 dated 08.06.2010) in Sector – 66, Gurugram – Manesar urban complex being developed by M/s French Buildmart Pvt. Ltd. has been prepared with the following provisions which are as under:-

1. **WATER SUPPLY**

   The source of water supply in this area is by HSVP Mains. It has been proposed to construct underground tanks of capacity as per attached details and the location for domestic purpose and for fire protection. The underground tanks will be fed from the HSVP based supply, which will feed O.H. tanks on the roof of the Building and has been designed as per the Hazen Williams formula. Presently there is HSVP W/S in this area. However the provision of tube well has been taken in this estimate due to non availability of water but after getting the approval from the competent authority through tube well / tankers / any other approved source till HSVP W/S will made available. The proposed tube well shall be 510mm bore drilled with reverse rotary rig and installed with 80mm i/d housing pipe and 50mm i/d slotted tube as strainer.

   DESIGN

   The scheme has been designed for population of 4405 persons, considering 1 person per 3 sqm area for ground floor and 1 person per 6 sqm for first floor for commercial and considering @ 10% for shopkeeper @ 45 LPCD and @ 90% for visitors @ 15 LPCD and office area 1 person per 10 sqm and maintenance staff and considering @ 90% for official @ 45 LPCD and @ 10% for visitors @ 15 LPCD as per design calculations.

   PUMPING EQUIPMENTS

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

2. **SEWERAGE**

The scheme is designed for sewer connecting to the STP and bypass connection to HSVP sewer scheme.

The sewer lines have designed for three times average D.W.F in relation to water supply demand. It has assumed that about 80% of the domestic and flushing water supply shall find its way into the proposed sewer. Sewer lines shall be running by gravity and discharge to STP proposed. Treated water will be used for Irrigation & Flushing purpose (through recycling) under the pipe line system.

3. **STORM WATER DRAINAGE**

It has been proposed to lay R.C.C pipes with required number of manholes for disposal of storm water, which will be connected to the HSVP drain. The intensity of rain fall has been taken as 6.00mm (1/4")per hour. A minimum size of 400mm i/d R.C.C pipe for storm water drain will be provided and designed as per manning's formula. Necessary provision of rainwater harvesting arrangement has also been taken in this estimate.

4. **ROADS**

Road have been provided to above areas and estimate is prepared as revised specifications adopted by HSVP.

5. **STREET LIGHTING AND ELECTRIFICATION**

Provision for external lighting of proposed area has been made.

6. **HORTICULTURE**

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

7. **FIRE FIGHTING**

As per N.B.C, fire tanks and required capacity pumps have been taken in the estimate and marked on the plan.

8. **SPECIFICATIONS**

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

9. **RATES**

The estimate has been based on the present market rates.

10. **COST**

The total cost of the scheme including cost of all services works out to Rs. ~~257.97~~ 359.65 Lacs (Rupees Two Crore Fifty Seven Lacs Ninety Seven Thousand only) including 3% contingencies and 49% departmental charges + price as calculation and cost per acre comes out to Rs. ~~127.53~~ 177.78 Lacs.

(Authorized Signatory)

SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF INTERNAL DEVELOPMENT WORKS FOR REVISED "COMMERCIAL COLONY MEASURING 2.0229 ACRES (LICENSE NO. 43 OF 2010 DATED 08.06.2010) IN SECTOR – 66, GURUGRAM MANESAR URBAN COMPLEX BEING DEVELOPED BY M/S FRENCH BUILDMART PVT. LTD.

DESIGN CALCULATION

Total Area of Plot (Commercial)	=	2.0229 Acres Or 8186.373 Sqm
Permissible Ground Coverage @ 60%	=	4911.824 Sqm
Permissible FAR @ 350%	=	28652.305 Sqm
Proposed Sanction Ground coverage	=	4907.118 Sqm
Proposed Ground Coverage	=	4749.203 Sqm
FAR Achieved	=	28647.712 Sqm

I) WATER REQUIREMENT

A. Ground + First Floor

1 Area on Ground Floor (Shopping Area)	=	4749.203 Sqm
Occupancy @ 3m^2 / person	=	1583 Persons
2 Shopping area on First floors	=	4230.024 Sqm
Occupancy @ 6 m^2/person	=	705 Persons
Total occupancy	=	**2288 Person**
Water Requirement @ 10% shopkeeper =~~229~~ 898 nos. @ 45 LPCD	=	~~10305~~ 40410 LPD
Water Requirement @ 90% visitors =~~2059~~ 1390 nos. @ 15 LPCD	=	~~30885~~ 20850 LPD
Total	=	~~**41190 LPD**~~ 61260.....(A)

B. 2nd Floor to 9th Floor (Office Area)

i) Office Area	=	19668.485 Sqm
Occupancy @ 10 m^2 / Person	=	1967 Persons
Water Requirement @ 90% official = 1770 Nos @ 45 LPCD	=	79650 LPD
Water Requirement @ 10% visitors = 197 Nos @ 15 LPCD	=	2955 LPD
Total	=	**82605 LPD**.....(B)

C) MTC. STAFF + GUARD ETC.

Considering water requirement for mtc. Staff + Guard etc. L.S.	=	150 Persons
Water Requirement @ 45% LPCD	=	6750 LPD .....(C)
Total Water Requirement (A+B+C)	=	~~1,30,545.00~~ 150615 LPD
	OR	~~131~~ 150.61 KLD Say ~~140~~ 150 KLD

II) FIRE DEMAND

(i) For UGT i.e. Population	= 4405 Persons	
(p) ½ x 100/1000 = (4.405) ½ x 100	= 209.88 KLD	Say 250 KLD

III) Garden Irrigation Requirement (For Total Area) = 30.00 KLD

IV. Total Water Requirement = ~~140.00~~ 150.0 **KLD**
(Excluding Fire Demand)
Hence Domestic Water Requirement (67%) = ~~140~~ 150 x 67% = ~~94.00~~ 100.50 KLD
Hence Flushing Water Requirement (33%) = ~~140~~ 150 x 33% = 46.00 KLD
Half Day Requirement = ~~47.00~~ 50 K.L. for Domestic Say 60.00 K.L.
= ~~23.00~~ 25 K.L. for Flushing Say 30.00 K.L.

But it is proposed to construct an underground tank capacity 60 K.L. in two compartment for domestic use, 30 K.L. for non potable water in two compartment (at STP) and 250 K.L. for fire fighting purposes for UGT in two compartment as shown location in the plan with UGT.

Total Capacity of UGT = 60 + 250 = 310.00 KLD

V. Tube Well **For UGT**

a) Yield = 15 K.L. / Hr.
b) Working Hour per day = 16 Hr. / Per Day
c) Total water demand = 94 M3/Day
d) Number of tube well required = 0.392
(Water Demand / Discharge / Hr. working Per day)
e) Add 5% extra = 0.019
Total = 0.411 Nos
Say = 1 Nos

(Water to the proposed development is to be supplied by HSVP. However, it is proposed to install only one no. tube wells for augmentation / standby purposes and provision has also been taken in the estimates.

I) Pumping Machinery for Tube wells

a) Gross Working Head = 80 Mtr
b) Average fall in S.L = 2 Mtr
c) Depression Head = 6 Mtr
d) Friction loss in main = 10 Mtr
Total = 98 Mtr
e) Discharge = 15000 LPH (Or 4.17 LPS Say 4.50 LPS)
f) Horse Power = 9.80 H.P.
HP = (4.50 x 98) / (75 x 0.60)
Say = 10.00 H.P.

It is proposed to provide 1 No. pumping set of 4.50 LPS discharge at 98 Mtr head (1W)

II) Boosting Machinery for domestic water For UGT

Total Water Requirement = ~~94.00~~ 100.50 KLD
Pumping per hour @ 8 hr. pumping / day = ~~94~~ 100.50 /8 KL / hr.
= ~~11.25~~ 12.56 KL / hr.
= ~~195.83~~ 209.37 lpm = ~~3.26 lps~~ Say 210 lpm

Say 4.00 lps

Gross working head	For UGT
Suction lift	= 7.00 mts.
- Frictional loss in mains & specials	= 6.00 mts.
- Clear Head required	= 75.00 mts.
Total	= 88.00 mts.
Say	= 88.00 mts.
Pump HP $\frac{210 \times 88}{60 \times 75 \times 0.60}$	= (4.00x88)/(75x0.60)
	= ~~7.82~~ H.P. 6.84
Say	= ~~10.00~~ HP 7.50

It is proposed to provide 2 No. of pumping set of 4.00 lps discharge at 88 mts Head each (1W + 1SB) for UGT

III) Boosting Machinery for flushing water at STP 50

Total Water Requirement	**= ~~46~~ K.L.D**
Pumping per hour @ 8 hr. pumping / day 50	= ~~46~~ /8 KL / hr.
6.25	= ~~5.75~~ KL / hr.
104.16	= ~~95.83~~ lpm = ~~1.59~~ lps, say 105 lpm
	~~Say 1 No. 2.00 lps each~~

Gross working head	
- Suction lift	= 7.00 mts.
- Frictional loss in mains & specials	= 6.00 mts.
- Clear Head required	= 75.00 mts.
Total	= 88.00 mts.
Say	= 88.00 mts.
Pump HP $\frac{105 \times 88}{60 \times 75 \times 0.60}$	= (2.00 x 88) / (75 x 0.60)
3.42	= ~~3.91~~ HP
Say	= 5.00 HP

It is proposed to provide 1 No. of pumping set of ~~2.00 lps~~ 105 lpm discharge at 88 mts Head each (1W + 1S)

IV) Boosting Machinery for Irrigation water

Total Water Requirement	**= 30 KLD**
Pumping per hour @ 5 hr. pumping / day	= 30 /5 KL / hr.
	= 6.00 KL / hr.
	= 100.00 lpm = 1.67 lps
Say	= 2.00 LPS

Gross working head

- Suction lift	= 3.00 mts.
- Frictional loss in mains & specials	= 3.00 mts.
- Clear Head required	= 25.00 mts.

Total		= 31.00 mts.
Say		= 31.00 mts.
Pump HP		= (2.00 x 31) / (75 x 0.60)
		= 1.38 HP
	Say	= 2.00 HP

It is proposed to provide 1 No. of pumping set of 2.00 lps discharge at 21 mts Head each (1W + 1S)

V) Boosting Machinery for Fire water

Total Water Requirement

Hydrant pump & spring as per CFO Directive	= 2280 LPM, 95 M Head and 80 H.P	= 1 Nos
Jockey pump (Hydrant) as per NBC table No. 23	= 180 LPM, 95M Head and 7.50 H.P	= 1 Nos
Diesel pump as per CFO Directive	= 2280 LPM, 95M Head and 80 H.P	= 1 Nos

Gross working head		
- Suction lift	= 5.00 mts.	
- Frictional loss in mains & specials	= 5.00 mts.	
- Clear Head required	= 85.00 mts.	
Total	= 95.00 mts.	
Jockey Pump HP (Fire)	= (3 x 95) / (75 x 0.60)	
	= 6.33 HP	
Say	= 7.50 HP	

VI) DG Set for plumbing

DG Set Requirement

Submersible Pump	(1 x 10)	= 10.00 HP
Domestic Pump	(1 x 10.00)	= 10.00 HP
Flushing Pump	(1 x 5.00)	= 5.00 HP
Rainwater drainage sump pumps (For basement)		= 10.00 HP (2 x 5.00 H.P.)
For External Electrification		= 10.00
Fire Jockey pump		= 7.5 HP
Total pump load		**= 52.50 HP**
		= 52.50 x 0.746 x 1.50
		= 58.747K.W
Total DG capacity		**= 1 No. 63 KVA**

Hence it is proposed to provide 1 No. D.G. Set of 63 KVA capacity

VII) Submersible pumps for Power Basement drainage

Total Water Flow rate from Sprinkler System = 1000 LPM = 16.67 LPS

2 No. Sumps considered for the basement to

Curtail long routes of drainage and filling at

Basement floor		= 16.67 LPS / 2 = 8.33 LPS
	Say	= 9 LPS

Gross working head

- Suction lift = 2.50 mts.
- Frictional loss in mains & specials = 2.50 mts.
- Clear Head required = 20.00 mts.

Total = 25.00 mts.

Pump HP = (9 x 25) / (75 x 0.60)

= 5.00 HP

Say = 5.00 HP

It is proposed to provide 3 No. of pumping set of 9 lps discharge at 25 mts Head each (2W + 1SB)

VIII) FLOW TO SEWAGE TREATMENT PLANT

Total Water Requirement = ~~94~~ 100.50 KLD for domestic & ~~46~~ 50 KLD for flushing

i) 80% of total Domestic Water Demand = 80% of ~~94~~ 100.50 KLD = ~~75.20~~ 80.40 KLD

ii) 80% of total Flushing Water Demand = 80% of ~~46~~ 50 KLD = ~~36.80~~ 40.0 KLD

Total **=~~112.00~~ 120.40 KLD**

Considering 5% marginal factor = ~~5.60~~ 6.02 KLD

G. Total **= ~~117.60~~ 126.42 KLD**

Say ~~120~~ 130 KLD

Proposed STP Capacity = ~~120~~ 130 KLD Or 0.13 MLD

(Authorized Signatory)

FINAL ABSTRACT OF COST

SR. NO.	SUB WORK	DESCRIPTION	AMOUNT (Rs. In Lacs)
			120.07
1	SUB WORK NO.I	WATER SUPPLY SCHEME	~~93.25~~
			39.25
2	SUB WORK NO. II	SEWERAGE SCHEME	~~40.28~~
			43.40
3	SUB WORK NO. III	STORM WATER DRAINAGE	~~21.20~~
			65.62
4	SUB WORK NO. IV	ROAD NETWORK	~~35.16~~
			7.76
5	SUB WORK NO. V	STREET LIGHTING	~~3.73~~
6	SUB WORK NO. VI	HORTICULTURE (PLANTATION & ROAD SIDE TREES)	2.87 ✓
			80.68
7	SUB WORK NO. VII	MTC. OF SERVICES & RESURFACING OF ROADS	~~61.48~~
		for 10 years, i.e. 1st 5 years of mtc	
		and 2nd Ph. after 10 years of mtc TOTAL	~~257.97~~
		(as per norms)	359.65 lacs
TOTAL : (~~Rupees Two Crore Sixty Lacs Fifty Nine Thousand only~~)			Say Rs. 359.65 lacs

Cost Per Acre = Rs. ~~257.97~~ 359.65 Lacs / 2.0229 = Rs. ~~127.53~~ 17778 Lacs Per Acre

AUTHORISED SIGNATORY

Recommended for

Executive Engineer
HSVP Division No. I,
Gurugram

Director
Town & Country Planning
Haryana, Chandigarh

Checked subject to comments in forwarding letter No. 2315 Dt. 06.02.2020 and notes attached with the estimate

Superintending Engineer (HQ)
for Chief Engineer 1 HSVP
Panchkula
6/2/2020

Superintending Engineer
HSVP, Circle-II, Gurugram

Addl. Chief Engineer
HSVP, Gurugram

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SUB WORK NO. 1 (Abstract of cost) **WATER SUPPLY**

SR. NO.	SUB WORK	DESCRIPTION	AMOUNT (Rs. In Lacs)
			24.35
1	Sub Head No. 01	Head Works	~~20.35~~
			26.00
2	Sub Head No. 02	Pumping Machinery	~~20.60~~
			16.52
3	Sub Head No. 03	Rising Main from Plant Room Dom. & Flushing water supply	~~10.77~~
4	Sub Head No. 04	External Fire Hydrants (Fire Risk)	7.56
			0.81
5	Sub Head No. 05	Irrigation	~~1.48~~
			78.24
		TOTAL	~~60.76~~
		Add 3% contigencies & P.H. Services	~~1.82~~ 2.35
		TOTAL	~~62.58~~ 80.59
		Add 49% Departmental Charges + Price escalation	~~30.67~~ 39.48
		unforseen items TOTAL	~~93.25~~ 120.07
		Say in Lacs	~~93.25~~ Lacs

C.O. to final abstract of cost

SUB WORK NO. 1 **WATER SUPPLY**
Sub Head No. 01 **HEAD Works**

Sr. NO.	Description	Amount in Rs.
1	Construction of U.G. tanks and Fire TanK Including pipes, valve & Specials. i) UGT 310 KLD @ Rs. 3500/- per K.L.D	1085000.00
2	Provision for construction of Boosting Station 1 Nos @ Rs. 200000/- each	200000.00
3	Boring and installing tube well reverse rotary rig complete with pipes and strainer to a depth of about 120 Mtr complete in all respect. 1 Nos @ Rs. 600000/- each	600000.00
4	Provision for construction of tube well chamber size 1.50m x 1.50m complete in all respect. 1 Nos @ Rs. 100000/- each (Holding T.W)	100000.00
5	Provision for carriage of material and unforeseen items L.S.	50000.00
		24.35 Lacs
	TOTAL	~~2035000.00~~
	Say in Lacs	~~20.35~~

(C/O To Abstract of cost for Sub Work No.1)

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SUB WORK NO. 1 **WATER SUPPLY**
Sub Head No. 02 **Pumping Machinery**

Sr. NO.	Description	Amount in Rs.
1	Providing and installing Hydro pneumatic pumping set of following capacities for domestic water Supply with specials	
	4.00 lps at 88 mts head - 2 No. (1W+1SB) - @ Rs. 80,000/- each Set (10.00HP) 240 lpm 1.00	160000.00 2.00 Lacs
2	Providing and installing Hydro Pneumatic pumping set of following capacities for Flushing water supply	
	2.00 lps at 88 mts head - 2 No. (1W+1SB) @ Rs. 60,000/- 1 Set (5.00 HP each) 105 lpm 0.75	120000.00 1.50 lacs
3	Providing and installing Submersible pump for tube wells with specials	
	4.50 lps at 98 mts head - 1 Nos (1W) @ Rs. 1,00,000/- 1 Set (10HP each) 2	100000.00 1
4	Providing and installing submersible pumping set of following capacities for basement drainage	
	- 9 lps at 25 mts head 3 Nos (2W + 1SB) @ Rs. 30,000/- (5.0 HP)	90000.00
5	Providing and installing pumping set of following capacities for fire prtoections	2.00
	- 180 lpm at 95 M head 1 No. @ Rs. 80,000/- (7.50 HP each) 2	80000.00
	- 2280 lpm at 95 M head 1 No. @ Rs. 3,50,000/- (80 HP each) (Hydrant)	350000.00
	- 2280 lpm at 95M head 1 No. @ Rs. 5,50,000/- (80 HP) (Diesel Engine)	550000.00
6	Provision for D.G. Set for stand by arrangement for all machinery = 1 No. 63 KVA @ Rs. 3,50,000/- each	350000.00 5.0
7	Provision for water treatment plant complete 1 No. @ Rs. 1,00,000/- (L.S)	100000.00
8	Provision for making foundations & erection of pumping machinery (L.S)	20000.00
9	Provision for pipes, valve & specials inside boosting chamber (L.S)	20000.00
10	Provision for electric services connection including electric fittings for boosting chambers and pump chamber etc. and cost of Transformer	100000.00 1
11	Provision for carriage of materials and other unforeseen items L.S.	20000.00
	TOTAL	2060000.00
	Say in Lacs	20.60 26.0 Lacs

(C/O To Abstract of cost for Sub Work No.1)

SUB WORK NO. 1 **WATER SUPPLY**

Sub Head No. 03 **Rising main upto Plant Room, Domestic & Flushing Water Supply**

Sr. NO.	Description	Amount in Rs.
1	Providing, laying, jointing & testing pipe lines including cost of excavation etc. complete in all respects	12.61 lacs
i)	100mm dia D.I. Pipe 1004 Mtr @ Rs. ~~700~~/- Per Mtr	~~702800.00~~
ii)	150mm i/d D.I. Pipes - 79 Mtr @ Rs. ~~900~~/- Per Mtr	~~71100.00~~
		1.24 lacs
2	Providing and fixing sluice valve including cost of surface box and masonry chamber etc. complete in all respect	0.60
	i) 100mm i/d 15 No. @ Rs. ~~7500~~/- each	~~112500.00~~
	ii) 150mm i/d 5 No. @ Rs. ~~10000~~/- each	~~50000.00~~
		0.30
3	Providing and fixing indicating plates for sluice valve ~~20~~ No. @ Rs. 1000/-	~~20000.00~~
		0.07
4	Provision for carriage of materials and other unforeseen items	20000.00
		1.00 lacs
5	Provision for making connection with HSVP Pipe etc. on master road	~~50000.00~~
6	Provision for cutting the road and making good the same	50000.00
		16.52 lacs
	TOTAL	~~1076400.00~~
	Say in Lacs	~~10.77~~

(C/O To Abstract of cost for Sub Work No.1)

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SUB WORK NO. 1 **WATER SUPPLY**
Sub Head No. 04 **Fire Rising Main**

Sr. NO.	Description	Amount in Rs.
1	Providing, Laying, jointing and testing Heavy Class M.S. Pipes for fire rising main including cost of fittings, valves, connection etc. complete in all respect	
a)	100mm dia - 90M @ Rs. ~~800~~ 1000/- Per Mtr	~~72000.00~~ 0.90 lacs
b)	150mm dia -499 M @ Rs. ~~1000~~ 1575/- Per Mtr	~~499000.00~~ 7.86 lacs
2	Providing and fixing fire Hydrant with accessories 15 No. @ Rs. 10000/- each	150000.00
3	Provision for carriage of materials (Lump sum)	10000.00
4	Providing and fixing indicating plate -15 No. @ Rs. 1000/- each	15000.00
5	Provision of road cutting and making its condition as original - L.S.	10000.00
	TOTAL	~~756000.00~~
	Say in Lacs	~~7.56~~ 10.56 lacs

(C/O To Abstract of cost for Sub Work No.1)

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SUB WORK NO. 1 **WATER SUPPLY**
Sub Head No. 05 **Irrigation**

Sr. NO.	Description		Amount in Rs.
1	Providing, Laying, jointing and testing UPVC pipe lines suitable for 6 kg pressure including cost of fittings, valves, connection etc. complete in all respect		
	i) 25mm i/d 150 M @ ~~Rs. 150/- Per Mtr~~ (1.5)		22500.00
2	Providing and fixing 20mm dia, Irrigation hydrant valve complete in all respect 15 No. @ Rs. 3000/- each		~~75000.00~~ 0.53
3	Provision for carriage of materials and other unforeseen items (Lump sum)		~~10000.00~~ 0.05
~~4~~	~~Provision for pump 2 lps discharge at 21 Mts head (1W+1SB) 2 Nos @ Rs. 20000/- each (2 HP)~~		~~40000.00~~
			80500
		TOTAL	~~147500.00~~
		Say in Lacs	~~1.48~~ 0.81 lacs

(C/O To Abstract of cost for Sub Work No.1)

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SUB WORK NO. II **SEWERAGE SCHEME**

Sr. NO.	Description		Amount in Rs.
1	Providing, jointing, cutting and testing stoneware pipe grade A and lowering into trenches including cost of excavation, bed concrete, cost of manholes etc. complete		0.69 /as
	a) SW Pipe 200mm i/d avg. depths 0 - 2.00M 55 M @ Rs. 1200/- per Mtr		~~66000.00~~
	b) SW Pipe 250mm i/d avg depth 2.00 M 268 M @ Rs. 1300/- per Mtr		~~348400.00~~ 4.02
	c) SW Pipe 300mm i/d avg depth 2.75 M 50 M @ Rs. 1500/- per Mtr		~~75000.00~~
2	Providing, laying, jointing & testing pipe lines including cost of excavation etc. complete in all respect - 150mm dia Heavy Class DI pipes (overfow for STP)		0.90 /as 1575/ 0.87
	a) 150MM i/d D.I. Pipe - 55 M @ Rs. ~~1000~~/- Per Mtr		~~55000.00~~
3	Provision of lighting and watching etc. (L.S)		10000.00
			1.50
4	Provision for cartage of material & cutting of roads etc. (L.S)		~~20000.00~~
			1.00
5	Provision for making connection with HSVP (L.S)		~~50000.00~~
6	Provision for STP 120 KLD (Tertiary Treatment Level with recycling storage). Complete in all respect. L.S.		~~2000000.00~~ 16.50
		TOTAL	~~2624400.00~~ 25.58
		Add 3% contigencies & P.H. Services	~~78732~~ 0.76
		TOTAL	~~2703132~~ 26.34
		Add 49% Departmental Charges + Price escalation	~~1324535~~ 12.91
		unforseen, Add **TOTAL**	~~4027667~~
		Say in Lacs	~~40.28~~ 39.25

(C/O to Final Abstract of cost)

SUB WORK NO. III **STORM WATER SCHEME**

Sr. NO.	Description		Amount in Rs.
1	Providing, lowering, laying, jointing RCC pipe class Np3 with cement joint, manholes, specials into trenches including manholes, chambers etc. excavation, backfilling and disposal of surplus earth complete in all respect 2500/		10.85 lacs
	a) RCC Np3 pipe 400mm i/d = 434M @ Rs. 1200/- Per Mtr		520800.00
2	Provision for road gulley & with pipe connection L.S. (LS)		150000.00
3	Provision for lighting and watching (LS)		20000.00
4	Provision for timbering and shoring (LS)		20000.00
			2.00 lacs
5	Provision for cartage of material & cutting of Roads (LS)		20000.00
	and making good to its original		1.00
6	Provision for making connection with HSVP storm water drain (LS)		50000.00
7 &	Providing rain water harvesting arrangement for 03 No. pits @ Rs. 200000/- each Provn for temporary disposal of storm water till HSVP services are provide (LS)		600000.00 7.50 lacs
		TOTAL	1380800.00 28.55
		Add 3% contigencies & P.H. Services	41424.00 0.85
		TOTAL	1422224.00 29.40
		Add 49% Departmental Charges + Price escalation	696889.76 14.40
		TOTAL	2119113.76
		Say in Lacs	21.20

43.40 lacs

(C/O to Final Abstract of cost)

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Sub Work No. 4 **ROAD WORKS**

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Provision for leveling & earth filling as per site conditions	Per Acre	2.0229	~~120000~~	~~242748~~ 3.03 lacs
2	i) Providing and laying 100mm thick PCC under pavement, cement concrete of specified grade 1:4:8 and 150mm thick RMC grade M-40 ii) Providing and laying Bituminous road (~~250~~mm GSB, ~~300~~mm WMM, 50mm DBM, ~~40~~mm ~~BC~~).	Sqm	2770	1200/ ~~600~~	33.24 ~~1662000~~
3	Provision for kerbs & channels of C.C. 1.2:4	Metre	468	~~400~~ 600/	~~187200~~ 2.81
4	Provision for making approach and pavement to building, provision for C.C pavement	Sqm	L.S.		50000
5	Interlocking tile 80mm thick for surface of pavement for car parking etc.	Sqm	197	~~400~~ 600/	~~78800~~ 1.18
6	Provision for parking arrangement, guide map and indicating board	LS			50000
7	Provision for carriage of material	LS			~~20000~~
8	Pour for Traffic Light Control			(LS)	No lacs
	Sub Total				~~2290748~~ 48.76 lacs
	Add 3% contingencies & PH Services				~~68722~~ 1.28 lacs
	Sub Total				~~2359470~~ 44.04 lacs
	Add 49% Departmental Charges, price escalation				~~1156141~~ 21.58 lacs
	Labour cess, Octroi **Total**				~~3515611~~
	Say Rs. In Lacs				~~35.16~~ 65.62 lacs

(C.O. to Final abstract of cost)

Sub Work No. 5 **STREET LIGHTING**

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Providing lighting at surrounding area s per standard specifications of HVPN	Acre	2.0229	~~120000~~ 2.50 lac	~~242748~~ 5.06 lac
	Add 3% contingencies & PH Services				~~7282~~ 0.15 lac
	Total				~~**250030**~~ 5.21 lacs
	Add 49% Departmental Charges, price escalation unforseen, admin				~~122515~~ 2.55 lac
	Total				~~372545~~ 7.76 lac
	Say Rs. In Lacs				~~3.73~~

(C.O. to Final abstract of cost)

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Sub Work No. 6 **HORTICULTURE**

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Development of Lawn Areas				
a.	Trenching of ordinary soil upto depth of 60 cm i/c removal & stacking of serviceable material & disposing by spreading and levelling within a lead of 50 M and making up the trench area for proper levels by filling with earth or earth mixed with manure before and after flooding trench with water i/c cost of imported earth and manure				
b.	Rough dressing of turfed area				
c	Grassing with "Cynadon dactylon" i/c watering and maintenance of lawns for 30 days till the grass forms a thick lawn, free from weeds and fit for moving in row 7.5 cm part in eighter direction				
d	organized green 2200 Sqm Or 0.55 Acres (Considering for part area L.S.)	Acre	0.55	150000	82500
2	Providing and planting trees along boundary @ 6 m interval (Length appx 468M) = 468/6 = 78 Nos Say No. of trees = 80 Nos Cost details : Excavation = Rs. 60 Manure = Rs. 90 Tree Plant = Rs. 150 Tree Guard = Rs. 1000 Total = Rs. 1300				
		Each	80	1300	104000
	Sub Total				**186500**
	Add 3% contingencies & PH Services				5595
	Sub Total				**192095**
	Add 49% Departmental Charges, price escalation, return				94127
	Total				**286222**
	Say Rs. In Lacs				Rs. 2.87 Lacs

(C.O. to Final abstract of cost)

Sub Work No. 7 **Mtc. Of services & Resurfacing of Road**

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Mtc. Of water supply, sewer, storm water drain, roads, street light, hort. Etc. for period of 10 years including operation charges full establishment etc. complete in all respects 19.4255 acres @ Rs. 3.00 lacs per acre	Acre	2.0229	~~200000~~ 7.50	~~404580~~ 15.17
2	Provision for resurfacing of roads after 5 years of 1st phase with provision of 50mm thiCK BM including leveling coarse and 25mm BC as per crust design whichever is safer	Sqm	2770	600/-	1662000
3	2nd phase after next five years of 2nd phase (50mm DBM & 25mm BC or as per crust design whichever is safer	Sqm	2770	700	~~1939000~~ 20.78 lacs
	Sub Total				~~4005580~~ 52.57 lacs
	Add 3% contingencies & PH Services				~~120167~~ 1.58 lacs
	Sub Total				~~4125747~~
	Add 49% Departmental Charges, price escalation				~~2021616~~ 54.15 lacs
	Unforseen, Refund, **Total**				~~6147364~~ 26.53 lacs
	Say Rs. In Lacs				~~61.48~~ 80.68 lacs

(C.O. to Final abstract of cost)

SUMMARY OF DESIGN REQUIREMENT

S. No.	Description	Qty	Unit
1	Total Population	4405	Persons
2	Total Water Requirement (Domestic)	94	KLD
3	Total Water Requirement (Flushing)	46	KLD
4	Total Water Requirement (Horticulture)	30	KLD
5	U. G Tank (Domestic 310 KLD)	1	No.
6	No. of Domestic WS pumps UGT	1 + 1	Set
7	No. of Flushing pumps	1 + 1	No.
8	No. of submersible pumps	1	No.
9	Main Fire Hydrant electrical pumps	2	No.
10	Diesel fire pumps	1	No.
11	Jockey fire pumps	1	No.
12	Generating sets (63 KVA)	1	63 KVA
13	S.T.P. (120 KLD)	1	No.

TOTAL MATERIAL STATEMENT FOR WATER SUPPLY i.e. DOMESTIC, FLUSHING & RISING MAIN ETC.

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S. No.	Description	Size of pipe upto valve in 100mm	Size of pipe upto valve in 150mm	Size of pipe upto valve in 200mm
1	Domestic	428 M	71 M	-
2	Flushing	491 M	8 M	-
3	Rising Main	~~85~~ 90	-	-
	Total	**1004 M**	**79 M**	-

MATERIAL STATEMENT OF WATER SUPPLY SCHEME (DOMESTIC)

S. No.	Line Designation		Size of Pipe Provided	Length of Pipe (Mtr)	Length in Mtr		
	From	To			100MM	150MM	200MM
1	UGT	A	150	8		8	-
2	A	B	150	38		38	-
3	B	C	100	80	80		-
4	C	D	100	120	120		-
5	A	E	150	25		25	-
6	E	F	100	76	76		-
7	F	G	100	56	56		-
8	G	D	100	96	96		-
							-
	Total			**499**	**428**	**71**	-

Total for 100mm i/d D.I. Pipe Length **428 Mtr**
Total for 150mm i/d D.I. Pipe Length **71 Mtr**
Total **499 Mtr**

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MATERIAL STATEMENT OF WATER SUPPLY SCHEME (FLUSHING)

S. No.	Line Designation		Size of Pipe Provided	Length of Pipe (Mtr)	Length in Mtr		
	From	To			100MM	150MM	200MM
1	STP	a	150	8	-	8	-
2	a	b	100	42	42	-	-
3	b	c	100	80	80	-	-
4	c	d	100	120	120	-	-
5	a	e	100	21	21	-	-
6	e	f	100	76	76	-	-
7	f	g	100	56	56	-	-
8	g	d	100	96	96	-	-
	Total			**499**	**491**	**8**	**0**

Total for 100mm i/d Pipe Length **491 Mtr**
Total for 150mm i/d Pipe Length **8 Mtr**
Total **499 Mtr**

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MATERIAL STATEMENT FOR BOREWELL RISING MAINS AND GOVT. MAIN

S. No.	Name of Line		Size of Pipe Provided	Length of Pipe (Mtr)	Length in Mtr	
	From	To			150mm	100mm
1	T.W.	UGT	100	~~25~~ 30		~~25~~ 30
2	Govt. Line	UGT	100	60		60
	Total			~~85~~ 90	**0**	~~85~~ 90

MATERIAL STATEMENT FOR SEWERAGE SCHEME

S. No.	Line No.		Length (In Mtr)	Pipe Dia	Length in Mtr		
					200mm i/d	250mm i/d	300mm i.d
	From	To					
1	A	B	55	200	55	-	-
2	B	C	105	250	-	105	-
3	C	D	78	250	-	78	-
4	D	E	42	300	-	-	42
5	E1	E	85	250	-	85	-
6	E	STP	8	300	-	-	8
7	STP	HSVP SEW. (BY PLUMBING) 150mm i/d D.I. PIPE=55mtr				-	-
	Total		**373**		**55**	**268**	**50**

200mm i/d Pipe Length **55 Mtr**
250mm i/d Pipe Length **268 Mtr**
300mm i/d Pipe Length **50 Mtr**
150mm i/d D.I. PIPE (BY PLUMBING) = **55 Mtr**

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MATERIAL STATEMENT OF STORM WATER DRAINAGE SCHEME

Sr. No.	Line Reference		400mm i/d RCC Np3 Pipe Length in Mtr
	From	To	
1	A	B	85
2	B	C	90
3	C	D	78
4	D	E	56
5	E1	E	75
6	E	MASTER SWD	50
	Total Length		434

Total Length 400mm i/d RCC Np3 pipe = 434 Mtr

TOTAL RAIN WATER HARVESTING (RWH)= 3 No.

Material Statement of Road Works

Sr. No.	Road No.	Length	Width	Area	
i) 6.00 Mtr wide Road					
1	1	63.00	6.00	378.00	Sqm
2	2	104.00	6.00	624.00	Sqm
3	3	83.00	6.00	498.00	Sqm
4	4	46.00	6.00	276.00	Sqm
5	5	85.00	6.00	510.00	Sqm
	Total	381.00	6.00	2286.00	Sqm
ii) 12.00 Mtr wide Service Road					
6	6	64.00	5.50	352.00	Sqm
	G. Total	**445.00**		**2638.00**	
		Add. 5% extra for Curves		**132.00**	
		Total		**2770.00**	Sqm

iii) Kerbs & Channels

6 Mtr wide Road	381	Mtr
12 Mtr wide Service Road (1 x 64 Mtr)	64	Mtr
Total	**445**	**Mtr**
Add. 5% extra for Curves	23	Mtr
Total	**468**	**Mtr**

iv) Surface Car Parking = 15 Nos

Area = 15 Nos x 2.50 x 5.00 Mtr =	187.5	Sqm	
Add. 5% extra for Curves	9.38	Sqm	
Total	**196.88**	**Sqm**	**Say 197.00 Sqm**

MATERIAL STATEMENT FOR EXTERNAL FIRE FIGHTING

S. No.	Node No.		Size of Pipe Provided	Length of Pipe (Mtr)	Length in Mtr		
	From	To	mm		100mm	150mm	200mm
1	UGT	A	150	8		8	-
2	A	B	150	38		38	-
3	B	C	150	80		80	-
4	C	D	150	120		120	-
5	A	E	150	25		25	-
6	E	F	150	76		76	-
7	F	G	150	56		56	-
8	G	D	150	96		96	-
	Total			499	0	499	0

For 100mm dia with Fire Hydrant = 15 Nos
For 100mm dia pipe = 15 x 6.00 = 90.00 Mtr

Total for 100mm i/d Pipe Length	**90 Mtr**
Total for 150mm i/d Pipe Length	**499 Mtr**
Total	**589 Mtr**

SUBHEAD : IRRIGATION WATER SUPPLY SCHEME - DESIGN CALCULATION (HORTICULTURE)

HYDRAULIC STATEMENT OF IRRIGATION WATER SUPPLY

S. No.	Line Reference	Requirment (LPD)	Peak Flow in LPH	Velocity (m/s)	Size of the pipe required (in mm)	Size of the Pipe Recommend (mm)	Hydraulic Radius	Total Friction Loss in m/m	Length (M)	Loss of Head in Line (M)	Formation Level	Available head (M)
1	From Flushing Water Supply line	30000		-	25.00	25	-	-	150	-	-	-

Note :- 25 Nos connections are to be done from flushing water supply line i.e. 25 Nos x 6 Mtr/each = 150 Mtr for 25mm i/d

SUBHEAD : DOMESTIC WATER SUPPLY SCHEME - DESIGN CALCULATION

HYDRAULIC STATEMENT OF WATER SUPPLY SCHEME (DOMESTIC)

S. No.	Line Reference	Population	Total Water Requirement in LPD (As per 21.34 LPCD)	Peak Flow in LPH	Velocity (m/s)	Size of the pipe required (m)	Size of the Pipe Recommend (mm)	Total Friction Loss in M/M	Length (M)	Loss of Head in Line (M)	Formation Level (L/E)	Available head (M) (L / E)	Remarks
1	UGT -A	4405	94003	35250	0.38	100	150	0.002	8	0.01	230.95	319.04	Finish Ground level of UGT i.e. at
2	A - B	2405	51323	19245	0.29	100	150	0.001	38	0.04	230.90	319.00	water works F.L. = 231.05
3	B - C	2000	42680	16005	0.39	100	100	0.003	80	0.24	231.05	318.76	Boosting Head = 88.00M
4	C - D	1200	25608	9603	0.31	80	100	0.002	120	0.24	231.25	318.52	Haudraulic head = 319.05 Mtr at
5	A - E	2000	42680	16005	0.22	100	150	0.001	25	0.03	231.00	319.02	water works
6	E - F	1800	38412	14404	0.39	100	100	0.003	76	0.23	231.15	318.79	
7	F - G	1200	25608	9603	0.31	100	100	0.002	56	0.11	231.25	318.68	
8	G - D	500	10670	4001	0.23	80	100	0.001	96	0.1	231.25	318.58	

SUB HEAD : FLUSHING WATER SUPPLY SCHEME - DESIGN CALCULATION

HYDRAULIC STATEMENT OF WATER SUPPLY (FLUSHING)

S. No.	Line Reference	Population	Total water requirement in LPD (as per 10.44 LPCD)	Peak flow in LPH	Velocity (m/sec)	Size of pipe required (in M)	Size of pipe recommended (in mm)	Total friction loss in (m/m)	Length in Mtr	Loss of head in line (M)	Formation level	Available head (M)	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	STP -a	4405	45988	17245	0.29	100	150	0.001	8	0.01	230.95	319.04	F.L. at STP = 231.05
2	a - b	2405	25108	9415	0.39	100	100	0.003	42	0.13	230.95	318.91	Boosting Head = 88.00
3	b - c	2000	20880	7830	0.27	80	100	0.002	80	0.16	231.05	318.75	Flushing Hydraulic head at
4	c - d	1200	12528	4698	0.20	80	100	0.001	120	0.12	231.25	318.63	STP = 319.05 M
5	a - e	2000	20880	7830	0.27	80	100	0.002	21	0.04	231.00	319.00	
6	e- f	1800	18792	7047	0.23	80	100	0.001	76	0.08	231.15	318.92	
7	f- g	1200	12528	4698	0.20	80	100	0.001	56	0.06	231.25	318.86	
8	g- d	500	5220	1957	0.16	80	100	0.001	96	0.1	231.25	318.76	

SEWERAGE SCHEME - DESIGN CALCULATION

DESIGN STATEMENT OF SEWERAGE SCHEME

S. No.	Name of Node	Population	Total discharge as per 31.78 LPCD (IN LPD)	Sew. Quantity after evaporation losses (20%	Sewerage Discharge peak at 3 times	Size of pipe	Gradient	Velocity m/sec	Carrying Cap. Of pipe (In LPS)	Length in Mtr	Fall + Extra Fall	Ground level		Formation level		Invert Level		Depth of M.H		
			LPD	LPD	m3/sec	mm	mtr	m/sec	m3/sec		M	Start	End	Start	End	Start	End	Start	End	Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	A - B	500	15890	12712	0.0004	200	225	0.76	0.012	55	0.24	231.10	231.15	231.35	231.25	229.85	229.61 229.58	1.50	1.64	1.57
2	B - C	1700	54026	43220	0.0015	250	305	0.76	0.019	105	0.36	231.15	230.85	231.25	231.05	229.58	229.24	1.67	1.81	1.74
3	C - D	2500	79450	63560	0.0022	250	305	0.76	0.019	78	0.26	230.85	230.75	231.05	230.90	229.24	228.98 228.95	1.81	1.95	1.88
4	D - E	2905	92320	73856	0.0026	300	385	0.76	0.027	42	0.11	230.75	230.75	230.90	230.95	228.95	228.84	1.95	2.11	2.03
5	E1-E	1500	47670	38136	0.0013	250	305	0.76	0.019	85	0.28	231.05	230.75	231.15	230.95	229.65	229.37	1.50	1.58	1.54
6	E - STP	4405	139990	111992	0.0039	300	385	0.76	0.027	8	0.02	230.75	231.00	230.95	231.05	228.84	228.82	2.11	2.23	2.17
7	STP - HSVP Sew (By pumping)	150mm i/d D.I. PIPE (BY PLUMBING)								55	0.5	231.00	230.20	231.05	230.30	229.05	228.55	2.00	1.75	1.88

DESIGN CALCULATION OF STORM WATER DRAINAGE SCHEME

INTENCITY OF RAIN FALL = 0.006 MTR /HR

IMPERMEABILITY FACTOR = 0.6

S. No.	Name of Node	Area (Self)	Area (Self)	Branch Area	Total Area	Total Area	Rain fall	Discharge @ 17.36 LPS/ Hector	Length	Pipe dia	Slope	Velocity	Cap. Of drain	Fall + Extra Fall	Ground Level		Formation Level		Invert Level		Depth of M.H's		Average Depth
		IN SQM	In Acre	In Acre	In Acre	In Hector	mm / hr.	IN LPS	In Mtr	In mm	In Mtr	IN m/sec	IN LPS	IN Mtr	Start	End	Start	End	Start	End	Start	End	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	A - B	2400	0.59	0	0.59	0.24	6.00	4.16	85	400	570	0.76	98.57	0.15	231.10	231.15	231.25	231.25	229.35	229.20	2.00	2.05	2.03
2	B - C	800	0.20	0.59	0.79	0.32	6.00	5.56	90	400	570	0.76	98.57	0.16	231.15	230.85	231.25	231.05	229.20	229.04	2.05	2.01	2.03
3	C - D	1200	0.30	0.79	1.09	0.44	6.00	7.64	78	400	570	0.76	98.57	0.14	230.85	230.75	231.05	230.90	229.04	228.90	2.01	2.00	2.01
4	D - E	1600	0.40	1.09	1.49	0.60	6.00	10.41	56	400	570	0.76	98.57	0.10	230.75	230.90	230.90	231.00	228.90	228.80	2.00	2.20	2.10
5	E1 - E	1800	0.44	0	0.44	0.18	6.00	3.12	75	400	570	0.76	98.57	0.13	231.05	230.90	231.15	231.00	229.15	229.02 228.80	2.00	1.98	1.99
6	E - MASTER SWD HSVP	386	0.10	1.93	2.03	0.82	6.00	14.23	50	400	570	0.76	98.57	.09+.50 =0.59	230.90	230.20	231.00	230.30	228.80	228.21	2.20	2.09	2.15